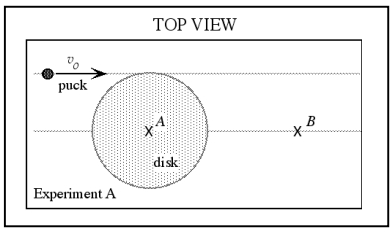
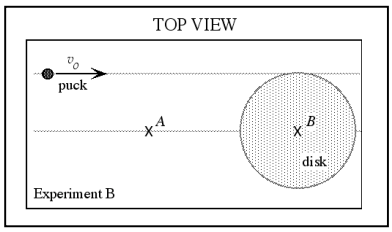
A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





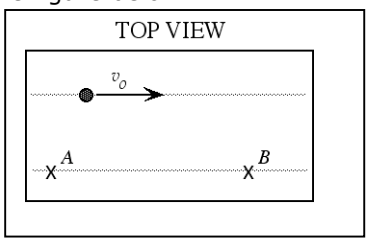
Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

Explain.

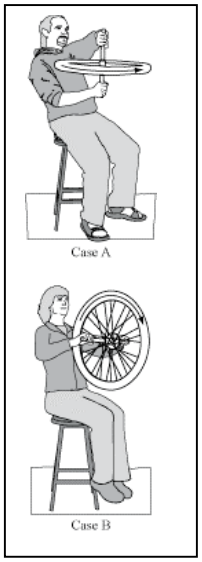
Q10. Describe the direction of the angular momentum of the puck with respect to point A.

Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



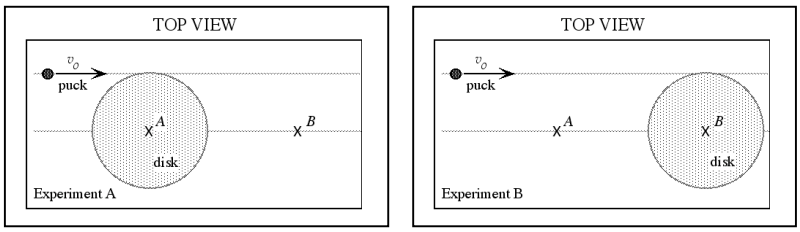
Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

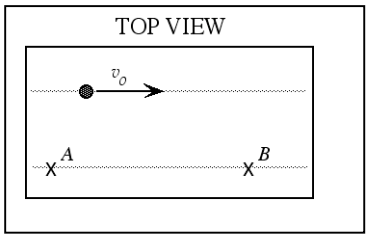
Explain. *The smaller puck has less friction.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *The larger puck has more momentum*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *The angular momentum for the pucks are the same.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down (toward the bottom of the page)*

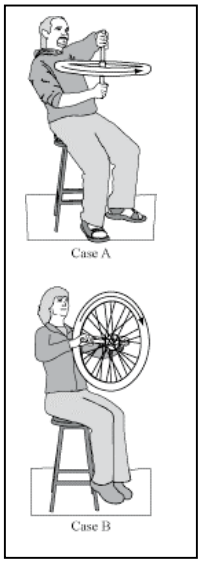
Explain. *This is due to the way angular momentum works.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *They are slowing down.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

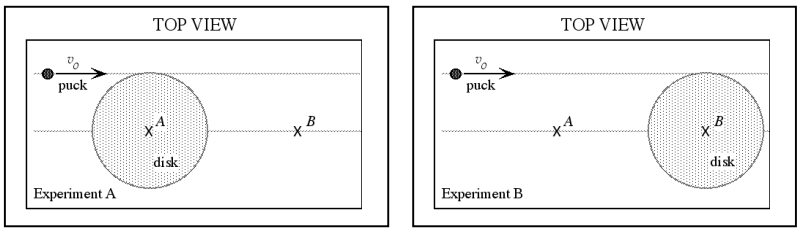
Explain. *This won't change things.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *This is the same as question 14.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

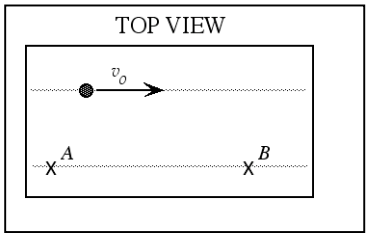
Explain. *In both experiments the puck travels at the same velocity and the disk remains at rest. The position of the disk doesnt matter because the Vo for the puck is constant and the puck does not accelerate.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The puck would hit the disk at the same place in both the experiments, so after the collision the two systems would just be the same.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *P=mv^2, and the mass of the puck stays constant, and because the floor is frictionless the velocity doesnt change.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up (toward the top of the page)*

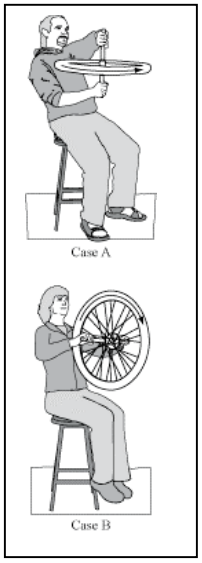
Explain. *Assuming point B was at the top of the page, the puck would be moving up towards that point.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *Everything in this experiment remains constant. The Velocity, mass, acceleration, all reamain constant, the only factor that changes is postion.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

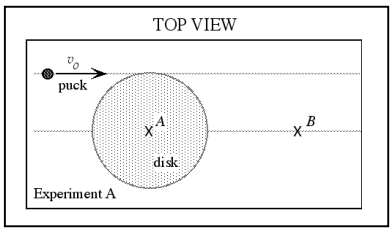
Explain. *The student will begin to rotate in the direction of the spinning wheel, because the force caused from the wheel spinning will move the student.*

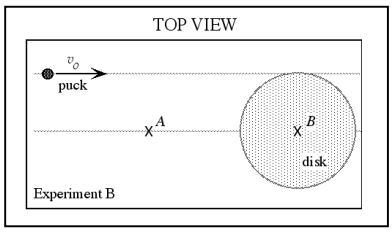
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The rotation of the wheel is vertical while the chair will only rotate horizontally. The prepedicuar force of the wheel will not be able to turn the chair.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

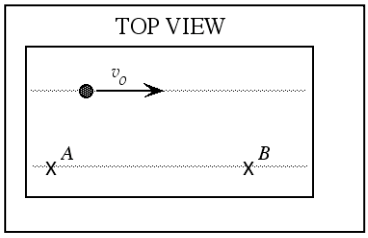
Explain. *I do not understand how to do this problem.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *I do not understand how to do this problem.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *I do not understand how to do this problem.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down and to the left*

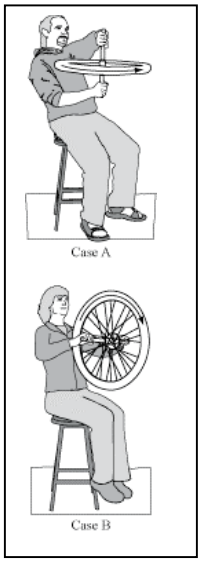
Explain. *I do not understand how to do this problem.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *I do not understand how to do this problem.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

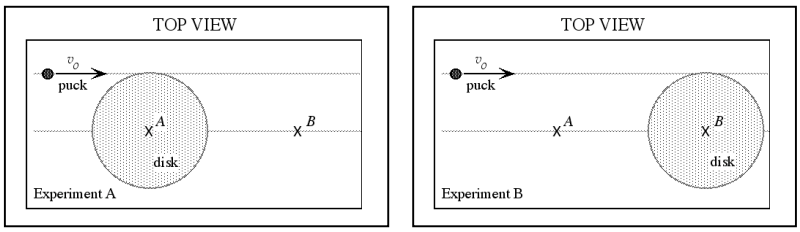
Explain. *I do not understand how to do this problem.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *I do not understand how to do this problem.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

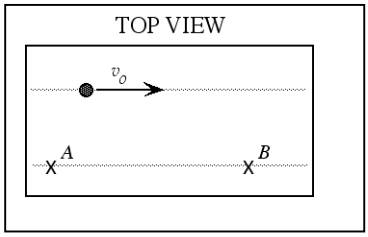
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *No change from point to point*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

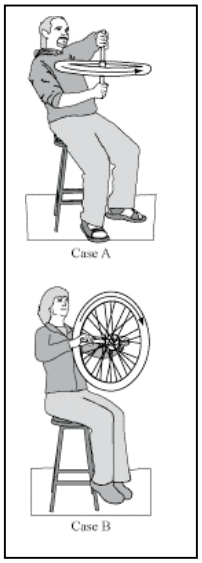
Explain. *No angular momentum*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

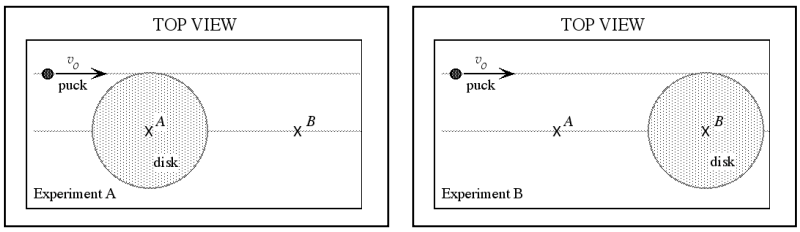
Explain. *The wheel will transfer some of the momentum causing him to rotate.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *All of the momentum is in the veritcal direction.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

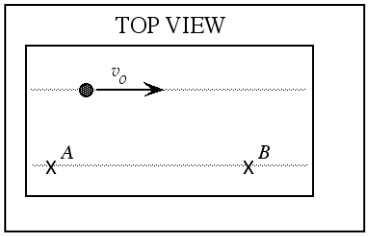
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

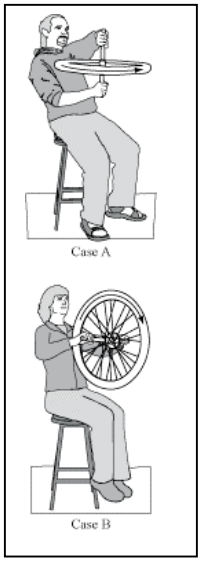
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both increasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

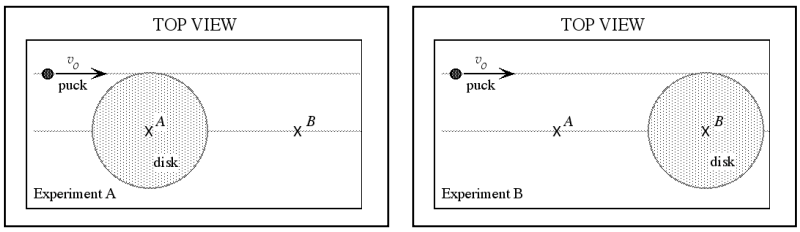
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

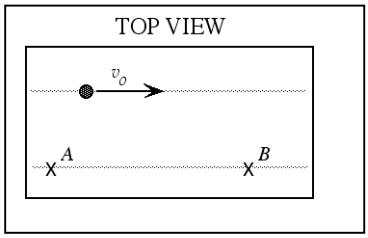
Explain. *because the final angular speed of the puck/disk sytem in experiment A is reat than that in experiment B*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *Because the final speed of the center of mass of the system in experiment A is less than that in experiment B*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *puck A is equal to puck B because they are both equal to zero*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

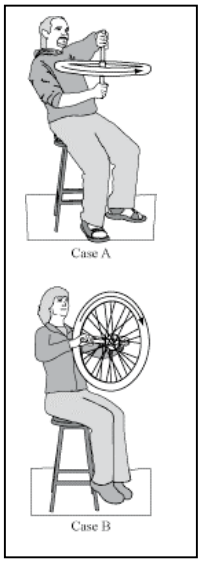
Explain. *angular momentum of te puck with respect to point B is to the right*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *puck A and puck B are both remaining constant with time*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

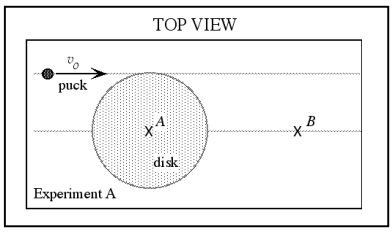
Explain. *because the student will begin to rotate counter-clockwise as seen above after he is handed the spinning wheel*

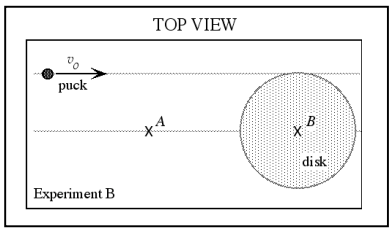
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *Becase the student will also begin to rotate counter-clockwise after she is handed the spinning wheel*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

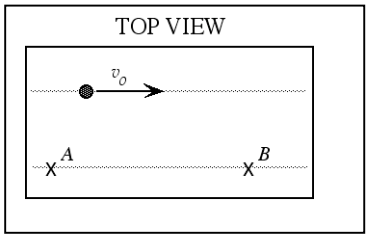
Explain. *The puck has the same initial velocity when it collides with the disk in both experiments.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Since the initial velocity of the puck does not change the experiment is really the same so the results will be the same in each one.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *Using the idea of Kepler's Laws it is reasonable to assume that the area swept out at the instant shown with respect to A is greater than that with respect to B due to the puck's proximity to each point.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

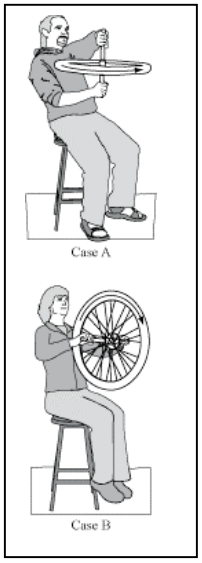
Explain. *The direction of the angular momentum vecotr will be the same after any change in time because the velocity vector is not changing direction.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *Using Kepler's Laws again, as the puck moves away from A its angular momentum decreases but asw it moves closer to B the angular momentum must increase.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

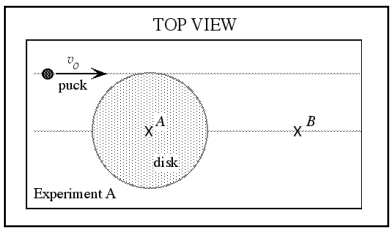
Explain. *The spinning wheel exerts a torque on the student as the radius from the center of the student to the outside of the wheel is greater than that to the inside of the wheel there will be a net torque in the same dirction that the wheel is spinning.*

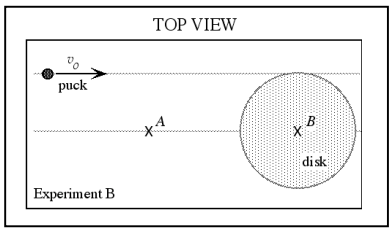
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The torque from the spinning is up and down so there is no net torque in the potential rotational direction of the student.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

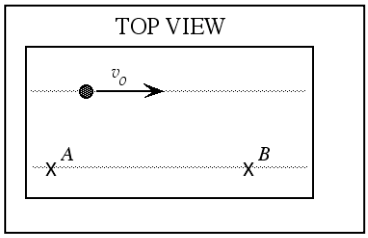
Explain. *because they move at they same speed, they will hit with the same force, causing angular speed to be the same.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *equal, because it hits at same speed, the speed is the same*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *the angle is steeper.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down and to the right*

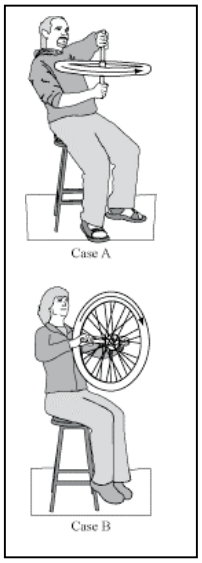
Explain. *it is pointing to point b*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *as time moves on, the angles change.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

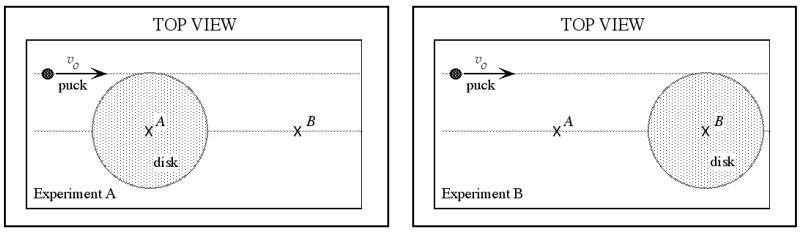
Explain. *it will have a direct affect and make the person spin the same way as the wheel.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *it is pulling them forward, but the chair cant go forward, so they remain at rest.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

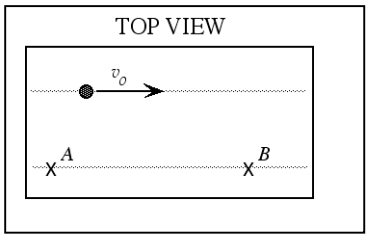
Explain. *b/c in b the puck gets to speed up longer*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *same*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *b/c the radius is less*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

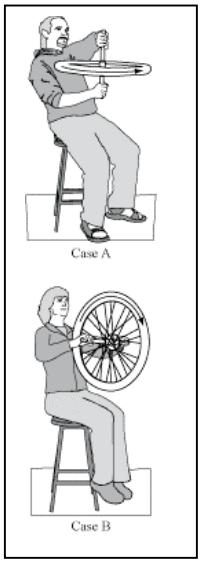
Explain. *b/c p=mv so mass doesnt have a vector and the velocity is pointing to the right*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *b/c they have to same constant velocity if velocity is constant acceleration is zero*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

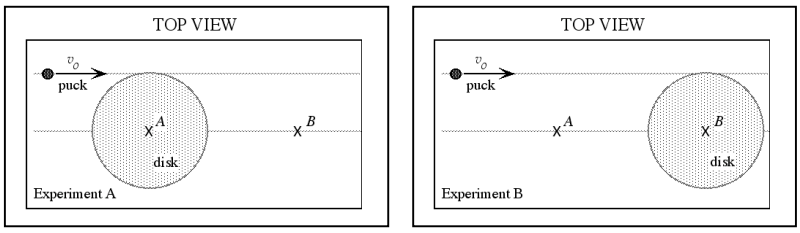
Explain. *b/c the student is moving oppisits of the wheel to counter act the force of the wheel pulling*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *b/c the wheel isnt vertical*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

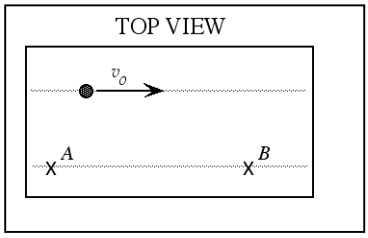
Explain. *conservation on momentum and velocity*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *conservation of momentum and velocity*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *conservation of momentum and velocity*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

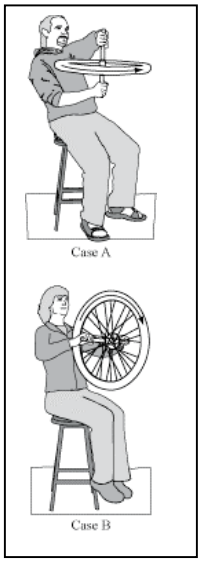
Explain. *conservation of momentum and velocity*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *conservation of momentum and velocity*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

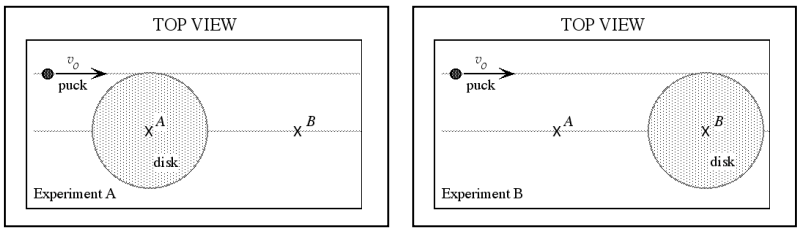
Explain. *this does not affect the student*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *due to acceleration of wheel*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

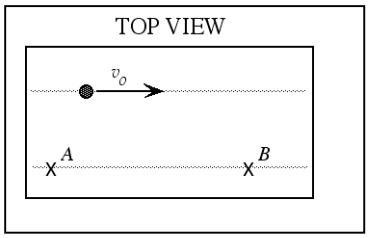
Explain. *greater distance traveled than in exp. B*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *center of mass is constant*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *conservation of momentum*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down and to the left*

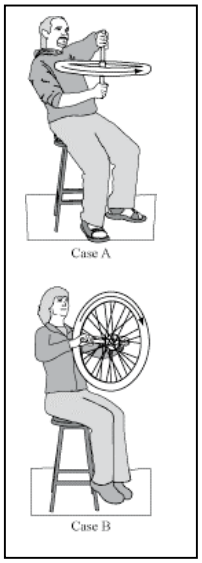
Explain. *right thumb rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *because they're losing velocity*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

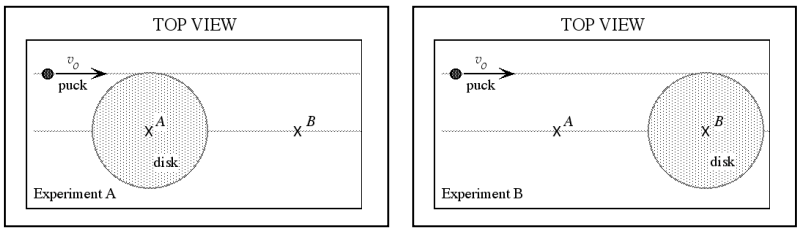
Explain. *moving with the spin*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *spinning the other way*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

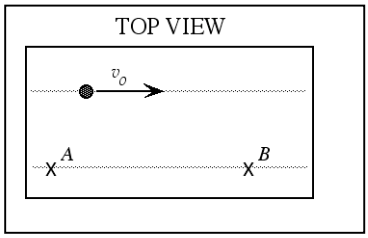
Explain. *Everything is the same in both experiments, except position, which would have no effect on the angular momentum.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Same as above…*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *Radius of puck to b is greater than radius of puck to A.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *into the page*

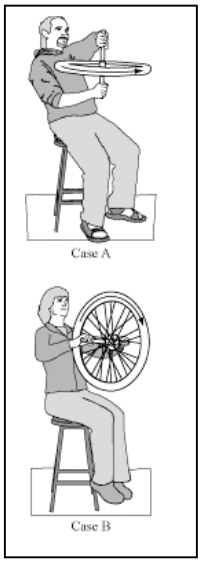
Explain. *Right hand rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *Radius from puck to A is increasing, radius from puck to B is decreasing.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

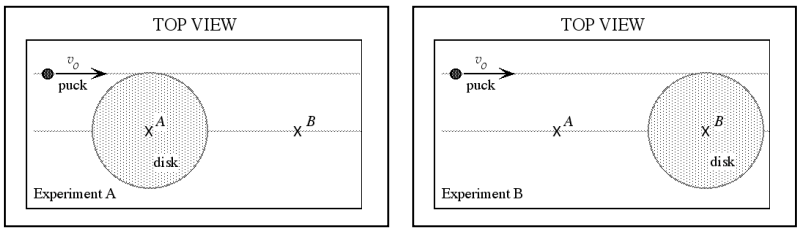
Explain. *Right hand rule, angular momentum is downward.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *Right hand rule, angular momentum points to the left.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

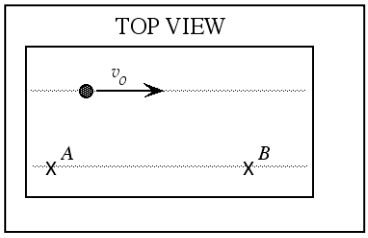
Explain. *because the only difference is distance, and the puck is going at a constant V*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *because the only difference is distance, and the puck is going at a constant V*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *because the puck is closer to A, therefor the concurrence made by the puck is smaller.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down and to the right*

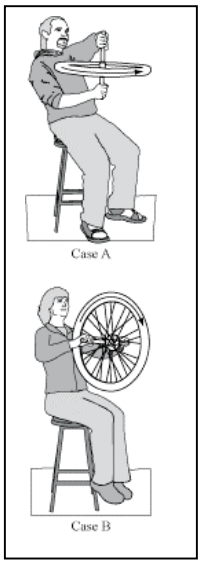
Explain. *it is above and to the left of the point, moving right.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *compared to each other there not moving*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

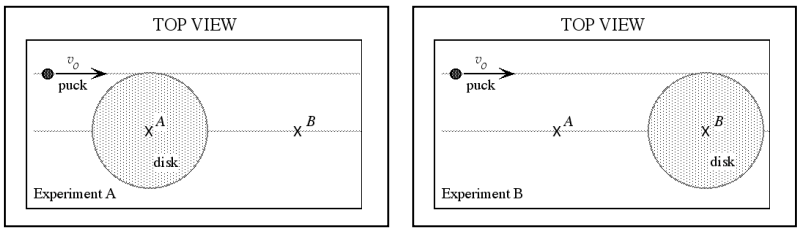
Explain. *the rotation is conserved about the wheel. acc is up*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *the rotation is conserved about the wheel. acc is up, or when its turned, to the right, which is clockwise*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

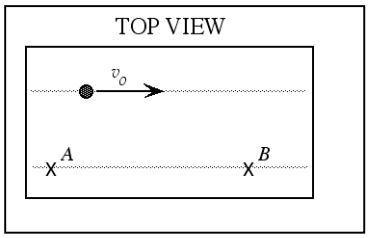
Explain. *because of the distance*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *because it moves the disk to the right*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *conservation of momentum*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down (toward the bottom of the page)*

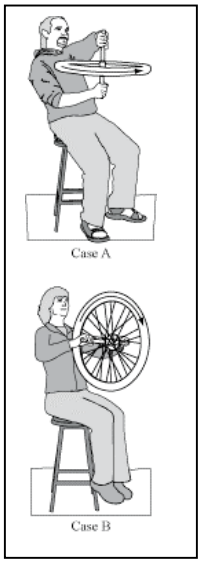
Explain. *right thumb rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *losing velocity*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

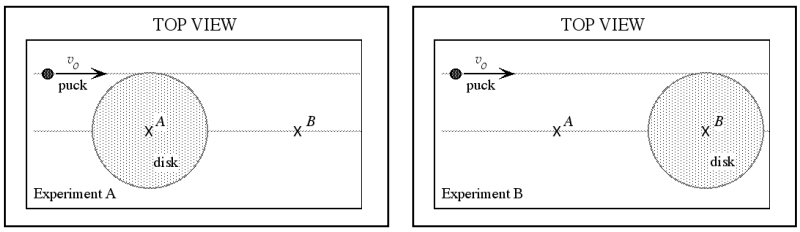
Explain. *because it follows the direction of the spin*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *it spins the other way*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

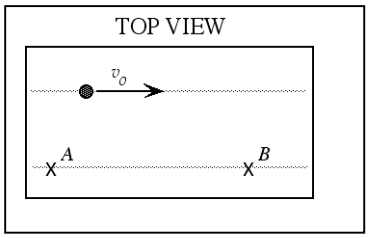
Explain. *same speed, it's just rotating now.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *b has more speed so it's pushing it to the outside.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *equals zero, not spinning.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

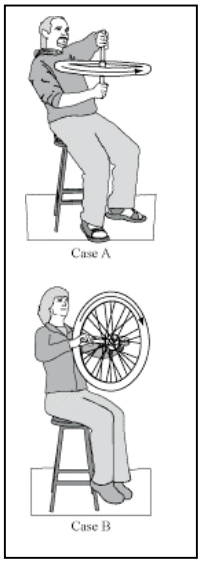
Explain. *not spinning, not ang moment.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *gets further away from a, less change in angle. opposite for b*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

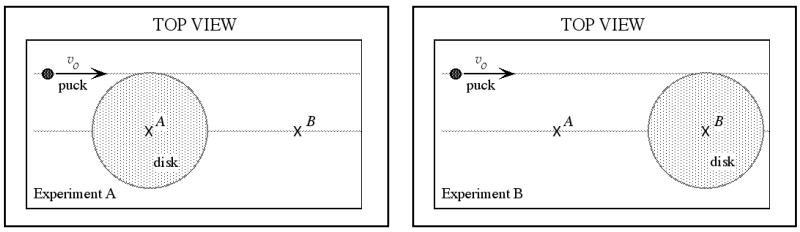
Explain. *the energy is not being transfered to the student.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *the angular velocity is to the left, but as she slows down, it turns to the right.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

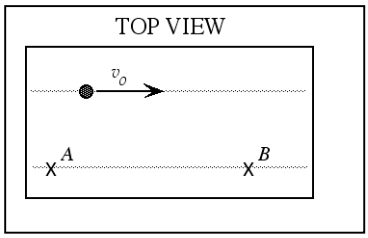
Explain. *Because of the angle*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *The angle is greater on that one*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *because A is closer to the puck*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down (toward the bottom of the page)*

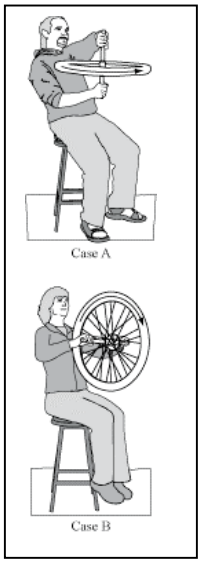
Explain. *right hand rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *right hand rule*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

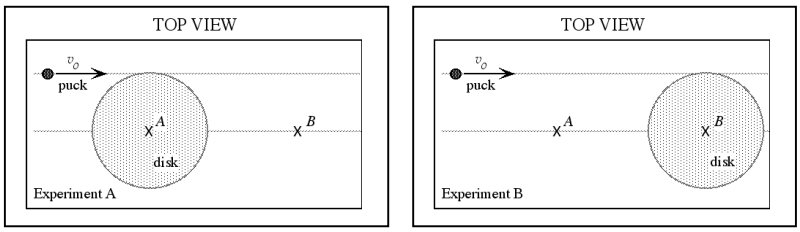
Explain. *right hand rule*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *not holding the axis*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

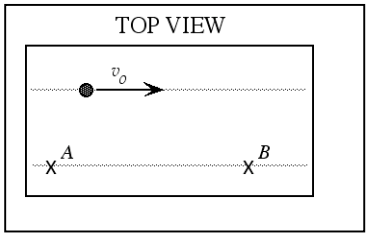
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

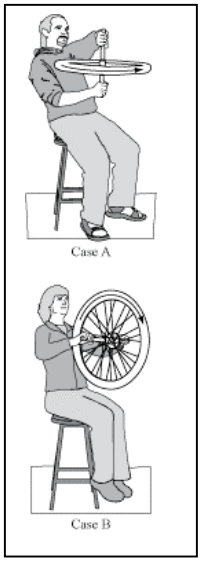
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both increasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

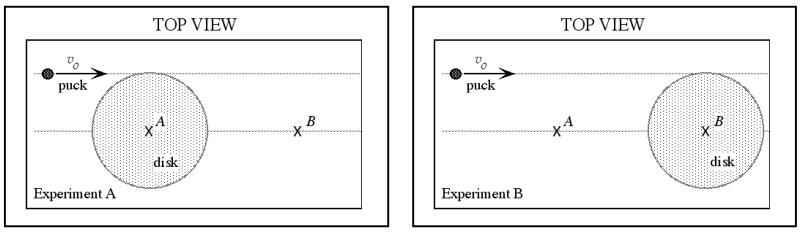
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

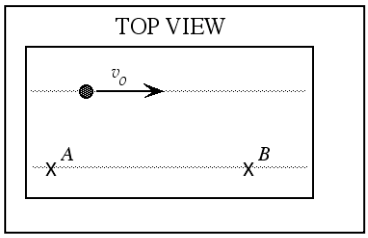
Explain. *radius is less*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *greater M*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *sin is 0*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

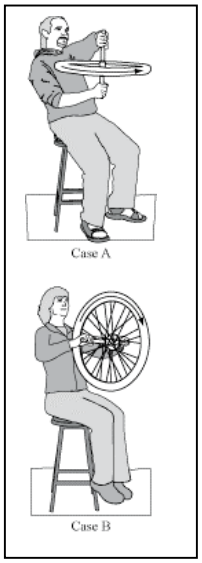
Explain. *same as before*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *angular*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

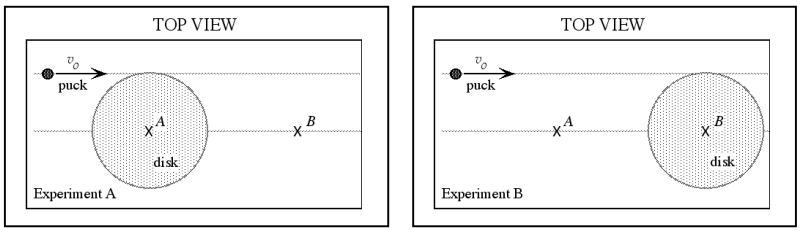
Explain. *flat disc*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *no change in center of mass*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

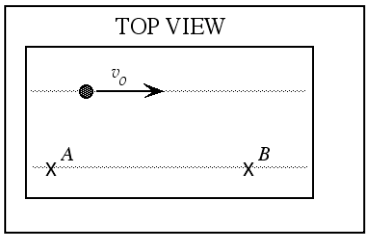
Explain. *because*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *because*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *because*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the left*

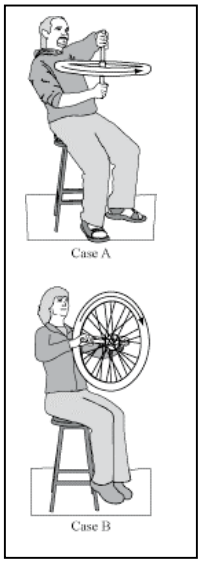
Explain. *because*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *because*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

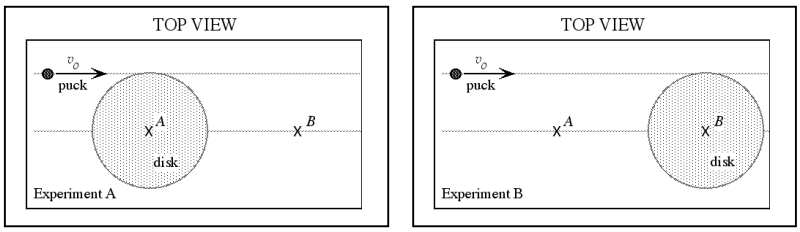
Explain. *because*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *because*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

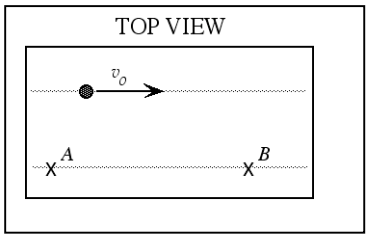
Explain. *Stuff*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *I was late*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *I should read this, heh?*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the left*

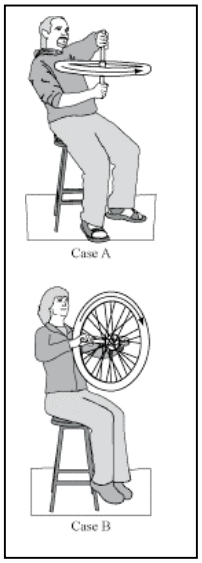
Explain. *I don't know, to be honest!*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *Guess*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

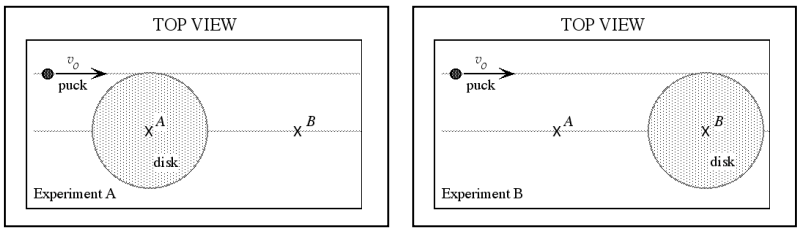
Explain. *Spin the wheel*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *Spin faster*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

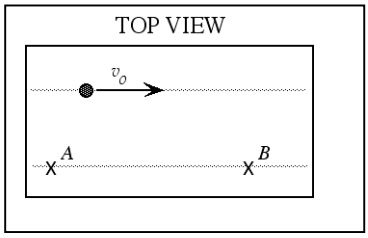
Explain. *Since the masses are the same, the only varaible that would create differing results between the two experiments would be a change in velocity over distance due to friction, which does not occur, so they are the same.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Both systems have equal masses and are impacted at v0, so the same amount of energy is conserved in both cases, resulteing in the same final velocity.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *Because the puck is not spinning, L (the amount of "spin") is equal to zero, thus rendering both cases zero.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

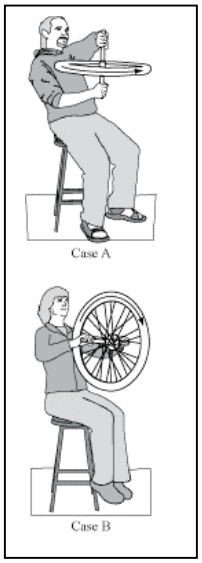
Explain. *Since there is no spin, the vector L will not be pointing up or down, and will be equal to zero.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *If no spin exists, L remains zero.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

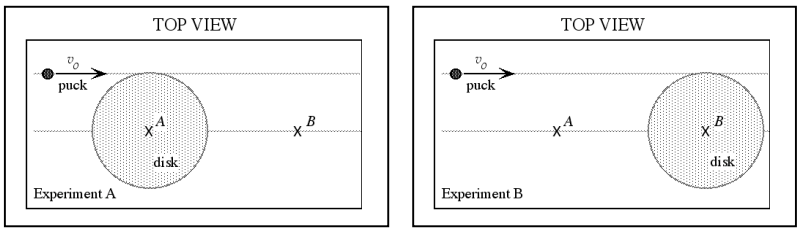
Explain. *The force vector of the wheel will push at the student with an angular momentum toward his right, which will be carried over into a clockwise rotation.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

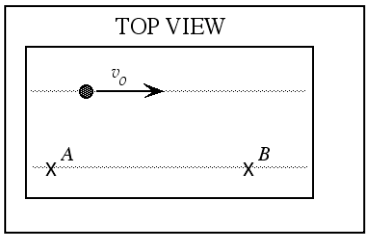
Explain. *not sure*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *how it works*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *close a*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

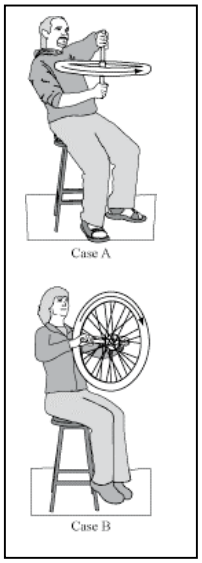
Explain. *dunno*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *think so*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

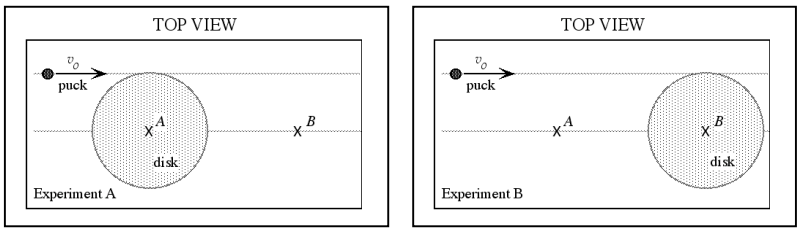
Explain. *blah*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *poop*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

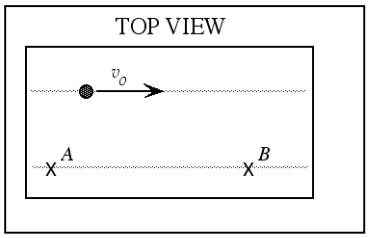
Explain. *The speed of the puck never changes.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Again, the puck is moving at the same speed, it only impacts at a later time.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *The puck is not spinning, not rotational motion.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up (toward the top of the page)*

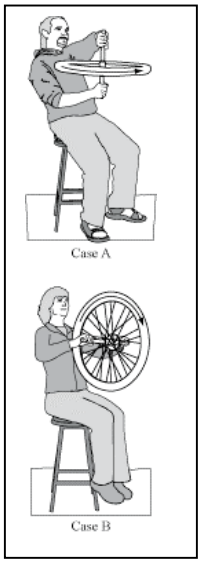
Explain. *Right hand rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *The puck is not spinning at is moving with constant velocity*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

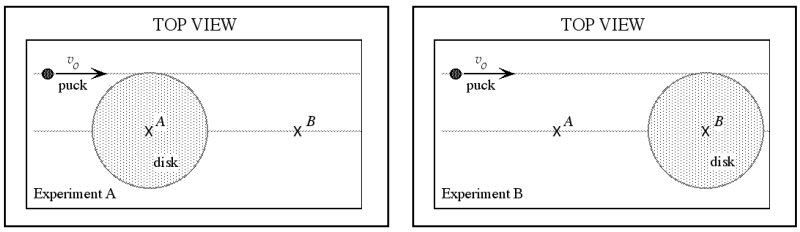
Explain. *The momentum is PARALLEL to the actual rotation of the wheel. Right hand rule stuff.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *Right Hand Rule*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

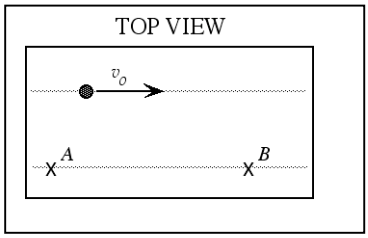
Explain. *the puck moves with constant velocity and hits the disc in the same spot in both experiments therefore final velocity for the system must be the same.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *puck moves with constant v and collides at same angle to disc, due to newtons 2nd they must be the same.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

unanswered

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *unanswered*

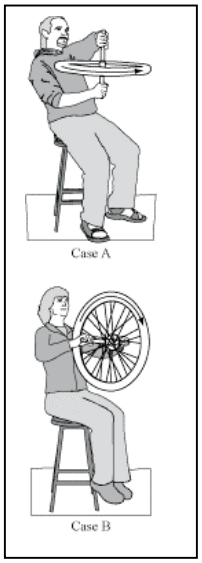
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

unanswered

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

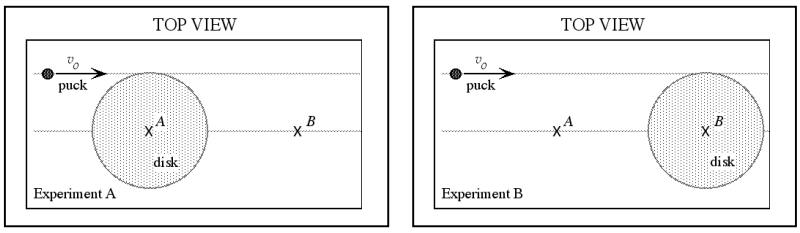
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

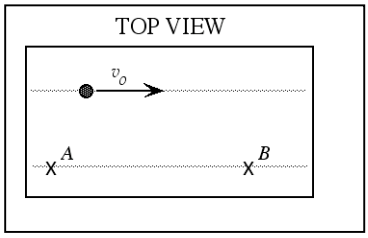
Explain. *the distance will not change the angular speed.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *the greater distance allows for mor time for the puck to accelerate*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *the distance does not change the magnitude of momentrum*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

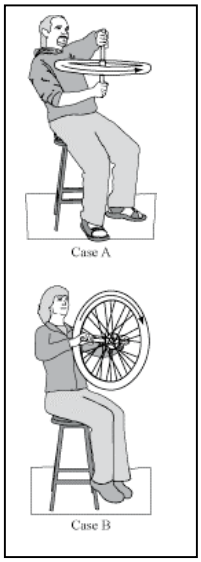
Explain. *no direction*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *does not change with time*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

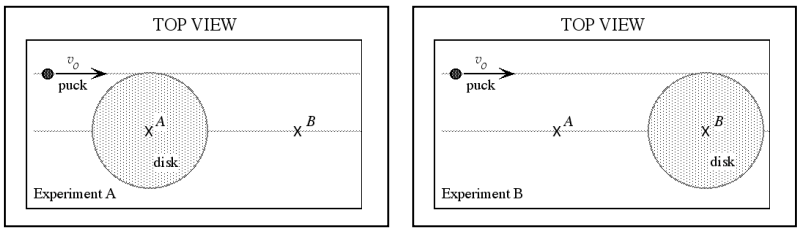
Explain. *thumb points up*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *thumb points down*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

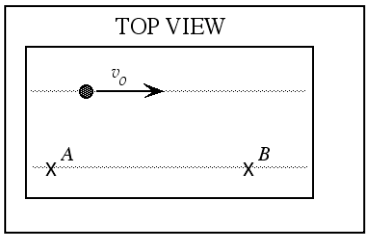
Explain. *constant velocity*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *constant velocity*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

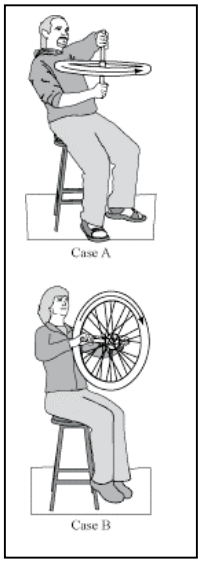
Explain. *perpendicular to B*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

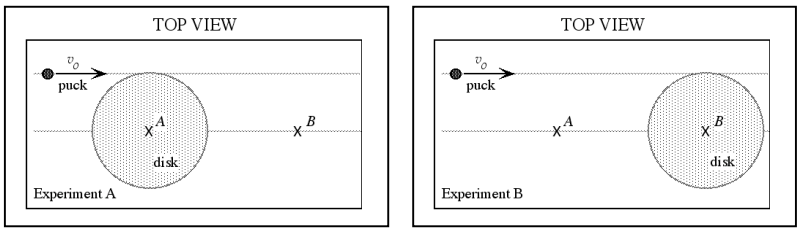
Explain. *chair spins opposite of wheel*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

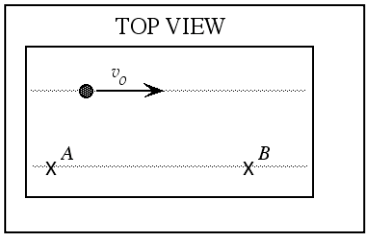
Explain. ***because***

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. ***into the page***

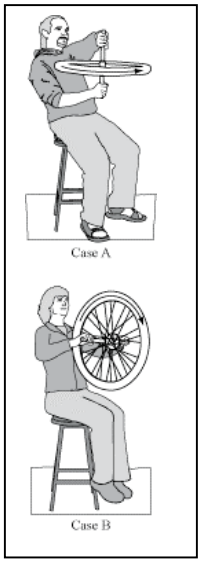
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

unanswered

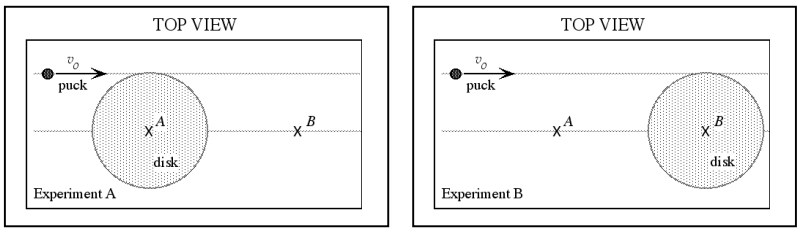
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

unanswered

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

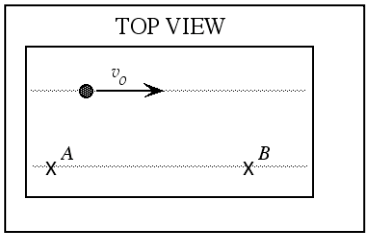
Explain. *the initial velocity of the puckis the same in the two experiments*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *same mass, same angular speed and same velocity.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *distance between the puck and point A is smaller than the distance between the puck and point B*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *out of the page*

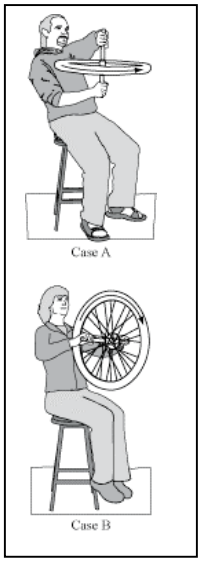
Explain. *the right hand rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *distance between the puck and point A is inscreasing and decreasing between the puck and point B as the puck is going toward the left.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

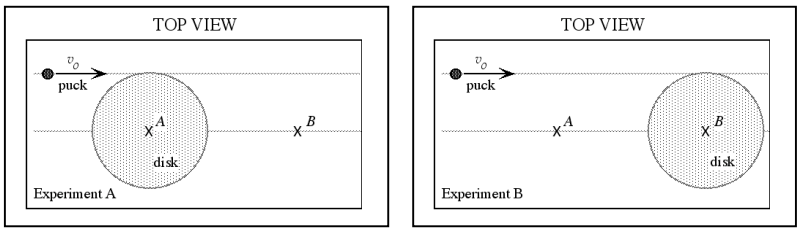
Explain. *there are no forces exerted by the wheel on the student except its weight*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *no forces on the student except the weight of the wheel*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

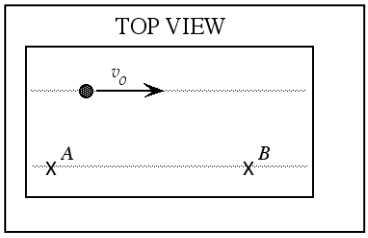
Explain. ***There is no difference between the two experiments, the puck just travels a farther distance***

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. ***The experiments are the same, the puck travels a farther distance***

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. ***the distance from B is greater than it is from A, ergo radius is greater***

Q10. Describe the direction of the angular momentum of the puck with respect to point A. ***up and to the right***

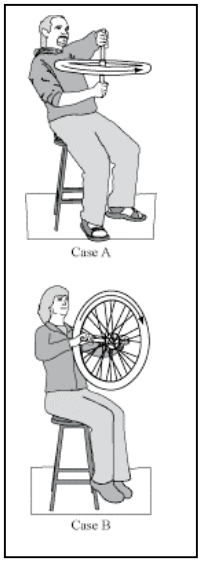
Explain. ***if the puck were moving about a circle around B, with a radius of the distance from pt. B, the puck would be traveling up and to the right***

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. ***The puck is getting further away from A so its radius is increasing. the puck is getting closer to B, so its radius is decreasing***

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

unanswered

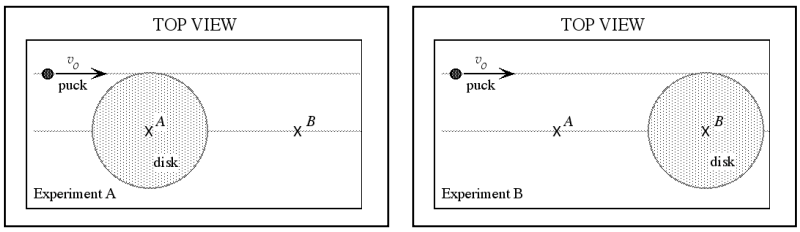
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

unanswered

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

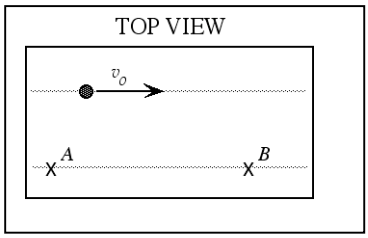
Explain. *intuituition*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *intuituition*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *intuituition*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *out of the page*

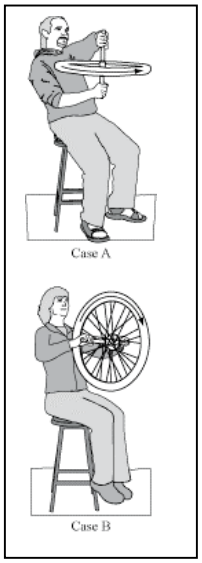
Explain. *right hand rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *intuituition*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

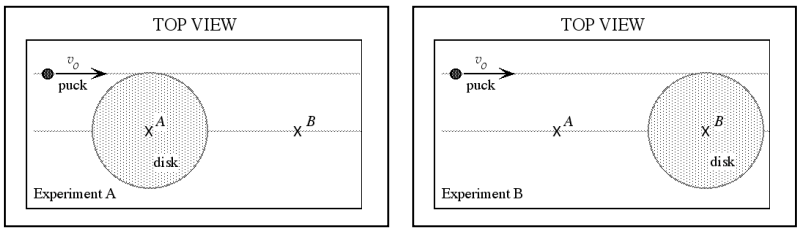
Explain. *intuituition*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *intuituition*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

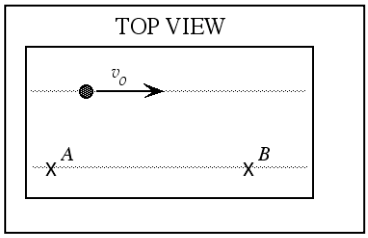
Explain. *the disk can be treated as a point mass since there is no friction on the table, therefore no spinning will occur and the final angual speeds will be equal.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *an equal force was exerted on A and B, therefore the speed of the center of mass will be the same*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *the puck is not spinning, so its angular velocity is equal to zero. It is also moving at a constant speed so its velocity will not change between the two points.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

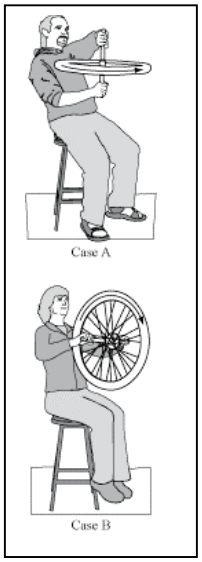
Explain. *the disc is not spinning, so its angular momentum is zero.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *constant velocity, therefore L remains constant*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

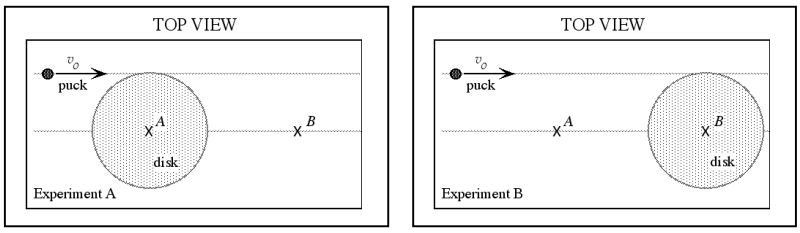
Explain. *L is perpendicular to the spinning motion (in this case, up). An upward L will not cause the student to spin.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *L is perpendicular to the spinning motion, in this case to the right, therefore the student will start to move to the right.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

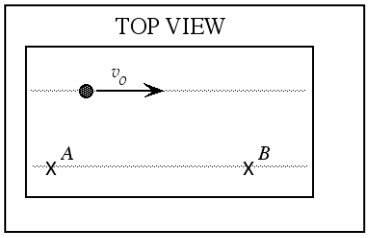
Explain. *When it collides, there is more kinetic energy to be transferred.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *Since there's more rotational velocity, there's less translational velocity.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *B is farther from A with respect to the puck, so at the instant shown the distance and w are localized.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *out of the page*

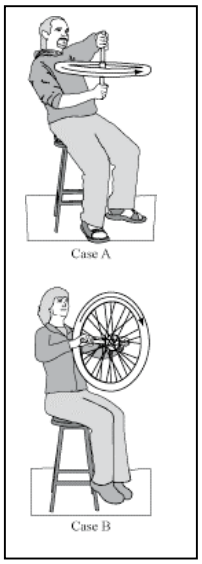
Explain. *rhr*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *I have no idea what this question is asking, and I have a feeling that tutorials will not clear up the confusion.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

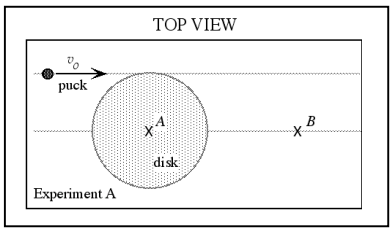
Explain. *If anything, he'd move up a little, but weight and gravity have their say.*

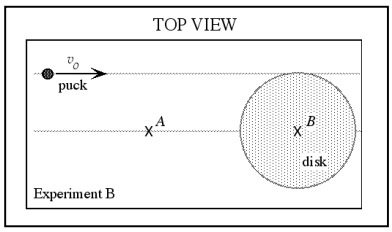
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *The direction of torque may push her a little.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

Explain. *more distance traveled in B so more movement.*

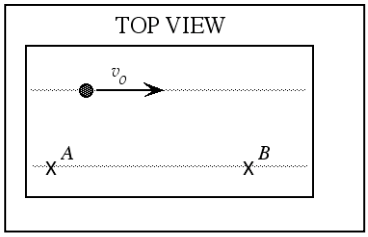
bad picture online tho.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *same mass and same colision, just at different points.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *parallel lines from Xa to puck and Xb to puck so cross product is zero.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

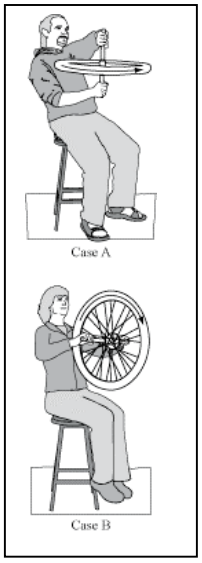
Explain. *same reason as above.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *same reason as above.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

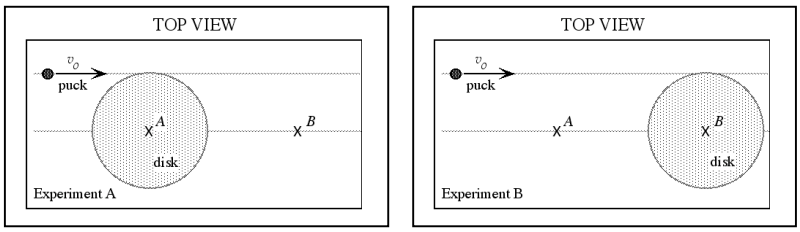
Explain. *wheel will spin, but not student.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *wheel is spinning up and down so no change in horizontal motion.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

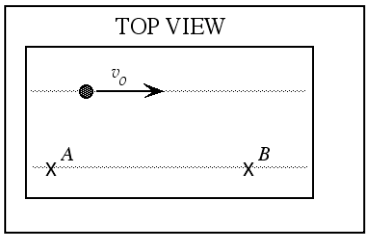
Explain. *f=ma*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *f=ma*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *because newton's second law f=ma*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the left*

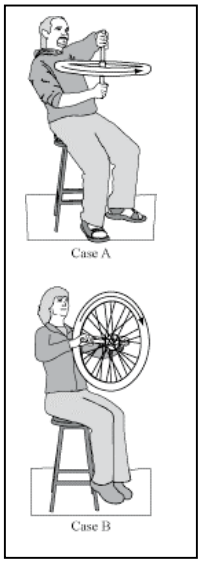
Explain. *f=ma*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *f=ma*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

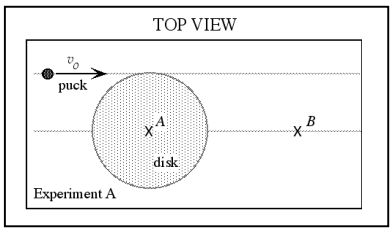
Explain. *f=ma*

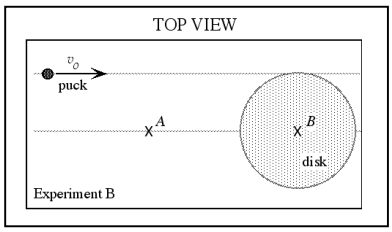
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *f=ma*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

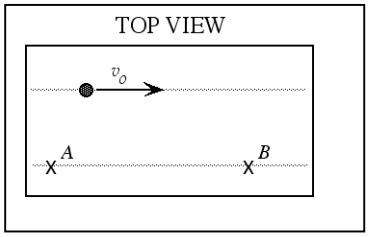
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

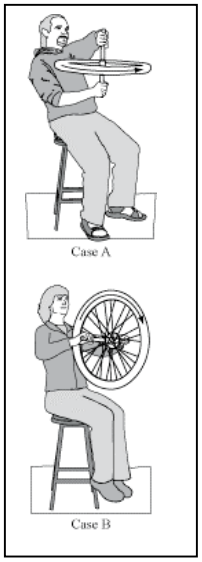
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

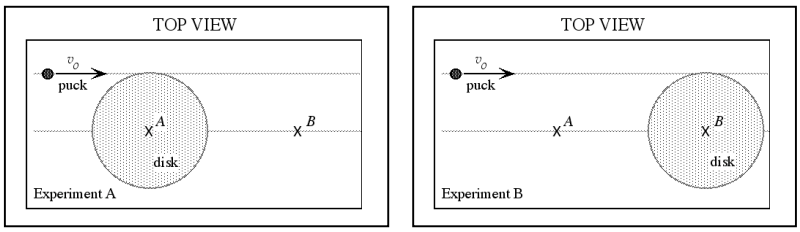
Explain. *The spinning wheel pushes the man in the opposite direction of the spin.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The spinning wheel will not counteract her weight....the wheel is spinning vertically. It puts no sideways force on her.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

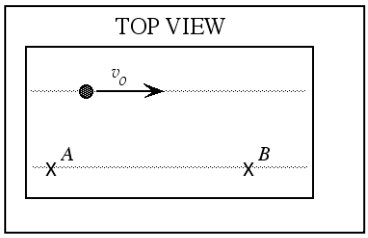
Explain. *look good*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *too tired*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *do what it do*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up (toward the top of the page)*

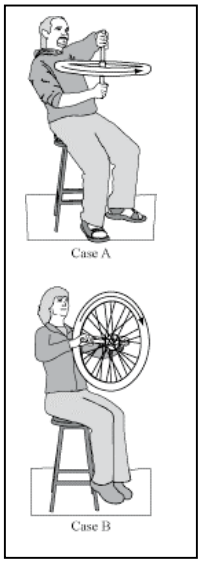
Explain. *rhr*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *over it*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

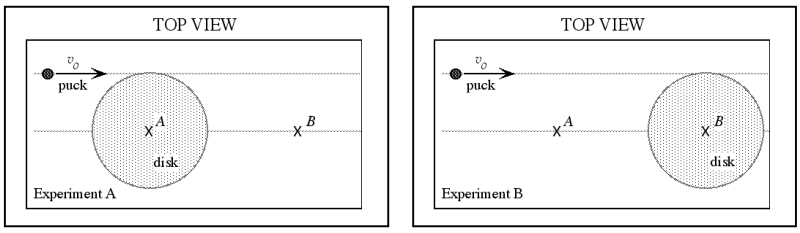
Explain. *blow*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *last question!*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

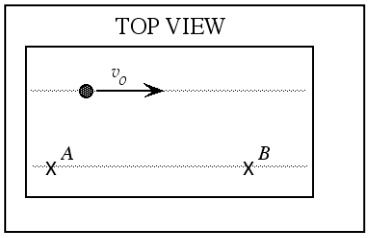
Explain. *both of the disks are hit at the same angle with the same velocity*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *both disks have the same anglar speed of the system so the center of mass speed is the same*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *the puke is doing it because thats how it goes*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

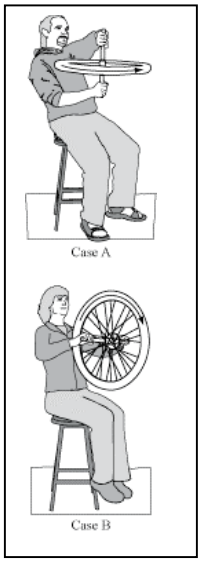
Explain. *cuz its above and to the right*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *its going from a to b*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

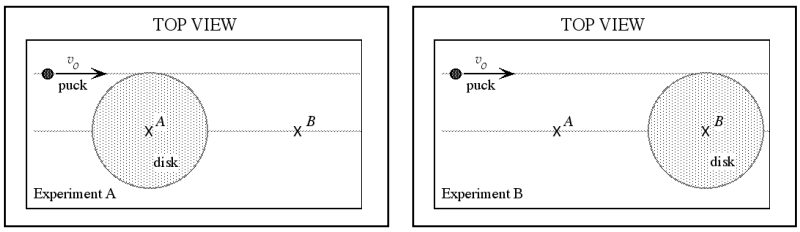
Explain. *it will move the student the way the wheel is spinning*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *the wheel is spinning parallel to the student*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

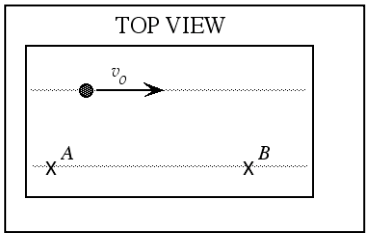
Explain. *Since the velocity of the puck is equal for both cases the collisions and their aftermath should be the same as well. Meaning everything, including angular acceleration are consistent in both experiments.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Again, both collisions occur under exactly the same conditions so the speed of the center of mass for the system is conserved between experiments as well.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *Angular momentum is definied as l=m*r*v, but there is no r in either case so. Thus angular momentum must be zero.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

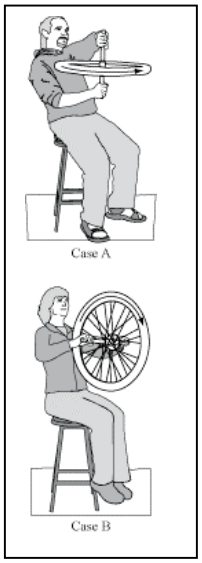
Explain. *Again, there is no r so there is no angular momentum.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *Since angular momentum is 0 the entire time angular momentum ends up being constant.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

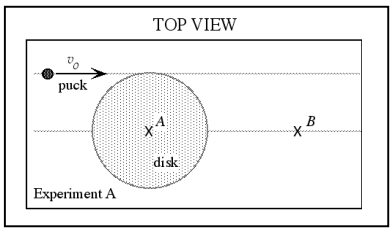
Explain. *Since every reaction has an equal and opposite reaction and the student serves the purpose of steadying the wheel he must have some force exerted on him. The force should be cw because it is opposite to ccw.*

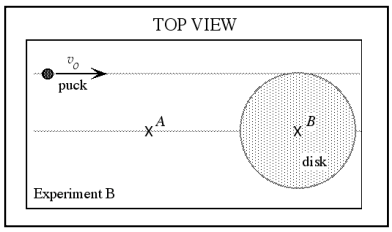
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *Since the student is essentially perpendicular to the force she should not have any force exerted on her becasue the cos(90) is zero.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

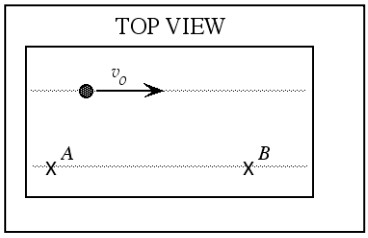
Explain. *The masses and velocities are the same in both.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *same as above*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *puck is closer*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

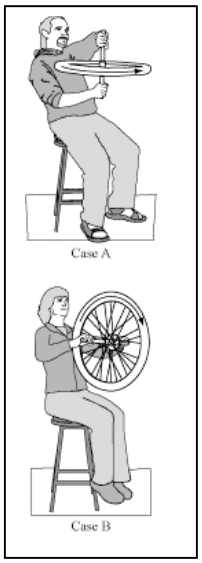
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

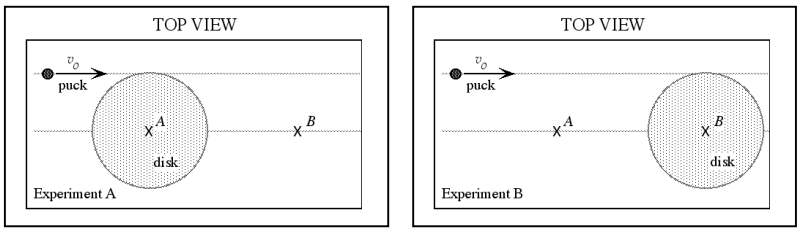
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

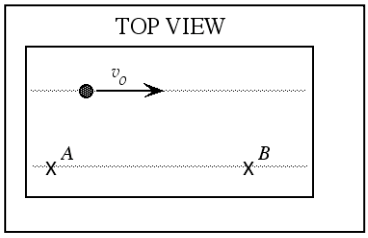
Explain. *the systems are identical except for a shift in position.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *the systems are identical except for a shift in position.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *r x p is zero*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

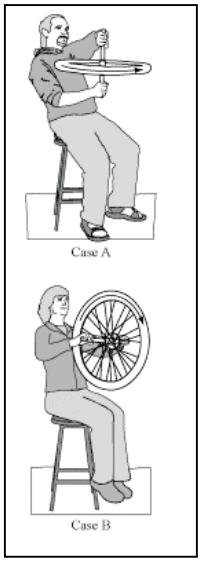
Explain. *the cross product of two vectors that point in the same direction is zero*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *they remain a constant zero*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

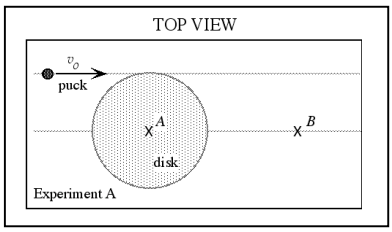
Explain. *r x p in this case is zero.*

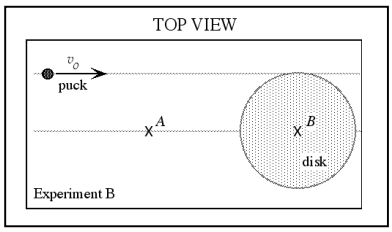
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *see right hand rule*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

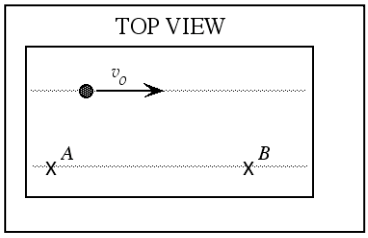
Explain. *because in experiment a, the puck has less time to gain momentum*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *because of the velocity right before impact*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *they're equal, but not zero…*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *unanswered*

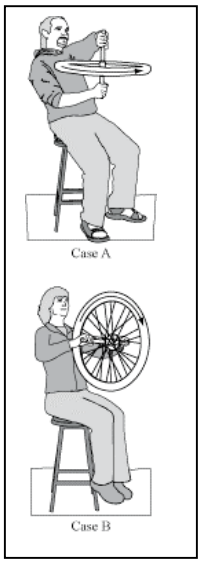
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

unanswered

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

unanswered

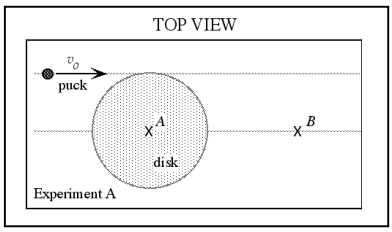
Explain.

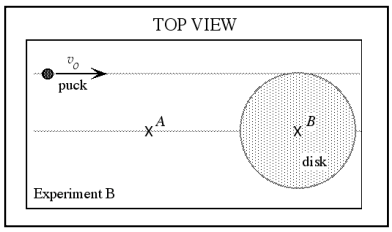
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

unanswered

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

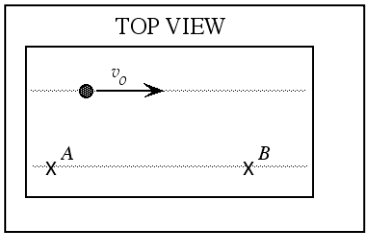
Explain. *they are equal because it is velocity and mass*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *,mn*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *kjhy*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the left*

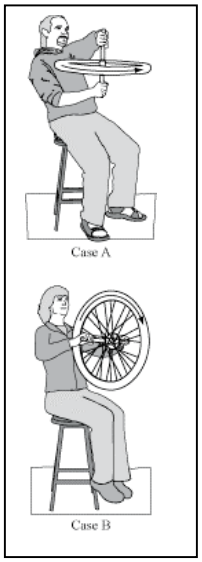
Explain. *kyd*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *345466*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

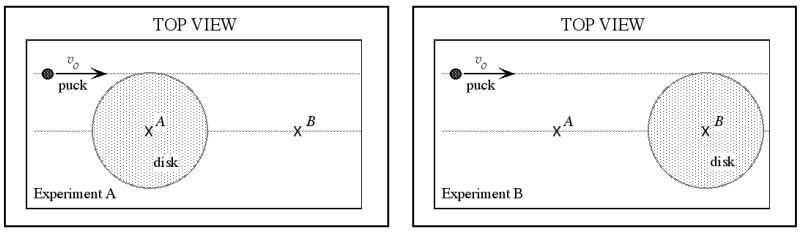
Explain. *right hand rule*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *right hand rule*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

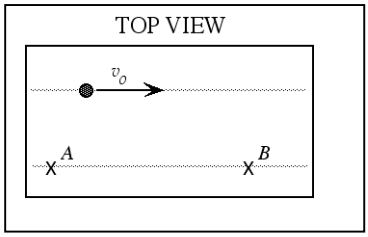
Explain. *the more speed it has going in the more speed is kept in the system*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *the center of mass never changes*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *they are both going the at the same rate*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

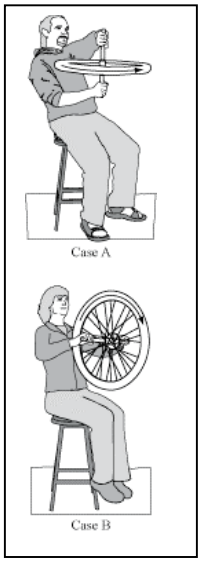
Explain. *it is moving parallel to the points*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *without friction the speed will not change*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

unanswered

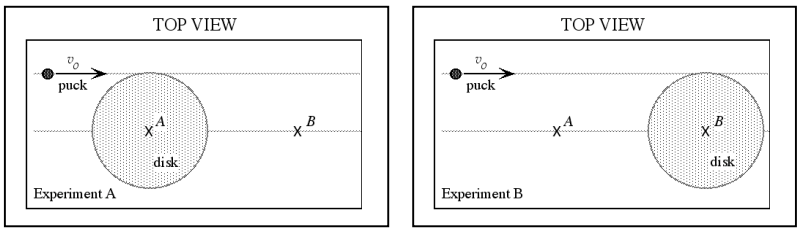
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

unanswered

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

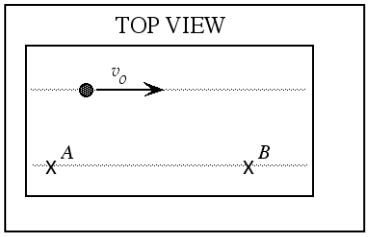
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down (toward the bottom of the page)*

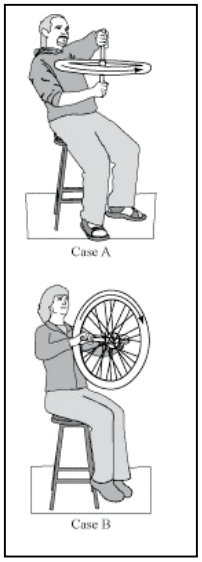
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

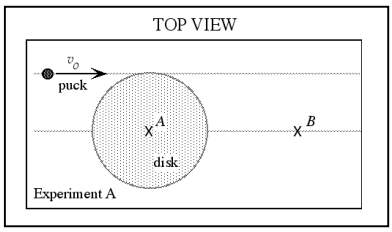
Explain.

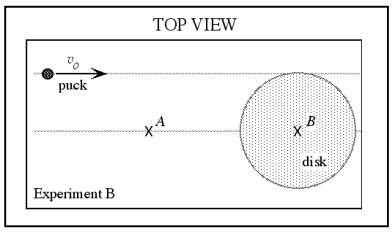
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

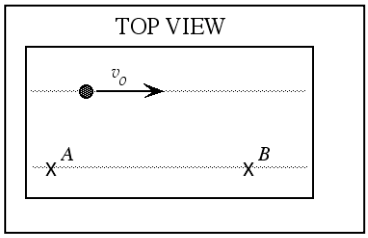
Explain. *The puck's velocity is equal in both and hits the disk at the same point… the only difference is the final position of the disk.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Same reason as above.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *How can the puck have any angular momentum? It's not spinning.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

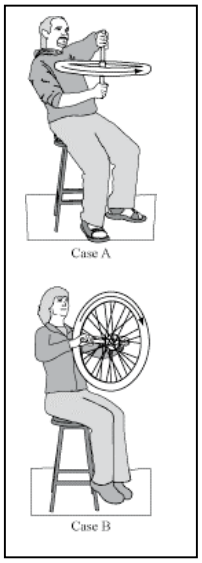
Explain. *It's not spinning.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *Puck isn't spinning.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

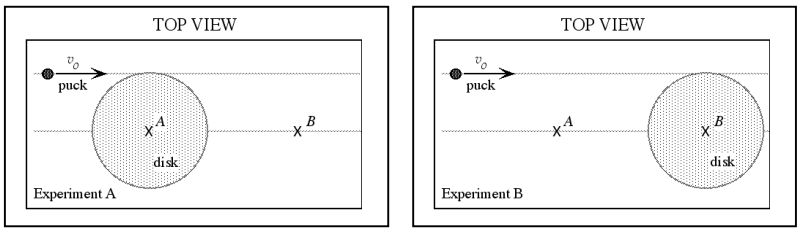
Explain. *The angular momentum will cause him to spin in the opposite direction of the wheel.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The wheel is not spinning in the same plane as the stool.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

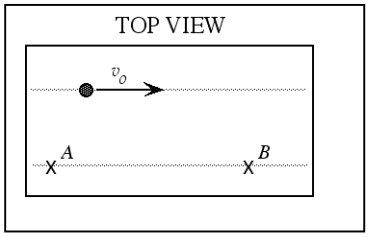
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

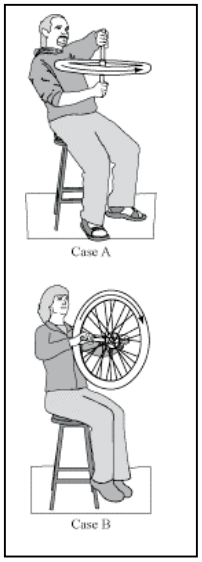
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

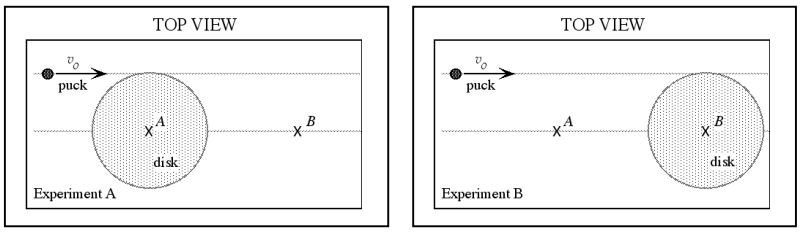
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

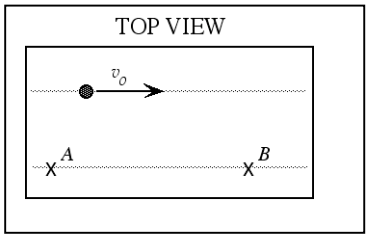
Explain. *In A, the puck has less time to move alone so the disk will slow its speed down sooner than it would in B.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *In A, the puck has to move with the disk longer than it does in B.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *Because the puck is moving towards point B*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the left*

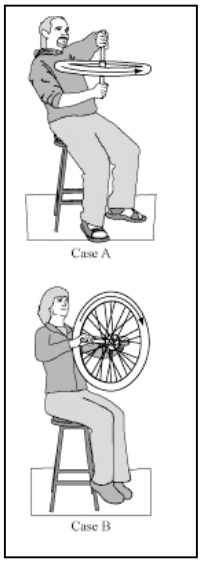
Explain. *the line the puck is on is parrallel to the line A B and it is above that line.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *The puck is moving across the surface and the points A and B are motionless.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

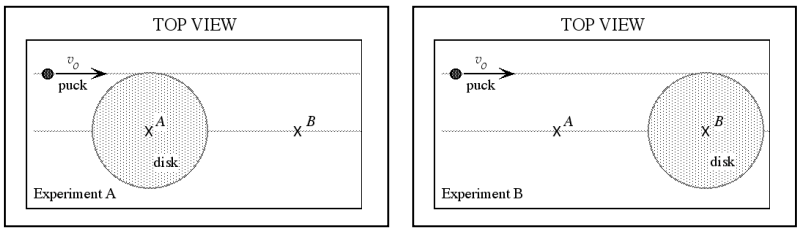
Explain. *the spinning of the wheel is going in the same direction the stool rotates.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The spinning wheel is spinning perpendicular to the way the stool is able to rotate*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

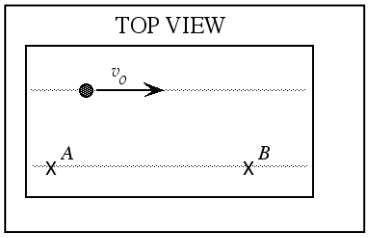
Explain. *In experiment B the puck travels furthur, and since the table is frictionless it accelerates more. Therefore Experiment B will have greater angular momentum.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *The puck has furthur to travel in Experiment B so it accelerates more, and that greater acceleration makes System B faster than System A.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *Momentum is mass times velocity and the velocity is constant as well as mass so angular momentum will be the same but it will not equal zero.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

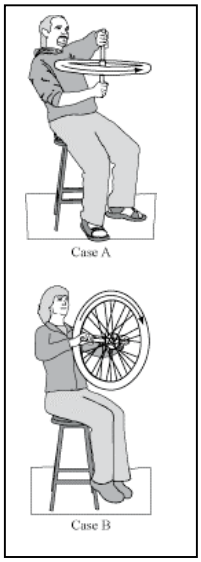
Explain. *Angular Momentum is in the same direction as the velocity vector.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *I don't know what L is because I don't have my notes with me. So sorry this was a guess.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

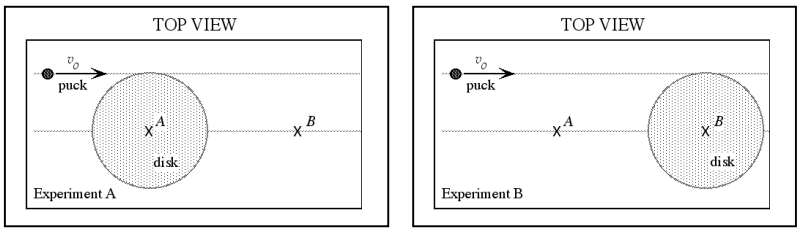
Explain. *The counterclockwise spin of the wheel pushes the student the opposite direction.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The rotation is vertical?*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

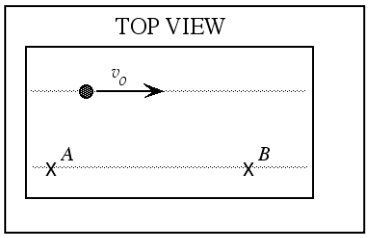
Explain. *cuz it is*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The rotational factor*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *Yup*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

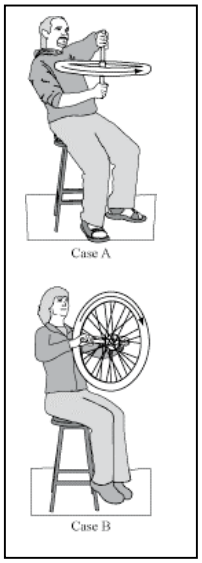
Explain. *Yup*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *Yes*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

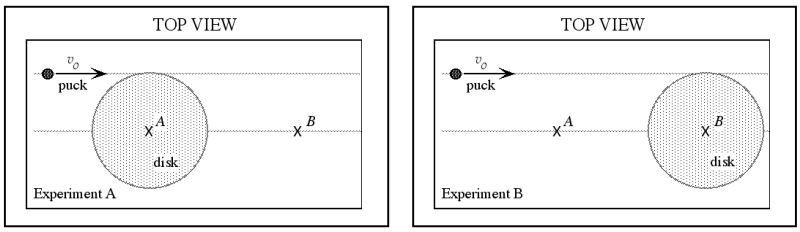
Explain. *It just will*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *I do not know*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

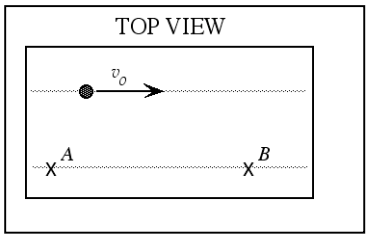
Explain. *yrtrer*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *boobs*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *good*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the left*

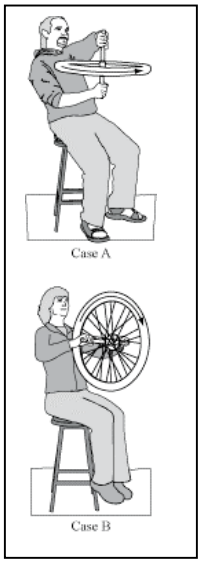
Explain. *it girl*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *taylor*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

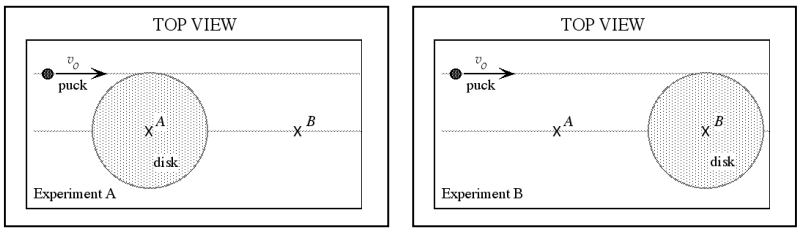
Explain. *ruej*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *tayso*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

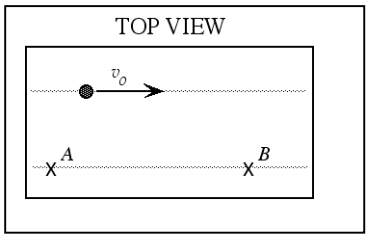
Explain. *Lack of friction*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *same as question 5*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *definition of angular momentum*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

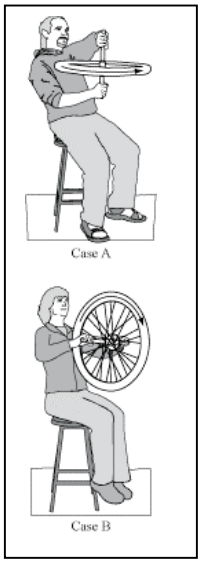
Explain. *same answer as question 9*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *friction*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

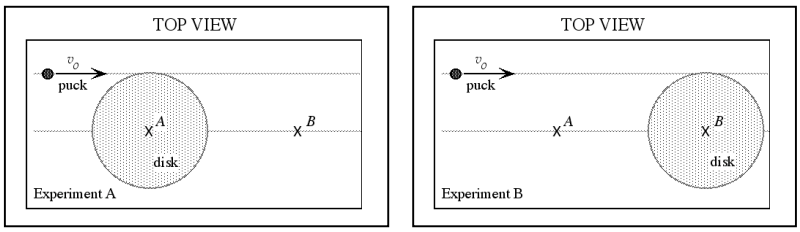
Explain. *rind hand rule*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *same answer as 15*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

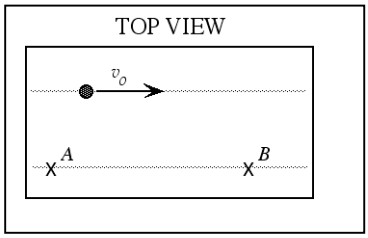
Explain. *the puck hits with the same velocity and thus exerts the same force in both cases. thus the angular final speeds must be equal.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The systems are essentially the same, but at slightly different places.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *I don't really know.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *out of the page*

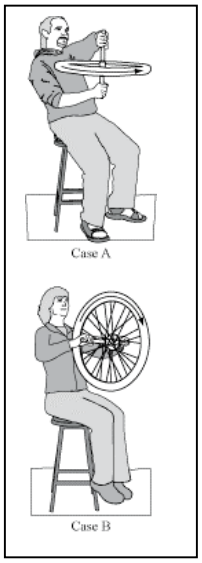
Explain. *Seems about right.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *it is getting closer to B and farther from A*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

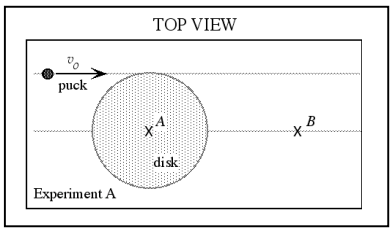
Explain. *he rotates opposite the direction of the wheel*

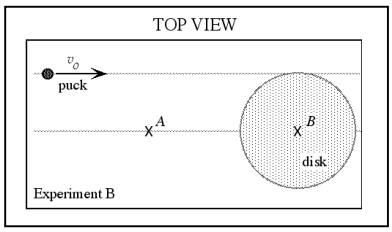
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The wheel is not transferring any momentum*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

unanswered

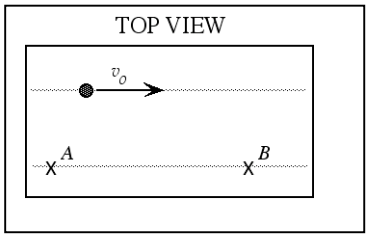
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

unanswered

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

unanswered

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *unanswered*

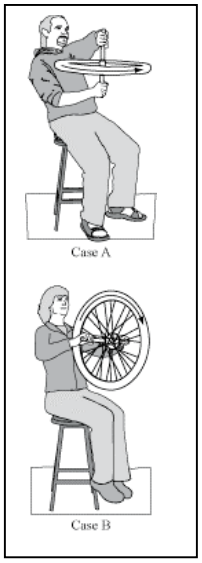
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

unanswered

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

unanswered

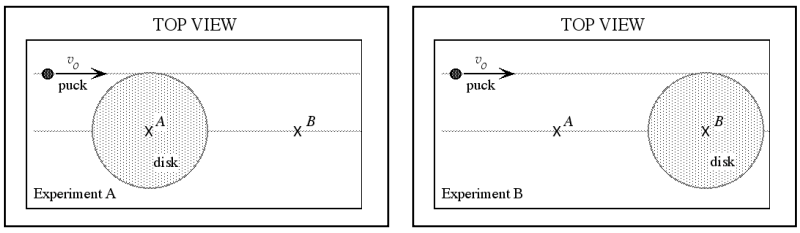
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

unanswered

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

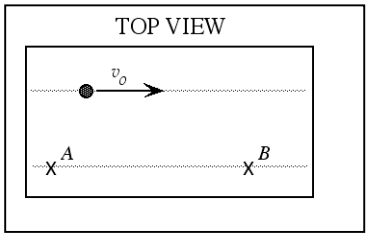
Explain. *The experiments are essentially the exact same.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The same experiment.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *It is moving closer by A so the change in angle is greater.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

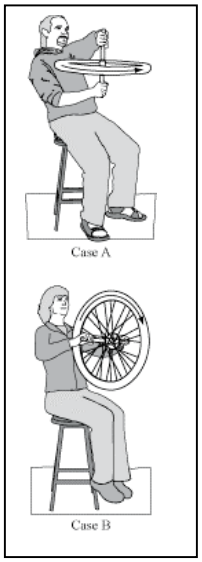
Explain. *That is the direction if B is the axis.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both increasing.

Explain. *They are both moving clockwise.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

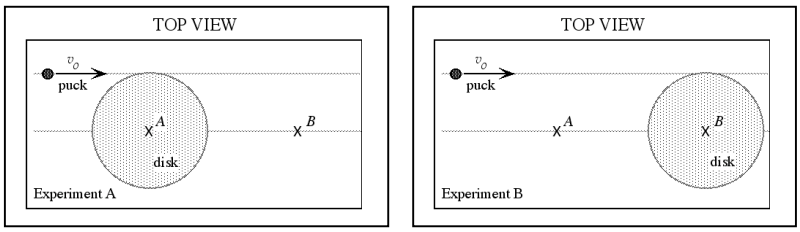
Explain. *He is only touching the axis, which is at rest.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *The wheels angular momentum is to the left.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

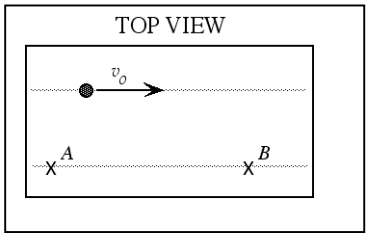
Explain. *The puck will hit the disk at the same speed in both and a t the same angle so the angular velocity will be equal*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *because there is no friction and the puck isn't accelerateing in either problem it doesn't matter where the disk is the inelastic collision will cause the system to move the same speed past that*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *because the radius between b and the puck is greater than bettween a and the puck so the angular momentum will be greater*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

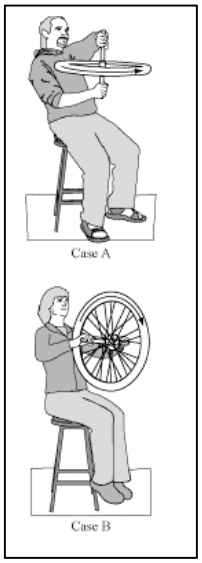
Explain. *because momentum is simply velocity times mass and mass or I in this case is a constant v is the only vector needed to be taken into account*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *because ris increasing as it passes a and the distance between b and the puck is decreasing it works out this way*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

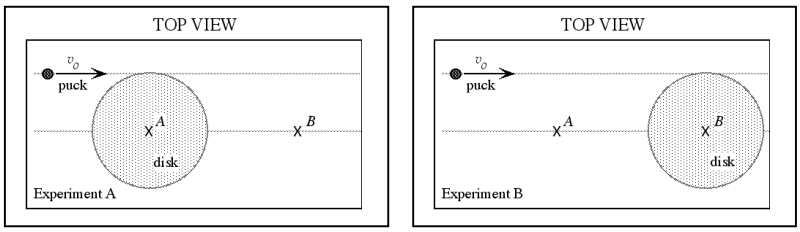
Explain. *cause the stool clearly only spins one way*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *cause it's vertical it remains at rest*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

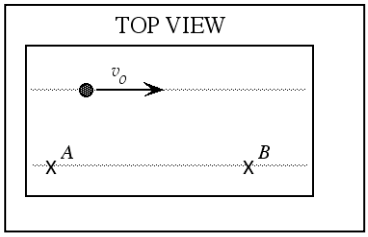
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *conservation of angular momentum*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up (toward the top of the page)*

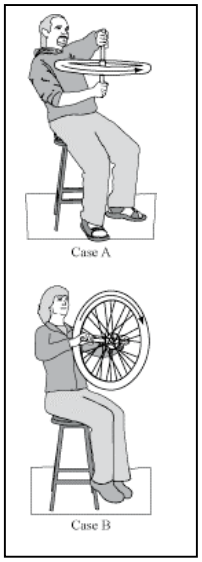
Explain. *rh rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

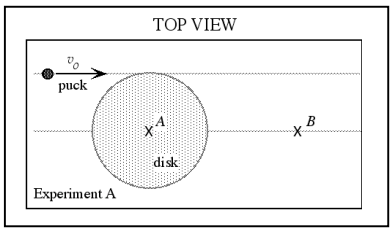
Explain.

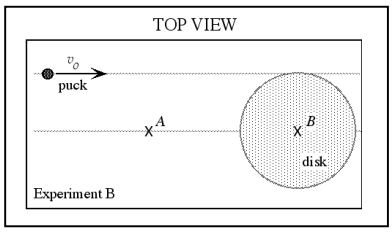
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

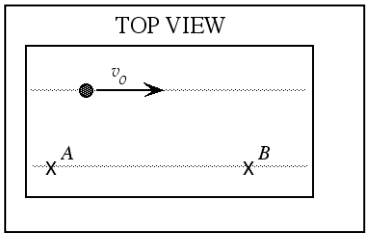
Explain. *Puck moves at const velocity and there are no other forces, they're essentially the same experiment.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *The system sticks together, and they're essentially the same experiement both times, so the center of mass should behave similarly.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *If the puck isn't spinning, there shouldn't be any angular momentum.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

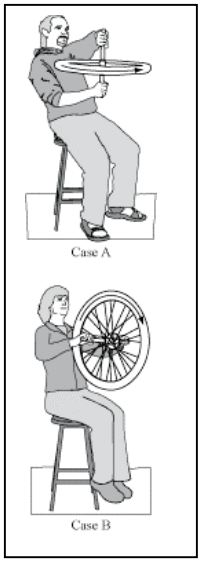
Explain. *No spin, so no angular momentum.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *No spin, no angular momentum. Ever.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

unanswered

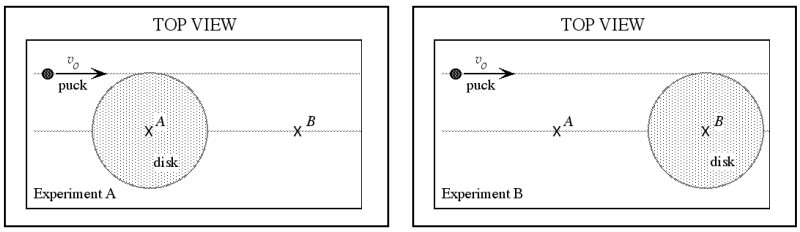
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

unanswered

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

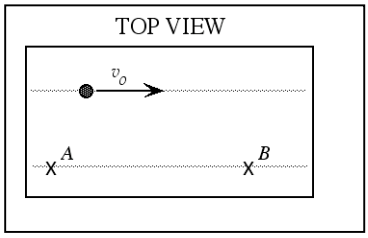
Explain. *the puck is the same amss so its angular speed must be greater than that of disk B*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *the center of mass is in the same spot since they stink together after they collide*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *l puckA is equal to L puck B and they both are equal due to the equation*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down (toward the bottom of the page)*

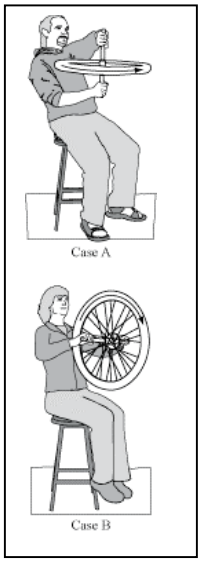
Explain. *it moves down toward the bottom of the page due to the right hand rule*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *the L stays the same becuase it is a constant*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

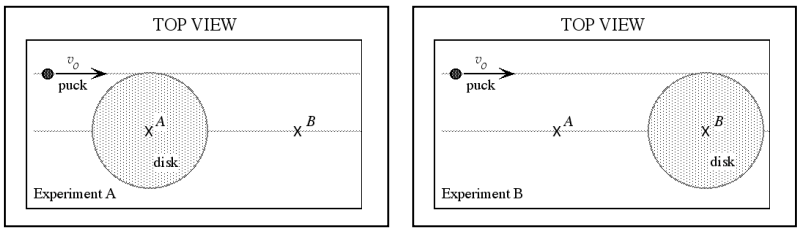
Explain. *it will move him a tiny bit in the same direction it is moving*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *it will mopve her a tiny bit w/ the rotation of the wheel*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

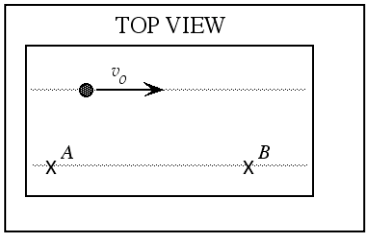
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. ***The angular momentum described above is zero.***

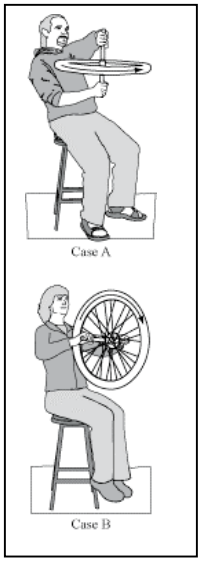
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

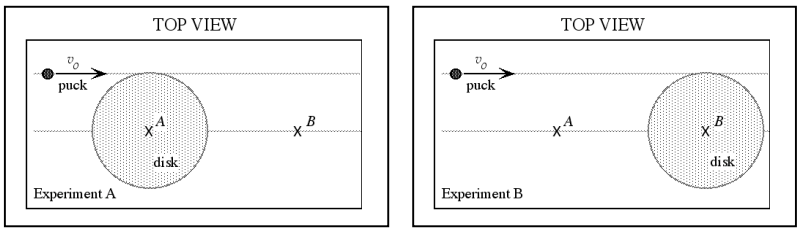
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

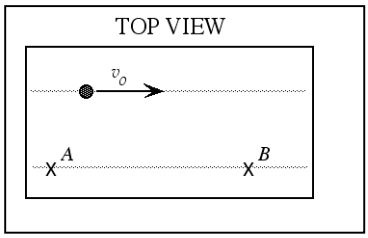
Explain. *The two pucks stick together*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *Honestly the picture placements are messed up and I cannot see what is going on in experiment B*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *both are moving*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

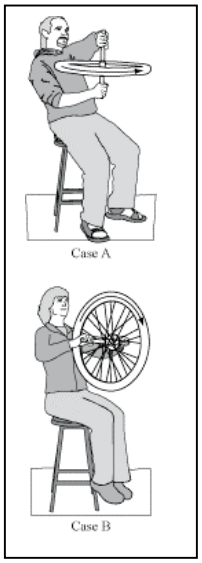
Explain. *the puck is coming from the left...I think.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *No friction and no acceleration so they must be constant*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

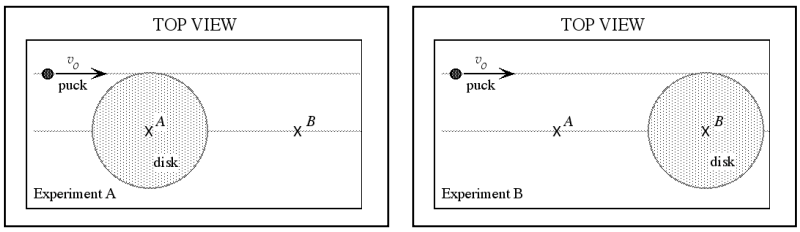
Explain. *Acceleration is upwards*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *the acceleration is to her left*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

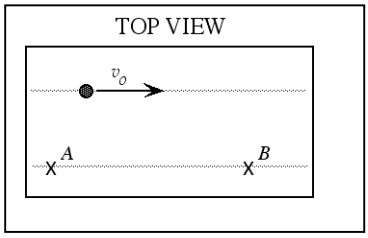
Explain. *the same ke is carried out, but since a doesnt go as far it must have more angular speed.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *b goes farther*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *angular momentum needs a perpendicular momentum which is zero*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

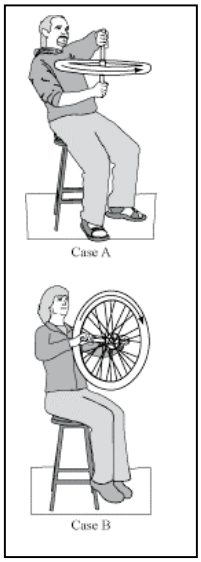
Explain. *no momentum*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *both are zero*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

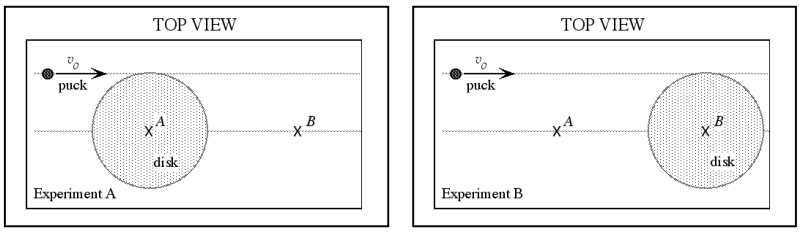
Explain. *y would the student move at all? he is sitting down*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *shes at rest*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

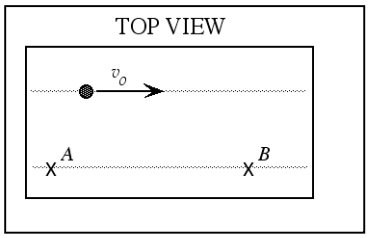
Explain. *Same speed when contact is made*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The same addition of mass*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *because it is*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

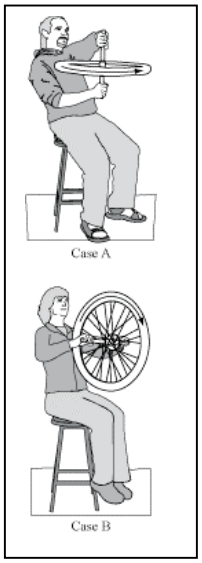
Explain. *because it is moving up and to the right*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *it is moving past both in the same time*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

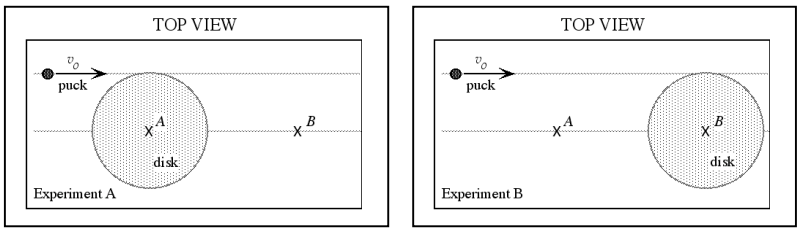
Explain. *cause there is torque in a direction that the person can move*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *no torque in moving directiong*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

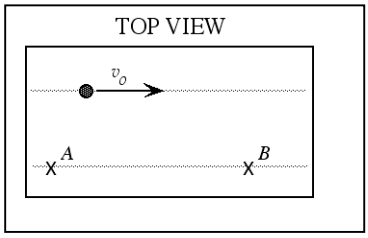
Explain. *i'm not quite sure. it's frictionless...so i guess they are equal*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *...i really don't know/ they may be equal?*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *only their positions vary*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

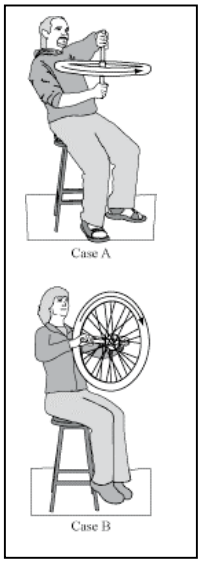
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *there are no net forces*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

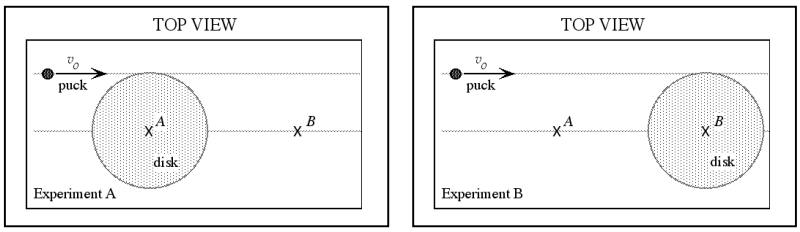
Explain. *i thought of a hula hoop*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *she must be moving away from her body*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

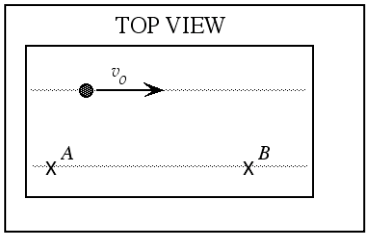
Explain. *i actually have no idea what this experiment is doing...the picture's really weird*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

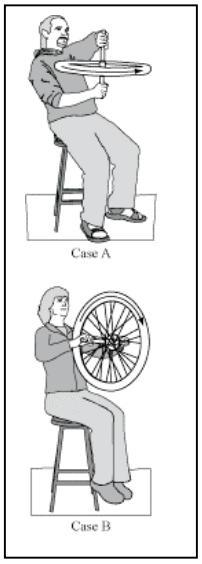
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

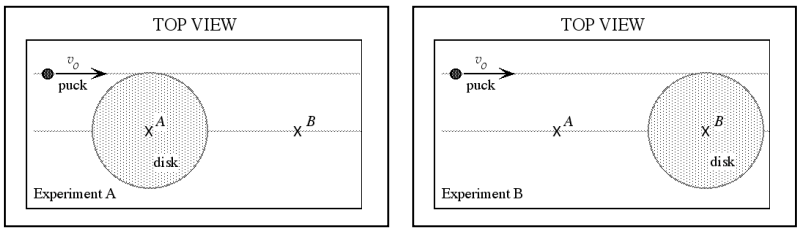
Explain. *the wheel is moving counter-clockwise so that makes sense*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *the wheel is spinning perperdicular to the girl so she will not move*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

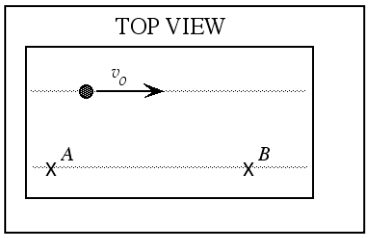
Explain. *the puck has a constant velocity*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The velocity of both are the same*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *the angel is getting bigger faster*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

Explain. *it goes upwards and to the right…*

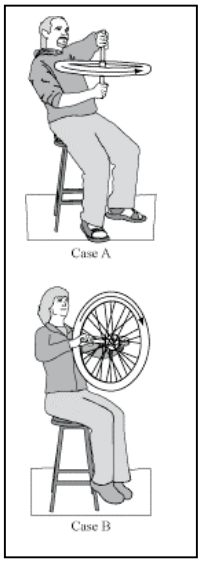
Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *L(puck,A) has a faster angular momentum and is decreasing.*

L(puck,B) has a slower angular momentum and is increasing.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

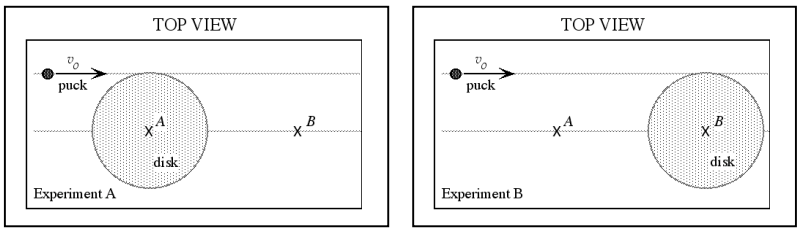
Explain. *I really have no idea*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *same as above*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

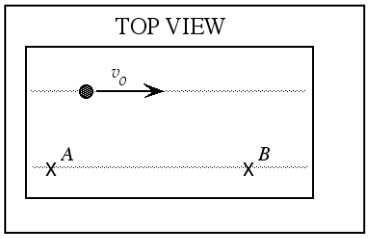
Explain. *The puck is still hitting the same part of the disk with the same constant velocity in both experiments*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The puck is still hitting the same part of the disk with the same constant velocity in both experiments*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *it seems right*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

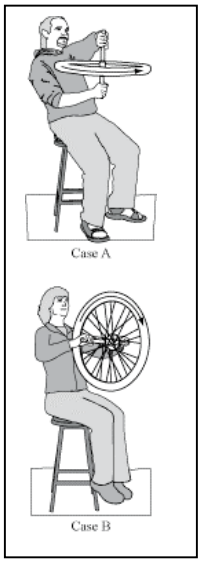
Explain. *I'm just taking a shot in the dark on this one.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *Another shot in the dark here too.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

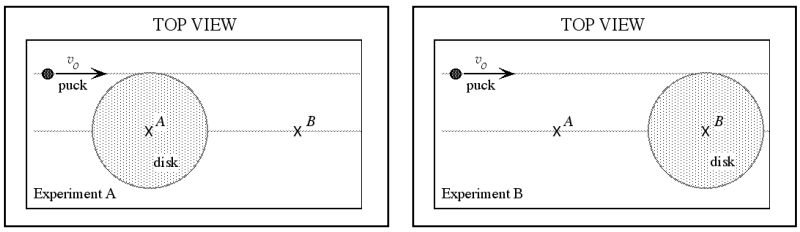
Explain. *The wheel is spinning, not the student.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The student is sitting on a stool. The wheel is the one spinning.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

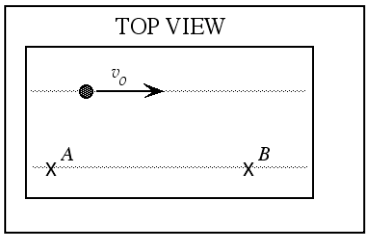
Explain. *because it has more force there*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *because it would be spinning faster*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *because it is hit with greater force*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down and to the right*

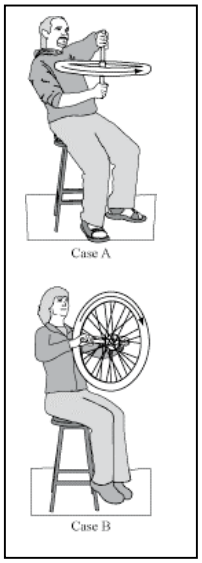
Explain. *because the final momentum equals the initial momentum*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *they are balancing each other out*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

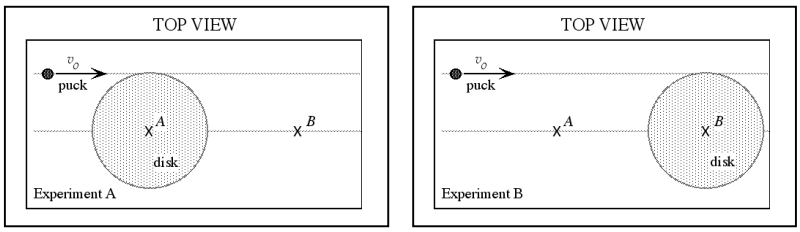
Explain. *because the rotation of the wheel will have some momentum on him*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *because she can not go up or down*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

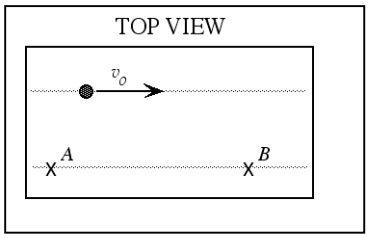
Explain. *just because, come on now…*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *friction!*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *duh*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down (toward the bottom of the page)*

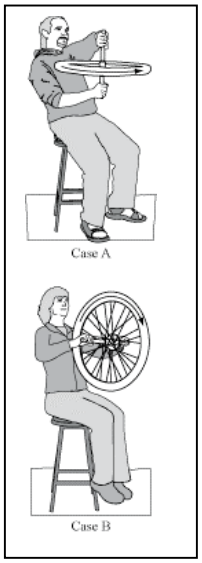
Explain. *ha. this is insulting*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *cuz my brain is huge*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

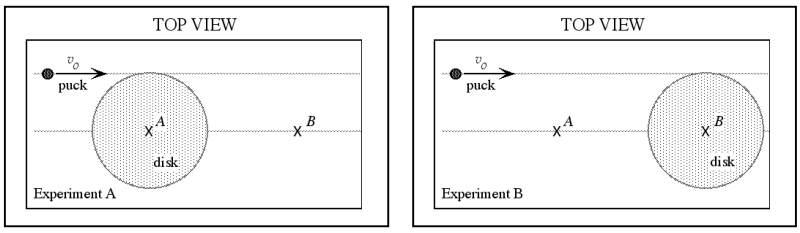
Explain. *toast?*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *mmm dig it*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

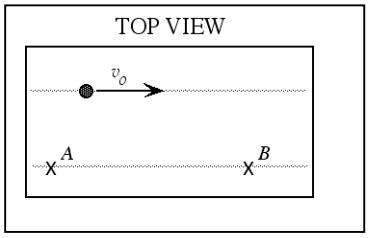
Explain. *since the puck is moving a constant speed it does not matter when it hits*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *since the puck is moving a constant speed it does not matter when it hits*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *there is no spinning so there is no angular momentum.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

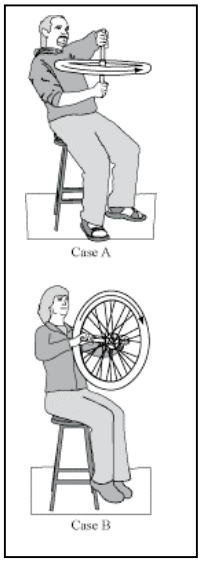
Explain. *It does not spin so there can be no angular momentum*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *They are constantly zero*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

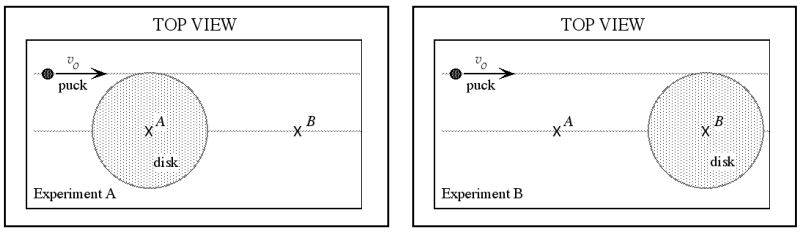
Explain. *This is where he would be sent*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *There is no force to the sides*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

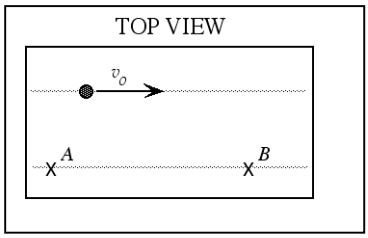
Explain. *Don't know.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Conservation of momentum.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *Not rotating.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

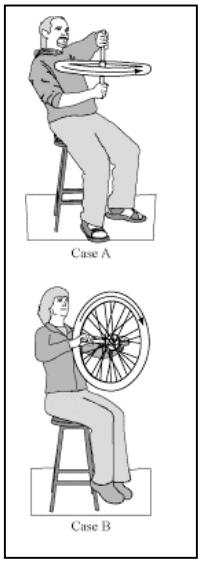
Explain. *Not rotating.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *Not rotating.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

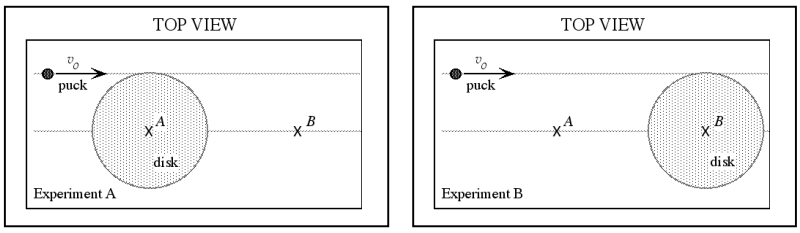
Explain. *Fun on the farm.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *South Park is almost on.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

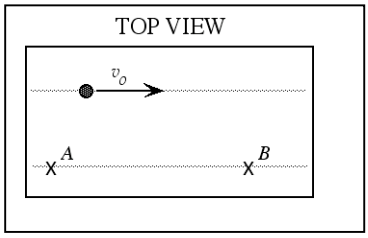
Explain. *because the puck hits at the same velocity and the same angle*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *same angle, same speed*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *the puck isn't spinning*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

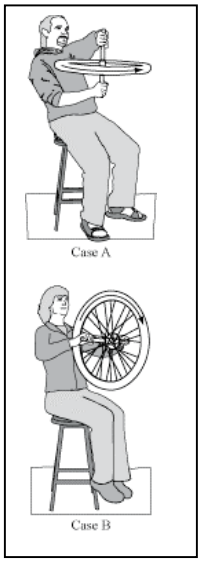
Explain. *the puck isn't spinning*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *I know these are wrong*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

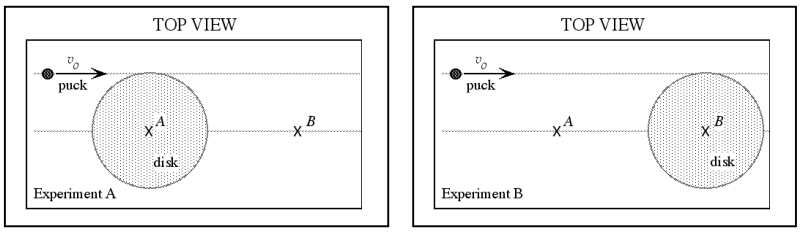
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

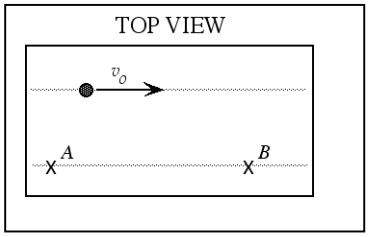
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down and to the right*

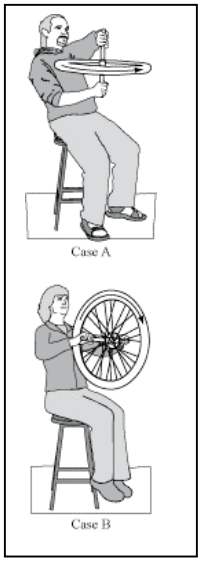
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

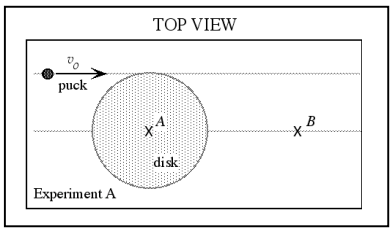
Explain.

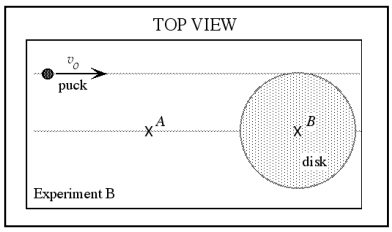
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

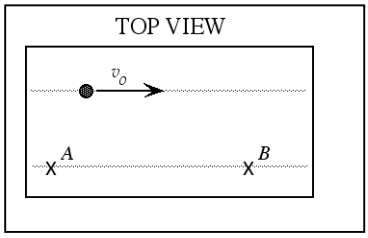
Explain. *the final angular speed of the puck/disk system in Exp. A is less tahn that in Exp. B*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *Because the final speed of the center of mass of the system in Exp. A is greater than that in Exp. B*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *Because puck A is less than puck B*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

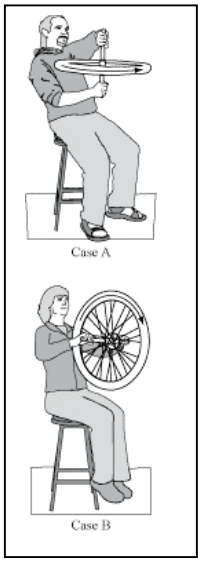
Explain. *because up and to the right*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *because L puck A and L puck B are both remaining constant*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

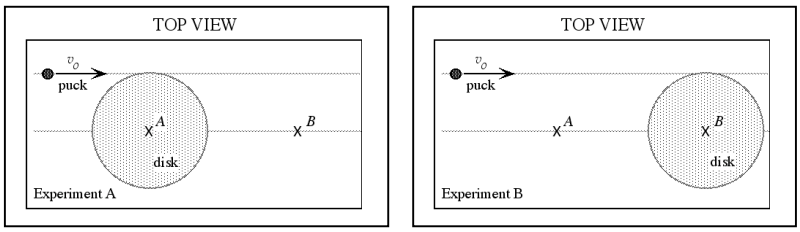
Explain. *because the student will begin to rotate clockwise to his right as viewed from above*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *because the studend will begin to roate clockwise as viewed from above*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

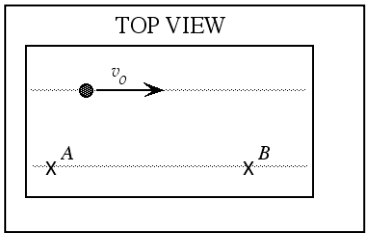
Explain. *since the table is frictionless and there is no spinning, it does not matter at all where the disk is at...the W after the collision is always the same.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Same resaoning, there is no acceleration on the puck, so the velocity of the two is the same when they hit in both cases so the angular velocities of the two are conserved.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *sin(theta)/=0/180....so it is not zero and their positions are pointless because there are no disks to spin in this picture*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

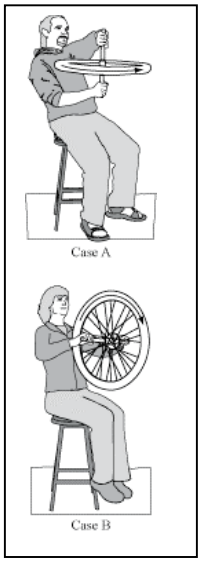
Explain. *because it is moving to the right and not spinning*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *constant velocity and no spinning*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

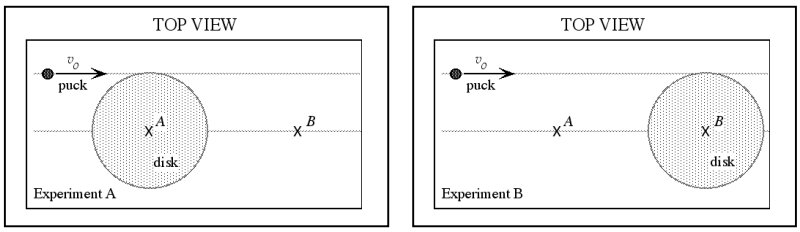
Explain. *because the wheel is spinning ccw*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *no left or right...rest*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

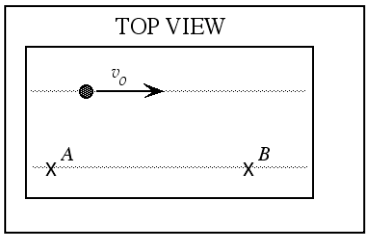
Explain. *Don't know.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *don't know*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *don't know.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

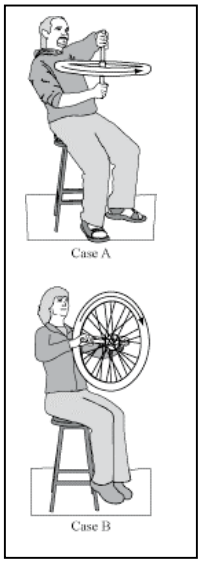
Explain. *don't know!*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both increasing.

Explain. *don't know. All guesses*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

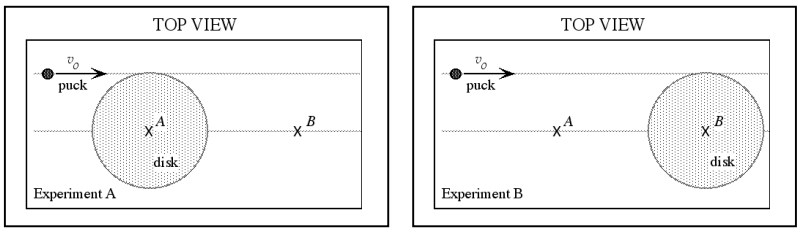
Explain. *wheel has to be at an angle to move the students.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *wheel has to be at an angle to move the student.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

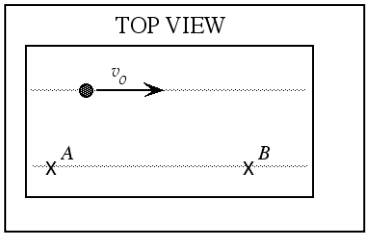
Explain. *It is greater because it has more velocity in the second experiment*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *same as above*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *they have to be the same conservation of angular momentum*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *out of the page*

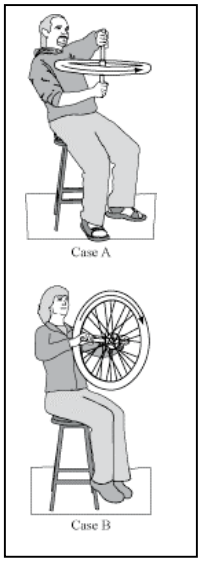
Explain. *Because it is moving to the right*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *Because it is moving to the right*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

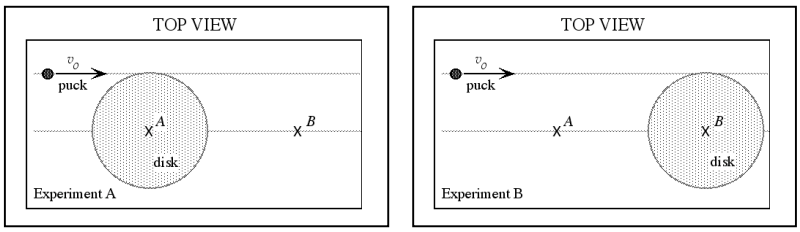
Explain. *becuase he is counter balancing the system*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *Because the momentum is pointing to the left or right so no spinning*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

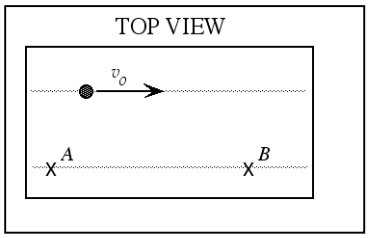
Explain. *same speed, same collision*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *same speed same collision*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *not spinning*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

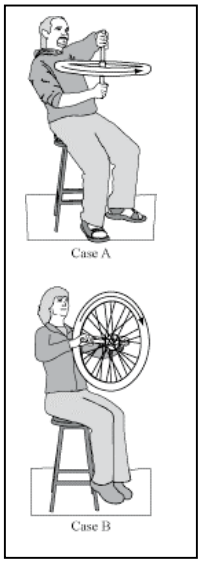
Explain. *not spinning*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *not spinning*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

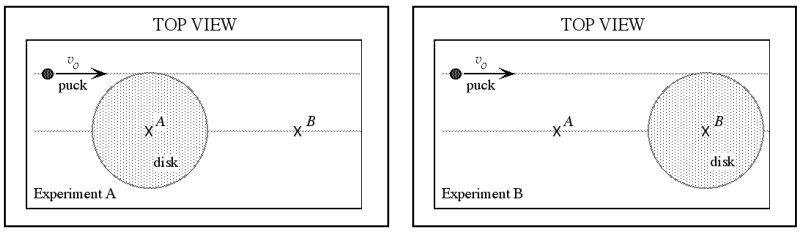
Explain. *angular momentum and angular velocity is up*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *it is the direction angular momentum points*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

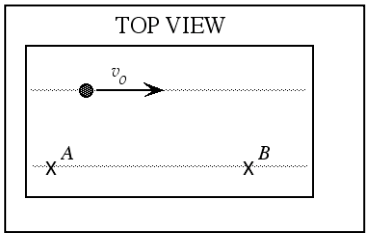
Explain. *i think it's the same becaue the puck seems to be moving at the same speed in both experiments although i can't see experiment a*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *if the system is both puck and disc..then it seems it would be the same in both experiments...but i cant see experiment a*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *the puck is closer to point a then b...so the magnitude is greater with respect to a*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the left*

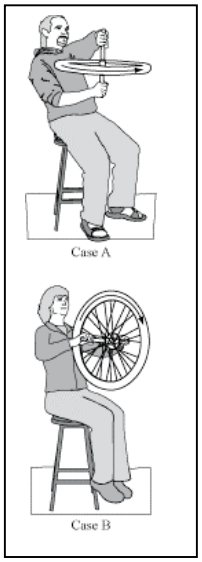
Explain. *the puck is positioned up and to the left of point b*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *the puck is moving away from point a, but towards point b*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

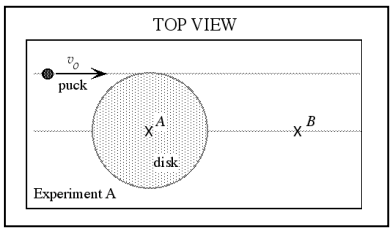
Explain. *because the force perpendicular to the direction of motion would be up*

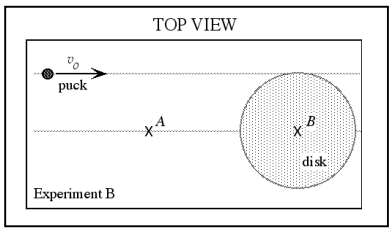
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *the force using the right hand rule points to the student's left...pushing the student to the left*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

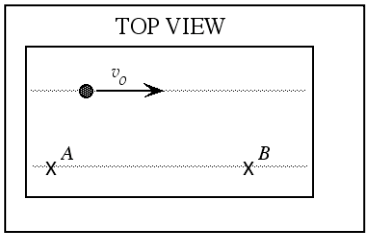
Explain. *Center mass is at the same place in both experiments*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Vo of puck is the same in both experiments*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *into the page*

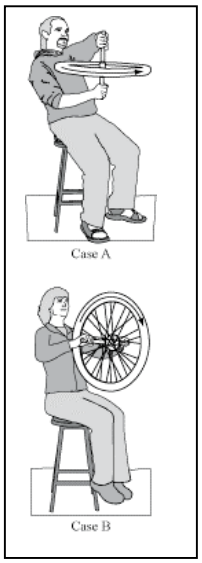
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both increasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

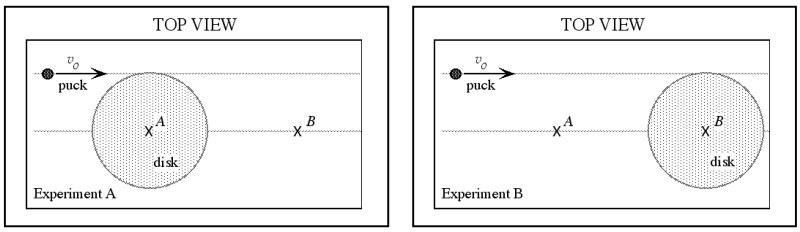
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

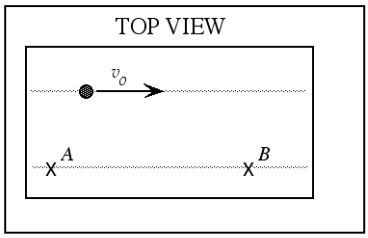
Explain. *Angular momentum is conserved.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The experiments are basically exactly the same since the puck hits the same object with the same velocity.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *The puck is not spinning and has no angular displacement and therefore has no angular momentum.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

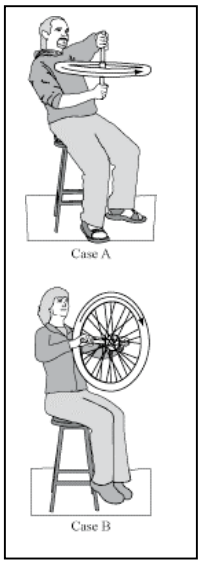
Explain. *The puck is not spinning and has no angular displacement and therefore has no angular momentum.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *They stay zero.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

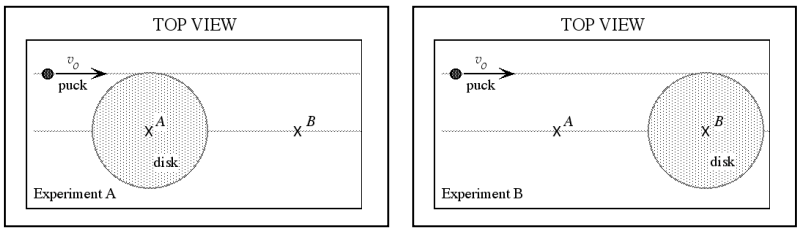
Explain. *The momentum of the wheel causes the student to move in the same direction (counter-clockwise).*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The angular momentum of the wheel is not in a direction that the stool can move.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

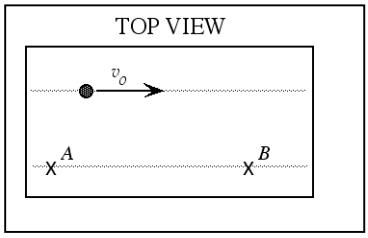
Explain. *the disk doesn't rotate so the angular speed must be the same.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *Exp A is greater because of its translational kinetic energy*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *The puck does not rotate.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

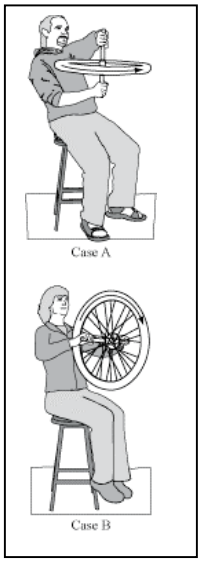
Explain. *the puck only has translational kinetic energy, not rotational energy*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *The puck doesn't spin*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

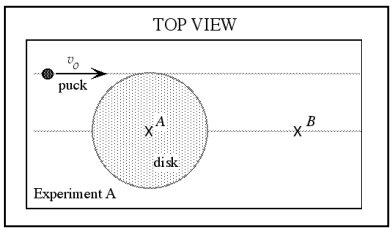
Explain. *The force causes him to move in the same direction that the Force is being applied to the wheel.*

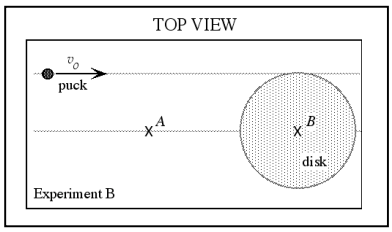
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The student only holds the wheel by the handles. Since the rotation is vertical, it will not rotate left or right. The rotation of the wheel doesn't change the student's location.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

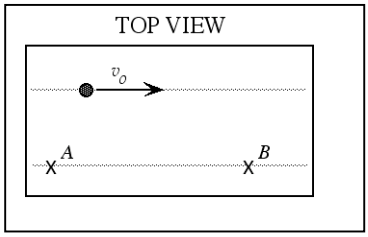
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

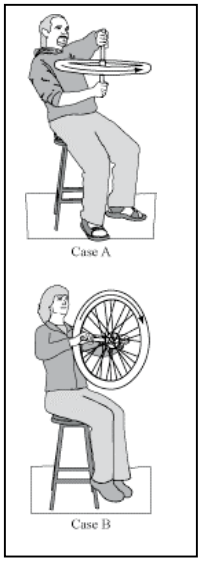
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

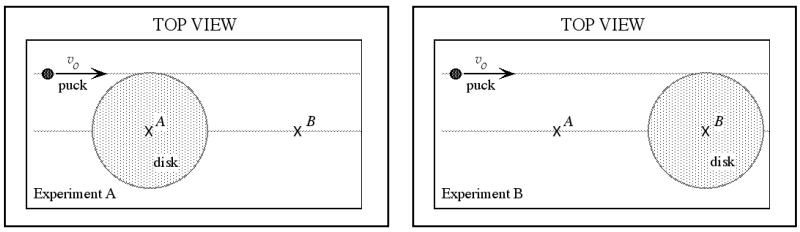
Explain.

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

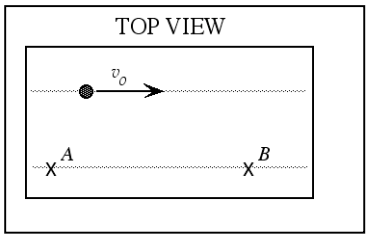
Explain. *i said so*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *i said so*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *i said so*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down (toward the bottom of the page)*

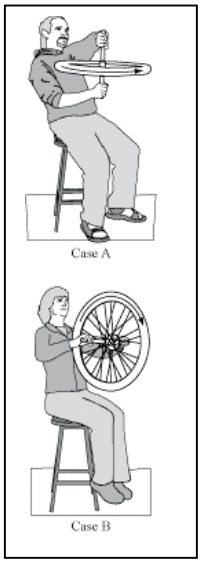
Explain. *i said so*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *i said so*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

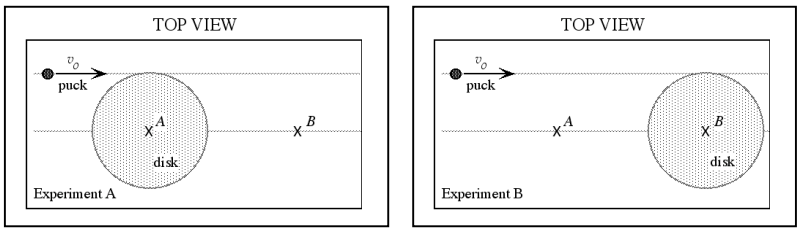
Explain. *i said so*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *i said so*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

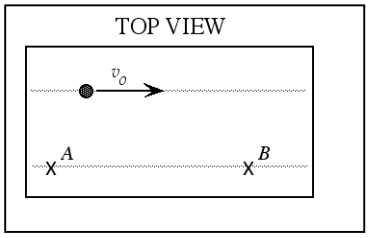
Explain. *Same situation, the puck just travels farther before it hits.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *Same masses and same situations, so equal angular velocity.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *the puck would move through a greater theta for point B than it would for point at at that certain point in time, therefore the angular momentum would be greater for b.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

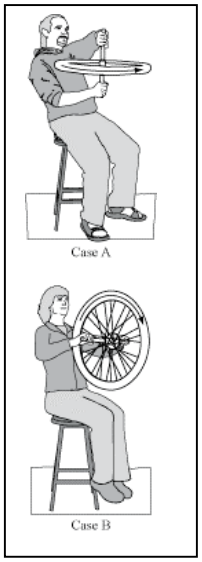
Explain. *That's the direction in which the puck is moving.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *Puck is moving towards the point parallel to point b, so the angle between that is decreasing, and moving away from point a, so the angle between those are increasing*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

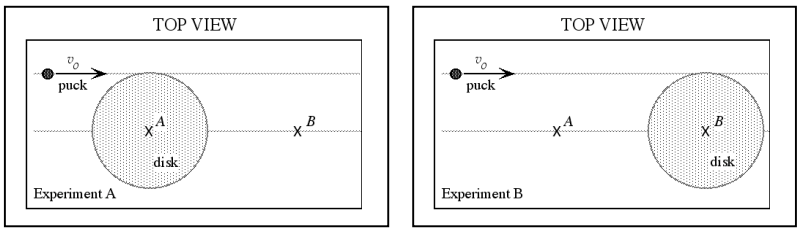
Explain. *I've seen it done. Also, the moment of inertia for the outer part of the wheel would be greater than the inner part of the wheel with respect to the stool as the axis, so the motion of the outer part would prevail.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The moment of inertia for the wheel with respect to student A has no axis to rotate about[it's perpendicular to the plane the axis can rotate in], so therefore she will not rotate.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

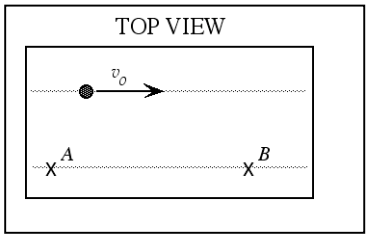
Explain. *The disc is hit with the same amount of speed by the puck at point A and B.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *This is an inelastic collision and momentum is conserved. Since the mass of the system is greater the speed will decrease for p=mv.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *The puck is movine with the same translational and angular momentum at both points.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

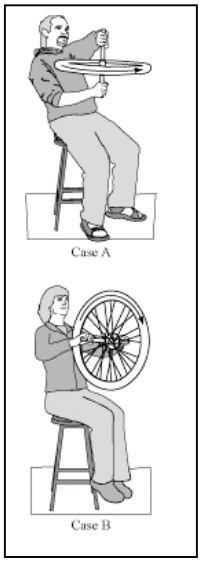
Explain. *The puck is not rotating so there is no angular momentum.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *There is no friction so velocity is constant.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

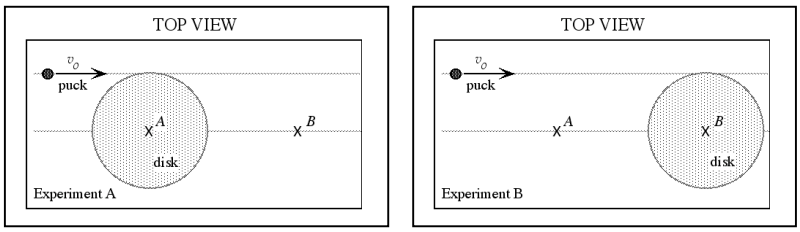
Explain. *The wheel rotates on its axis. The student has no contact with the rotating part of the wheel.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The wheel rotates on its axis. The student has no contact with the rotating part of the wheel.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

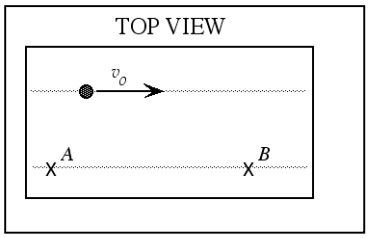
Explain. *hit at same locale with same force*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *conservation of angular momentum*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *momentum conserved, no angular velocity*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

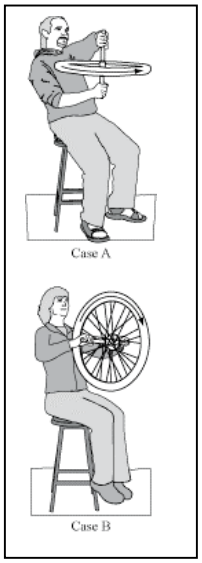
Explain. *no ang mom (= not vietnamese, but an abbreviation for no angular momentum)*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *no ang mom*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

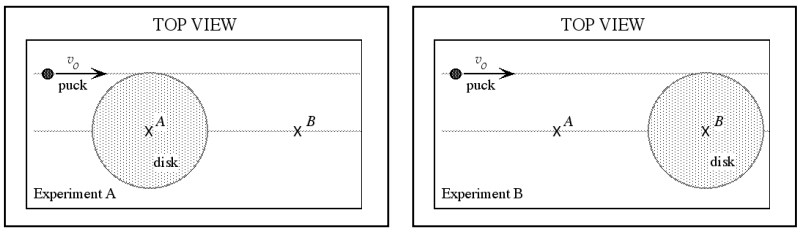
Explain. *the axis, which the student holds is stationary and the wheel moves freely.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *see above*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

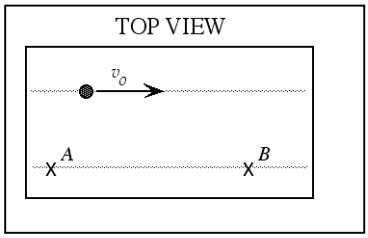
Explain. *I assumed that it would be greater because i really cannot tell what is in experiment A. So the only realization is that it would increase.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The Speed of the center of mass will not change between collisions.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *There is no angle at which the object is changing*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

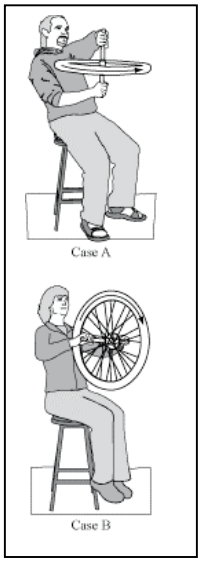
Explain. *Because it is in the direction of vo.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *They remain constant for reasons unknown.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate clockwise (to his right), as viewed from above.

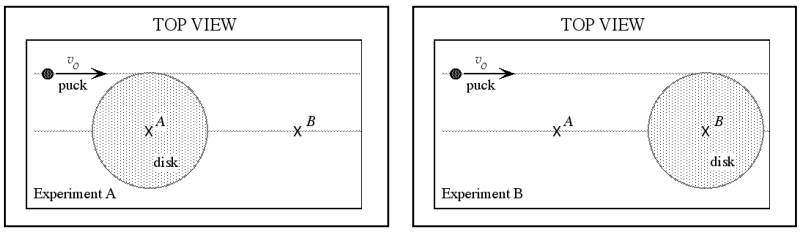
Explain. *This is because the wheel is pointed to the right so he will spin to the right.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *This is because she is just holding the wheel horizontally and not turning in any direction so she will not rotate*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

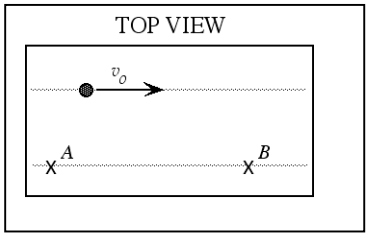
Explain.

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain.

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

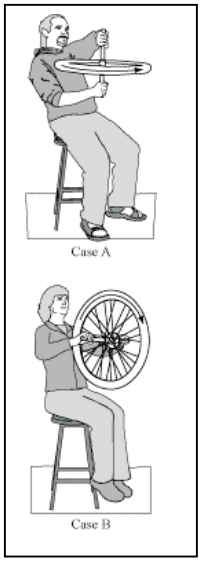
Explain.

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

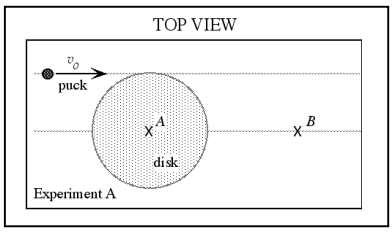
Explain.

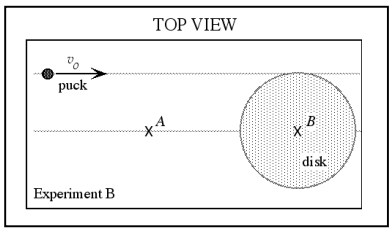
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

777

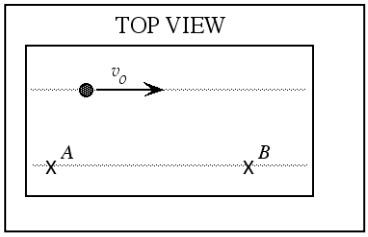
Explain. *777*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

777

Explain. *777*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

777

Explain. *777*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *777*

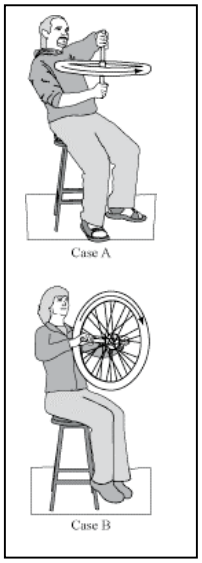
Explain. *777*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

777

Explain. *777*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

777

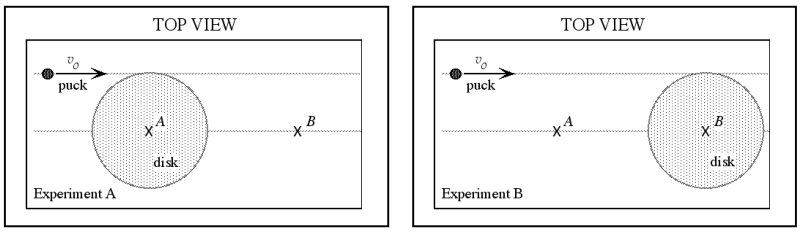
Explain. *777*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

777

Explain. *777*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

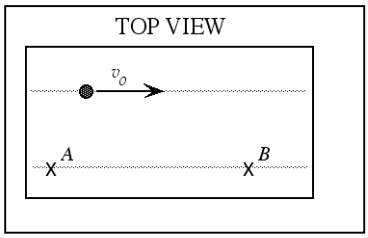
Explain. *Conservation of angular momentum*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *As momentum decrease with the same mass then the speed decreases .*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *Greater speed .*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up (toward the top of the page)*

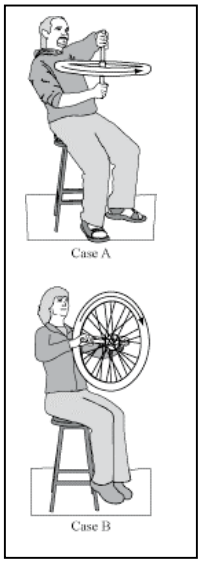
Explain. *using the right hand rule .*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *because the speed is decreasing .*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

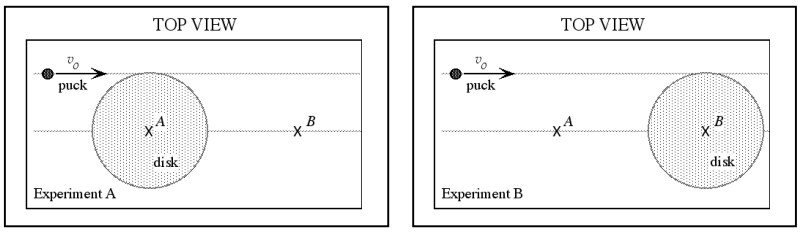
Explain. *opposite to the direction og the movement of the spinning wheel in order to move it .*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *In the same direction of the movement of the spinning wheel in order to move it .*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

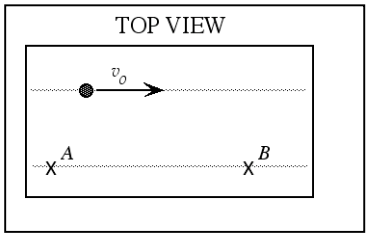
Explain. *Why would it be different? I don't see what the difference in these experiments is except initial positions.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain.

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

unanswered

Explain. *what's l puck?*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *unanswered*

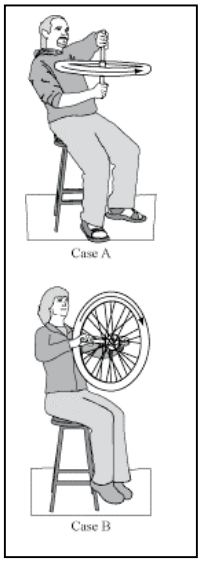
Explain. *why don't I understand this?*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

unanswered

Explain.

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

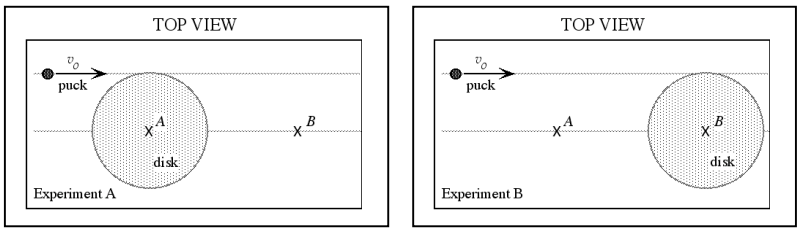
Explain. *the torque vector is pointing up*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *using the rh rule the thumb points to the left*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

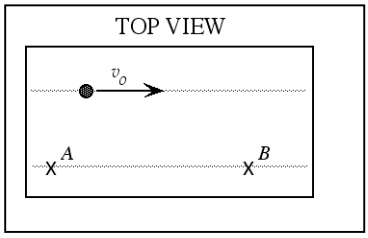
Explain. *From the angular momentum conservation theorem.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *As the angular momentum increases with the same mass that means v incresese so grater v for A.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *Maybe because it has greater angular speed .*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up and to the right*

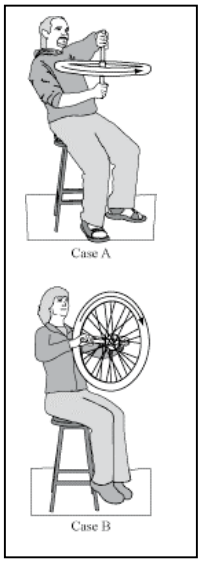
Explain. *Using the right hand rule to find the direction of the angular speed which is the same direction of the angular momentum .*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both decreasing.

Explain. *Because the speed is decreasing .*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

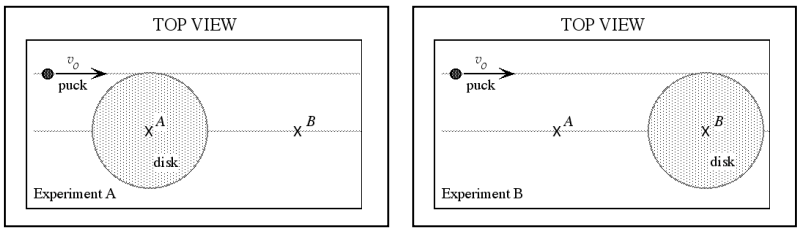
Explain. *The spinning wheel is moving not the student .*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *The spinning wheel is moving not the student .*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

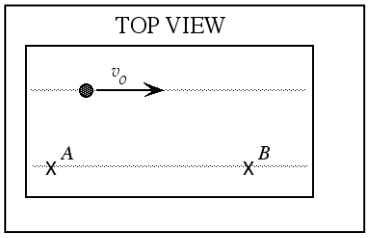
Explain. *In each case, the momentum involved is equal, as the mass of each object is equal, as are the initial velocities. Thus, the final velocities must be equal, as no outside force (or torque) acts on them.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *They are equal, as again the masses and velocities are initially equal, and with no external forces, the total momentum must remain the same.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *The linear momentum is equal in each case, but the angle formed between the displacement and momentum is closer to 90 in the case of A. Thus, the linear momentum is greater in this case.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *into the page*

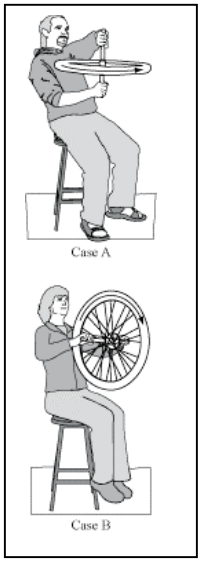
Explain. *Using the right hand rule, the displacement and the momentum, when crossed, form a vector pointing into the page.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *The angle between the momentum and the displacement is getting farther from 90 degrees in the case of A but closer in the case of B, meaning that B is growing and A is shrinking.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

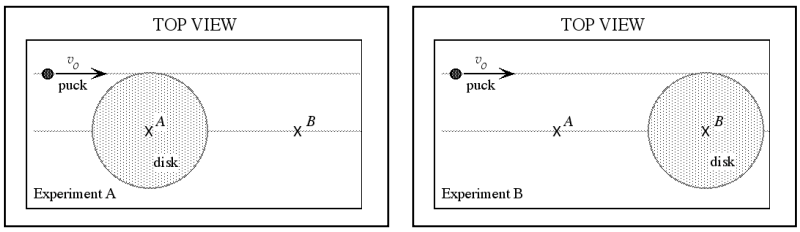
Explain. *There is no net force or torque acting on the student, and thus he will not move, due to Newton's first law.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *There is no net force or torque acting on the student, and thus, according to Newton's first law, she will not move.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is less than that in Exp. B.

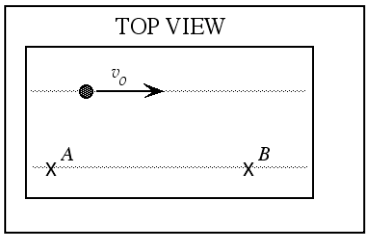
Explain. *flabber gasted*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *monkeys have the funniest faces*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *my mind is a simple ballet*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *into the page*

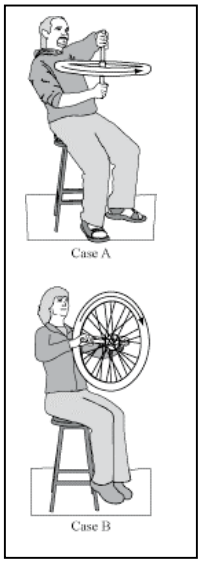
Explain. *i have no thumbs your are prejudiced against people without thumbs*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is increasing, and L(puck,B) is decreasing.

Explain. *gollum is someones heros*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

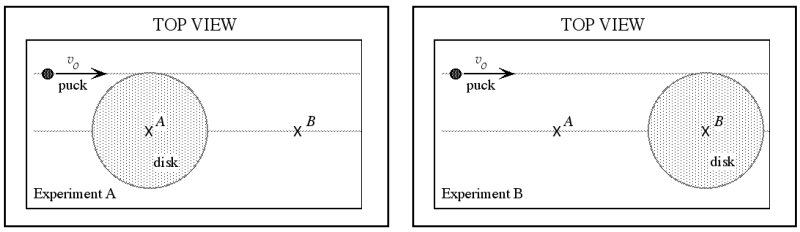
Explain. *because he is weak and need to build character*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *i dont know*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

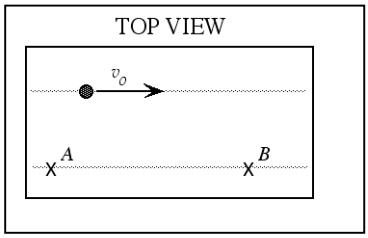
Explain. *The puck traveling at constant velocity will have the same effect on the disk regardless of initial distance traveled to reach the moment of the collision.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *if the puck collided with the same velocity in both experiments the disk will react the same with the same speed.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are equal to zero.

Explain. *the velocity of the puck is the same in both experiments and the the puck passes parallel to bot positions.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *The angular momentum described above is zero.*

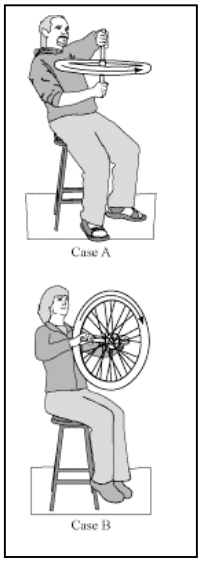
Explain. *the puck passes parallel to the point.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *not really sure about this*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

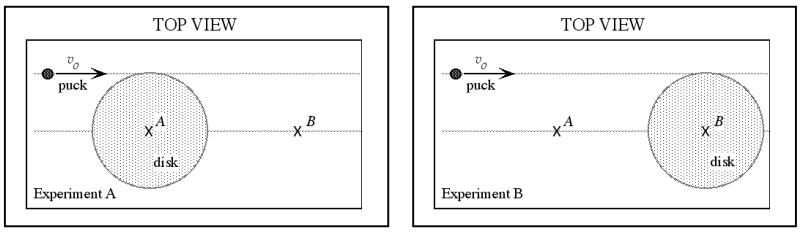
Explain. *rotational energy is transfered in the stool the student sits on.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

unanswered

Explain.

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

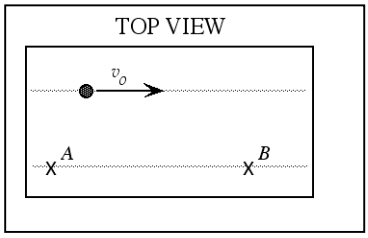
Explain. *The two are the same no matter where the two disks are initially.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The two are the same at that point because there is no difference in the two experiment.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *Because the relationship there is the same.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *to the right*

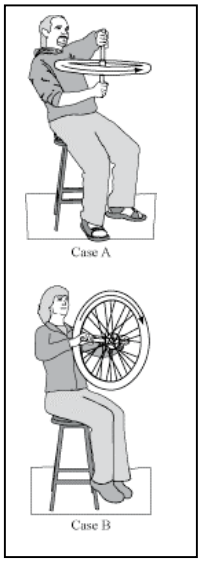
Explain. *The puck isnt spinning and its going to the right.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both increasing.

Explain. *They are both increasing on the frictionless table.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

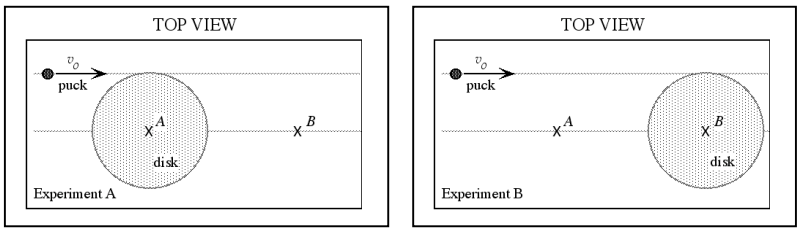
Explain. *The user has to move with the wheel assuming that the handles are attached to the moving wheel.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate clockwise (to her right), as viewed from above.

Explain. *The student would spin that way cause of the motion of the wheel.*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

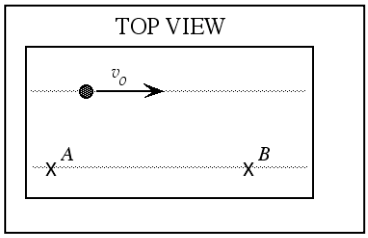
Explain. *I dont think the question is at all clear. I don't know what it is really asking. I don't see how they could be anything but equal.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is equal to that in Exp. B.

Explain. *The diagram is partially obscured for A so I can't see what is going on at all. But why would anything be different?*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is greater than L(puck,B).

Explain. *it is closer to point A and moving parallel to line AB. So if i understand the question correctly (which I doubt that I do) then theangle changes about A faster than about B until the puck is equidistant, then it switches as it gets closer to b*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *into the page*

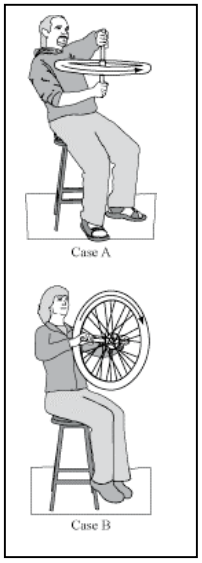
Explain. *something about right hand and fingers going about the direction the puck moves w respect to A or B and where my thub points.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *I still am not sure I understand the question. But is the angle between a and the puck changing slower and slower while angle B-puck is speeding up??*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

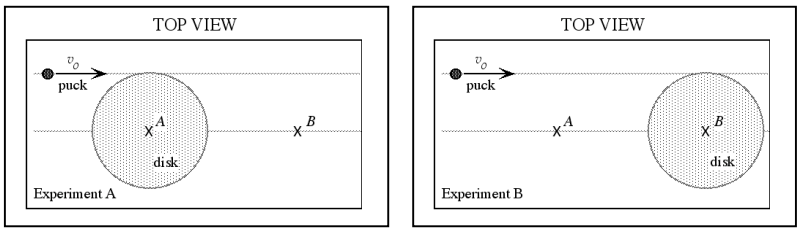
Explain. *i dont think there is any angular acceleration since there is no added torque to the wheel, so no outside torque why would the system want to change any? After all, it seems to have been working as it was before he was given the wheel. If you are in the air on a dirtbike, you tend to stay level even though the wheels are spinning. If you want to rotate forward then you squeeze the brakes a bit, and some of the rotational velocity is translated into the bike and you rotate forward a little bit.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *there is circular motion about the axle that the student can move, so why would she change*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.



Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is equal to that in Exp. B.

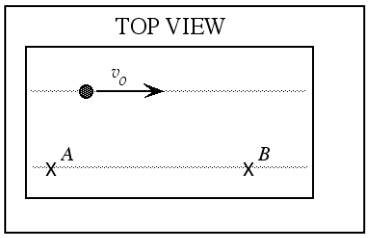
Explain. *angular speed is conserved.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is greater than that in Exp. B.

Explain. *The speed when the puck reaches the disc on A is greater than B.*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is equal to L(puck,B), and both are NOT equal to zero.

Explain. *It is the same all over*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *up (toward the top of the page)*

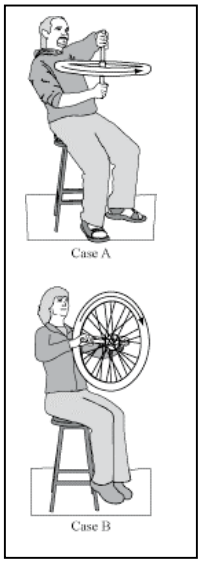
Explain. *used the hand trick*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) and L(puck,B) are both remaining constant.

Explain. *there is nothing changing them*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will remain at rest.

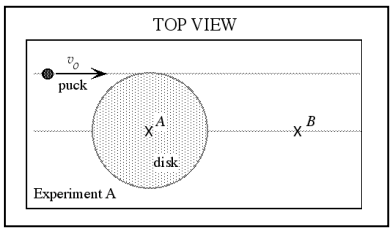
Explain. *the momentum from the wheel will cause the person to move upwards*

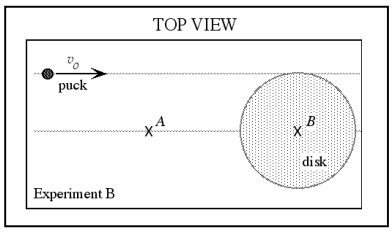
Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will begin to rotate counter-clockwise (to her left), as viewed from above.

Explain. *The momentum must be perpendicular and to the left so she will move to the left!*

A small puck moves at constant velocity v_o across a large level frictionless air table, without spinning. Points A and B are marked on the table. The line containing A and B is parallel to the path of the puck. In each of two experiments, the puck collides with and sticks to a clear plastic disk that is initially at rest. The center of the disk is initially at pt A in Exp. A, and at pt B in Exp. B.





Q4. After the collisions, is the angular speed of the puck/disk system (about its own center of mass) in Experiment A *greater than, less than*, or *equal to* that in Experiment B?

The final angular speed of the puck/disk system in Exp. A is greater than that in Exp. B.

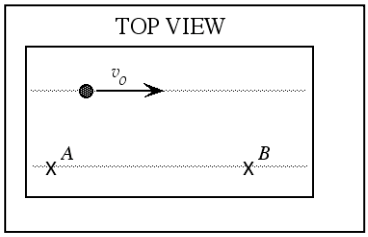
Explain. *becuase i dont really care and you dont read this anyway.*

Q6. After the collisions, is the speed of the center of mass of the puck/disk system in Experiment A *greater than, less than* or *equal to* that in Experiment B?

The final speed of the center of mass of the system in Exp. A is less than that in Exp. B.

Explain. *I think this is better because the angular momentum of the angle is momentus*

The large disk is removed. The puck is again moving with constant velocity v_o to the right, without spinning, on the same path as in Experiments A and B. Questions 5-10 refer to the **instant shown** in the figure below.



Q8. Is the magnitude of the angular momentum of the puck with respect to pt A ($L_{puck,A}$) *greater than, less than,* or *equal to* that of the puck with respect to pt B ($L_{puck,B}$)?

L(puck,A) is less than L(puck,B).

Explain. *because i dont really like the way you guys teach this stuff very much.*

Q10. Describe the direction of the angular momentum of the puck with respect to point A. *down and to the left*

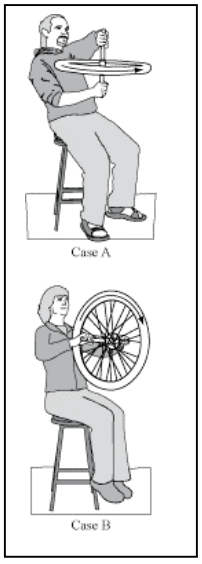
Explain. *the best answer for this is what i chose because i know best.*

Q12. Describe how (if at all) $L_{puck,A}$ and $L_{puck,B}$ are changing in time.

L(puck,A) is decreasing, and L(puck,B) is increasing.

Explain. *I just picked this one because it was last in the line up and i never pick the last one.*

Two students are initially at rest on stools that can rotate freely. Each student is then handed a bicycle wheel that is already spinning. The center of the wheel is stationary when it is given to the student. The wheel rotates freely on its axis. In Case A, the axle of the wheel is vertical, and the wheel spins counter-clockwise (when viewed from above). In Case B, the axle of the wheel is horizontal, and the top of the wheel is moving away from the student. In both cases, the student touches only the handles of the wheel.



Q14. After the student is handed the spinning wheel in Case A, will he begin to rotate clockwise (to his right), counter-clockwise (to his left), or remain at rest?

The student will begin to rotate counter-clockwise (to his left), as viewed from above.

Explain. *because the wheel will induce a torque on the student with a goatee. Yeh that is how you spell it.*

Q16. After the student is handed the spinning wheel in Case B, will she begin to rotate clockwise (to her right), counter-clockwise (to her left), or remain at rest?

The student will remain at rest.

Explain. *This is retarded we never know if we are getting it right or not until our TA tells us.... OH wait she doesn't tell us nething. This sucks.*