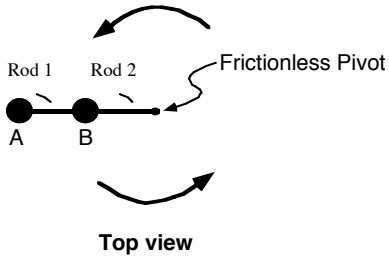
Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure F

Explain.

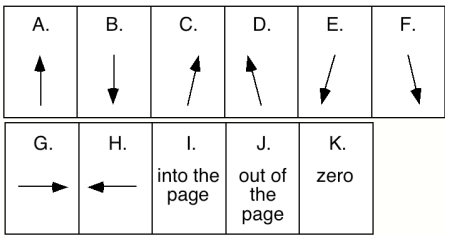
direction of acceleration is the same as the change in velocity over a period of time

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure F

Explain.

acceleration is the change in velocity over time



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. constant speed, no acceleration

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. tension 2 has to have enough force to hold 2 objects whereas tension 1 has only 1 object

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.acceleration is change in velocity over time

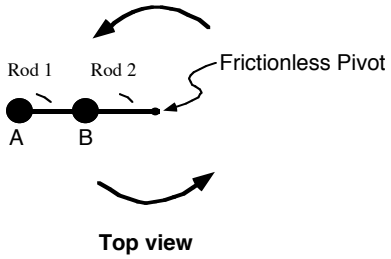
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain force is perpendicular to the acceleration vector

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

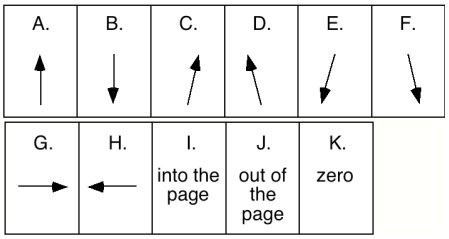
its perpendicular to the velocity vector

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

it would be the same as A



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. the radius of movement is larger for A, but the range in degrees is the same for both

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. The weights are the same

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.perpedicular to the tangent velocity vector

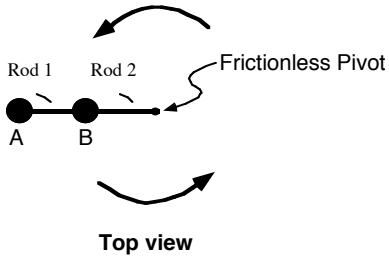
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain F=ma, so force is in the same direction as acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

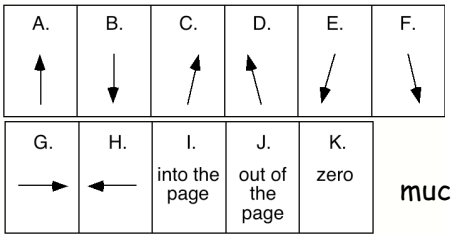
The acceleration is towards the pivot point if the velocity of the point is to remain constant.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

The acceleration is in the same direction as point a since they are both rotating around the same pivot point.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. Since the radius is larger ofor mass a it does not take as much acceleration to keep the same velocity

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. since the acceleration is greater for b the tension on the rod holding b must be greater as well.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Unanswered

Explain.

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain the net force is acffected by both the velociy and the acceleration and this figure is the combination of teh two vectors.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

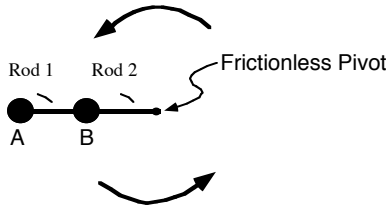
The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

Circular movement with constant acceleration is caused by acceleration perpendicular to velocity which is a tangent line to the trajectory.



Top view

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

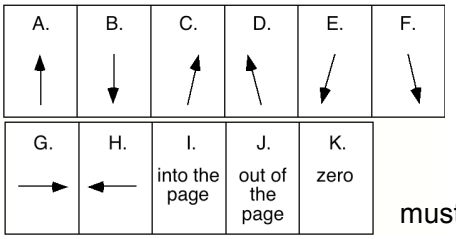
Figure G

Explain.

Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B?

Unanswered

Explain. The magnitude of A is greater than the magnitude of B.



Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. The forces all have equal and opposite pairs so the forces must be equal.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. The objects are accelerating so the acceleration is no longer merely perpendicular to the velocity. If it was still, the velocity would not change because it would have no effect on it.

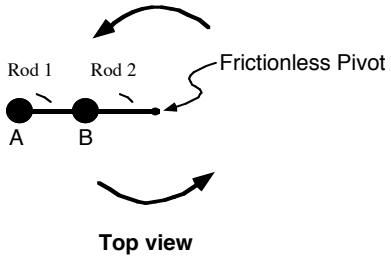
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Acceleration is in the direction of the net force.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure K

Explain.

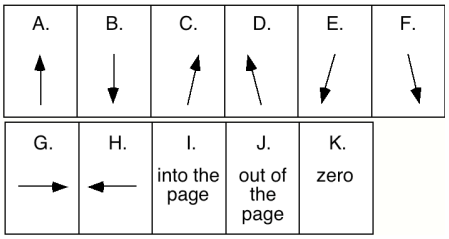
Constant rate= zero a

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure K

Explain.

Constant rate= zero a since a= change in rate/time



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. Both 0

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. Because all objects have newton's 3rd law applying to them.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.Moving in direction ofmotion.

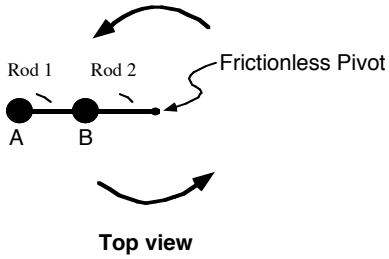
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Because it is moving in the direction of motion.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure F

Explain.

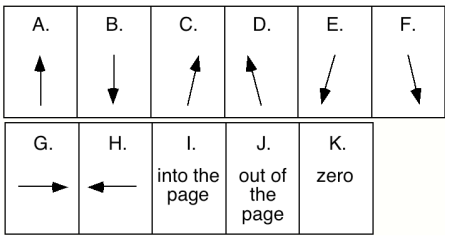
the acceleration yields a slight horizontal component along with the vertical (gravitation) component

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure F

Explain.

Same explanation as in Q.6



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is further away from the pivot and moves a greater distance in the same time B moves.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Tension 1 is affected only by mass of ATension 2 includes masses A & B

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. Same reasoning as before.

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Lies in direction of acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

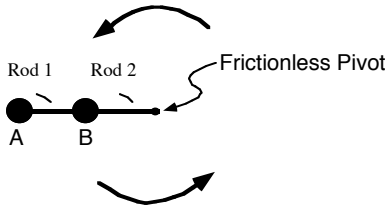
The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

The direction of the acceleration can be determined by finding the velocity vector at two different times and find the change of velocity which gives you the acceleration.



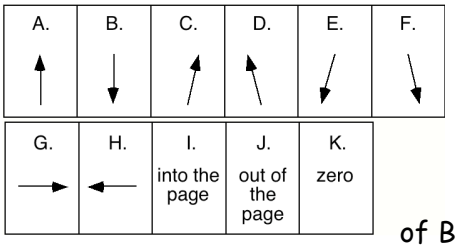
Top view

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

This is the same case as that posed in question 6. Even though the radius may differ, the direction of the acceleration is still the same.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. Even though the speed of object A is greater than that of B since it is farther away from the center of the circle, the chance of velocity will give the same result, thus the magnitudes of the acceleration of A and B are the same.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. The force or tension for rod 2 has to take in the account of both mass of A and B where T=ma being our only force. Since the acceleration is equivalent in each case yet only the mass changes with each rod, we can conclude that the greater tension lifes in rod 2.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.Now, the object is spinning faster and thus accelerating in both towards the center of the circle and with its tangetial velocity giving us the net acceleration in the direction of F.

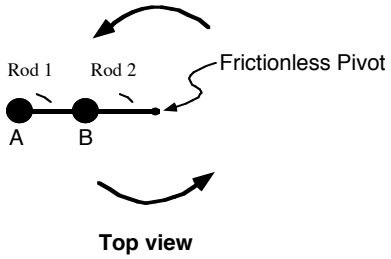
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The direction of the net force can be determined by Newton's second law where F=ma. Since we have determined the net acceleration direction, we can easily find the direction of the net force.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure K

Explain.

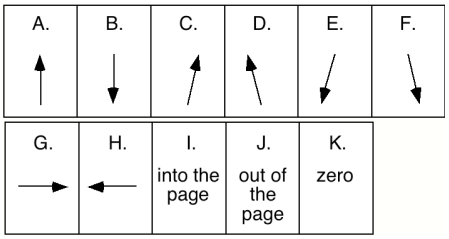
Angular acceleration is zero.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure B

Explain.

Angular acceleration is zero.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. Same, both zero.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. Both zero.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure D

Explain.In centripedal motion, the acceleration is directed toward the center.

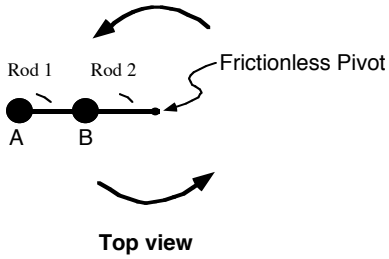
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain Acceleration is directed toward the center, so the force is directed in the same direction.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

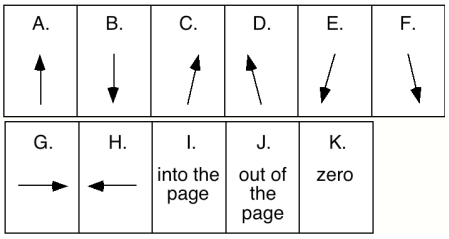
It is in the direction of the force and that is provided by the rod. So the acceleration is toward the center.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Toward the center because the rod provides the force.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. it is traveling a greater distance in the same time.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Tension 1 is lessened because there is a force in both directions.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.It accelerates to the center and also tangentially.

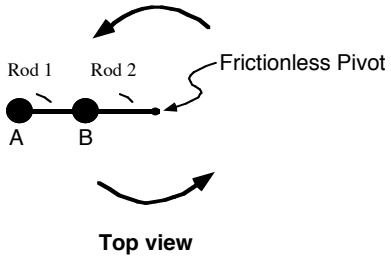
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain the acceleration is in the direction of the net force.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

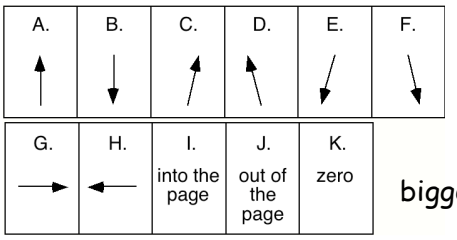
Well, it's motion follows the path of the circle, so the accerleration is towards the center of the circle.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Towards the center of the circle.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. Because A is traveling in a bigger circle, so the circumference is bigger, so velocity is bigger, so acceleration is also.

bigger

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Um, because acceleration is greater, then the force would be greater.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. Still accelerating towards center of circle, plus additional acceleration tangential to the path of motion.

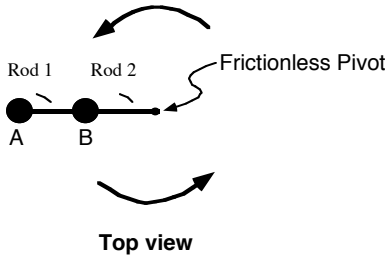
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Force and acceleration in same direction because they're both vectors and mass is not.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

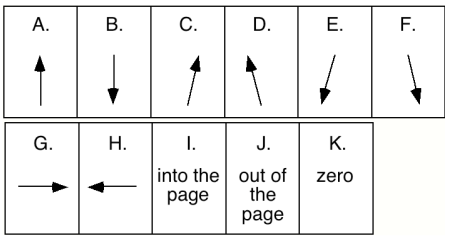
the acceleration always points toward the center, since it is perpendicular to the velocity vector

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

the same as object a, it is perpendicular to the velocity vector, which is tangential to the circle



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. same mass, same force, so they have to have the same acceleration

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod 2 has to support rod 1 and ball A, thus the tension in rod 2 is greater

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.the velocity vector is still tangential to the circle, so the acceleration still points in the same direction as before

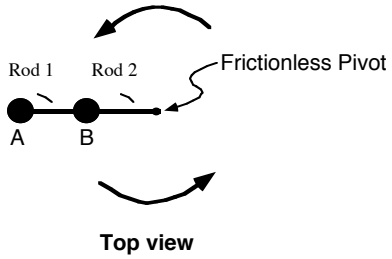
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain the net force is the sum of all the forces, which are just the acceleration and velocity vector. Since these make a 90 degree angle to each other, the net force will be in between them, thus figure f is correct

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure B

Explain.

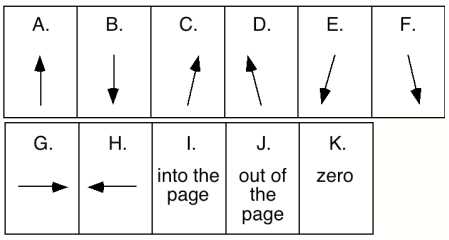
the object looks to be moving in a circle so there should be a centrepetal aceleration inward.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure B

Explain.

if the objects move in a system then there accelerations would be in the same direction.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. b is closer in the circle so then the accereration is faster because is has to travel a shorter distance.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. rod one is located farther out so the tension or force has to act over a farther distance making the object experience more tension.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure B

Explain.same as in question 5 the velocity may have increased but the acceleration remains the same.

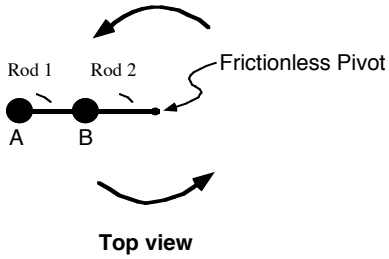
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain again the accereration revolves around the system and the circle makes circular acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure H

Explain.

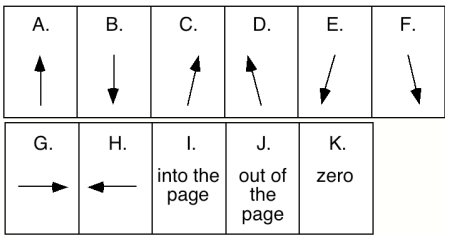
centripital acceleration is trying to force A away from its center of orbit but teh rod is holding it

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure H

Explain.

Same as for A



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. The radius r is greater which is a scalar multiple

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. The acceleration of A is greater than b not directly but related to to a squared function this means that tension in rod one will be greater because it is working opposite of A's force

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure H

Explain.acceleration will still be in the same direction only teh magnitude will be greater than before

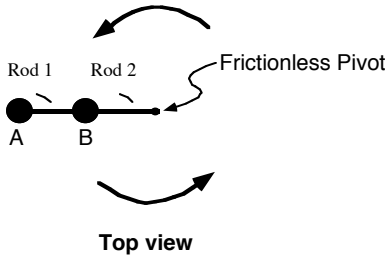
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure H

Explain net force must be in teh same direction as acceleration because they are scalar multiples of eachother

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

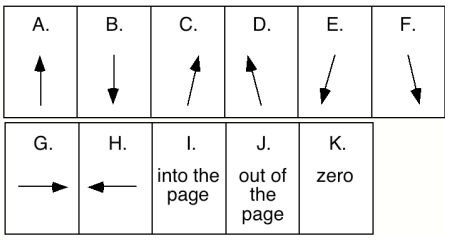
This is just uniform circular motion so the acceleration points toward the center of the circle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same as above



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A must have a greater acceleration because it will have a greater velocity, being farther from the center of the circle

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. rod 1 will have a greater acceleration than two for the same reason that A has a greater acceleration than B, so the tension in 1 will be greater

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. There is now a tangential component to the acceleration

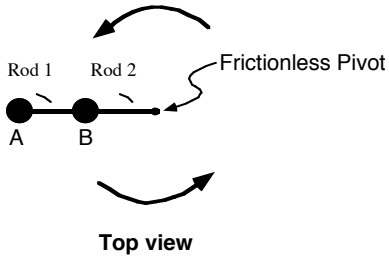
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Always the same as the direction of acceleration by F=ma

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

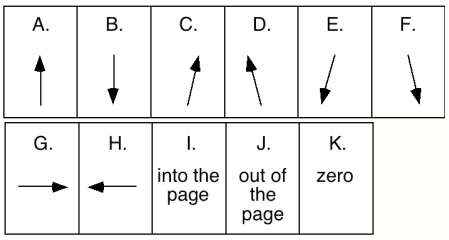
there is a centripical motion so the acceleration points in ward so that it does not fly outward

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same with A, centripical acceleration prevents it from flying out



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. it travels more distance in the same amount of time

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod one has one mass while rod two has both masses plus rod one to hold

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.there is still a centripical force acting on it but since it is going faster and faster i think that the acceleration will not be perfectly straight but a little slanted

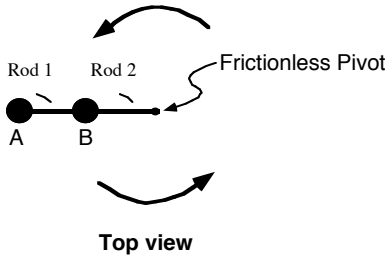
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain same as A, centripical acceleration but arrow not totally horizontal

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

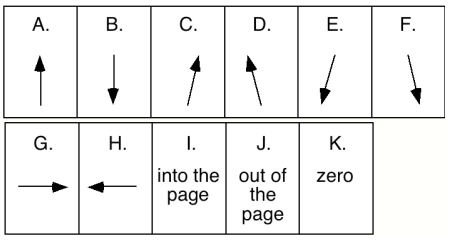
Centrifugal acceleration; A is moving with uniform circular motion.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same reason as A



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is greater because it must move faster to make it around in the same time as it takes B.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Because the acceleration of A is greater than that of B.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain. Still centrifugal acceleration.

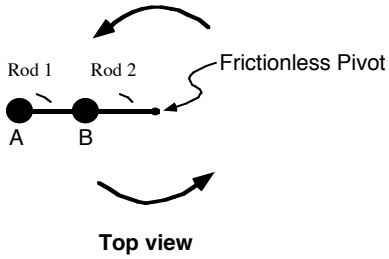
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain Force must be in the same direction as acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

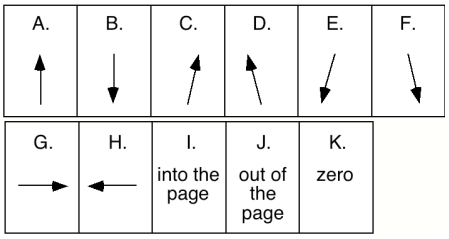
object A is gonna move in a circle so there is gonna be a centripetal force, hence acceleration that is toward the center

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same that than previous answer



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. same because they rotate around the same center

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. they rotate around the same center

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.because of the centripetal force

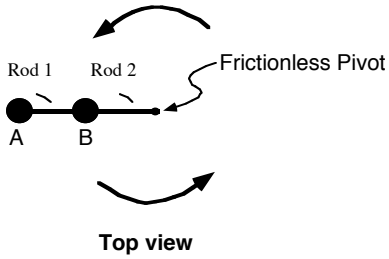
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain goes in the same direction than the acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

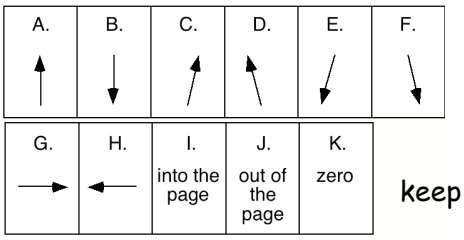
Constant speed, so it's accelerating toward the pivot. There's no tangential acceleration component.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as before, constant speed denotes no tangential component to acceleration.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. It's farther away from the pivot; takes more force to keep it in circular motion

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. There's more force on object A, so I'm assuming the force would be greater for that rod. Although I wasn't aware rods could hold tension.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. The resultant vector of centripetal acceleration plus tangential acceleration.

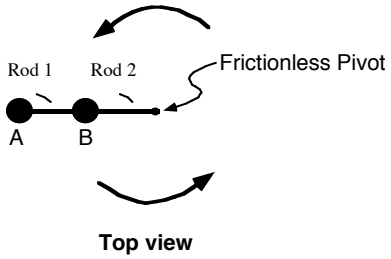
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain It's the force left when the centripetal acceleration and the normal force vectors cancel out.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure B

Explain.

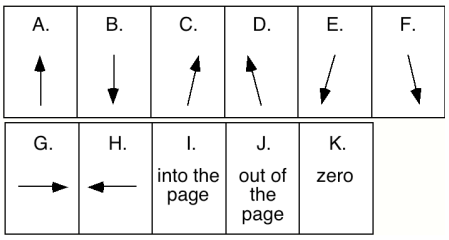
Gravity is working down towards the pivot, and velocity and acceleration is in the same direction.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure B

Explain.

Same as answer to question 6.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. Both are being swung at the same constant rate, therefore the same magnitudes.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Rod 2 has the combined tension from the rod and the weight (or Normal force) of the second ball.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure B

Explain.The direction doesn't change, just the magnitude which increases.

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Unanswered

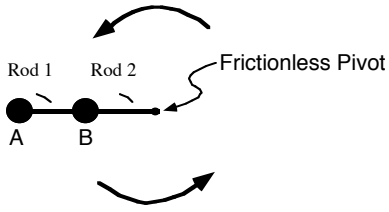
Explain Since there is a tension from the rod and the acceleration is directed directly down, I'm confused as to how the motion is actually curved?

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.



Top view

Figure G

Explain.

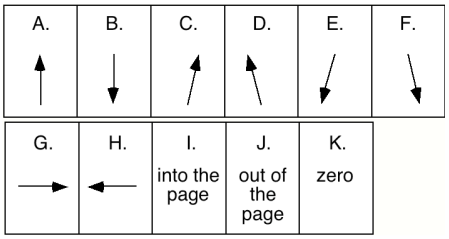
The rotation of the rod moving as one unit and at constant speed so the acceleration is in the chang in direction. Since it is a uniform circle, the acceleration is inward as the centripital force is.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

B and A are both moving as one unit



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A travels a farther distance.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. They are both equal and opposite force pairs pulling on one another giving the tensions the same magnitude.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure F

Explain. The speed is increasing which the acceleration is pointing in the direction of the point and also compensating for change in direction.

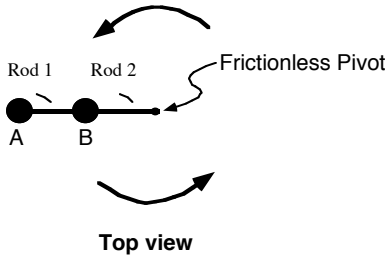
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure H

Explain As the systems gains speed, the force exerted from the spinning wants the system to fly off the frictionless point.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

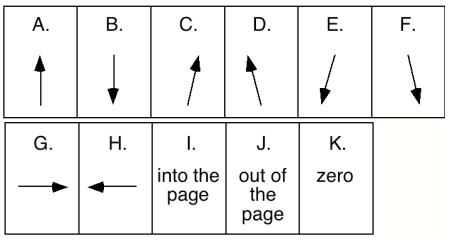
the rod is spinning with at a constant rate which means that there is a centripedal acceleration towards the center of the circle.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Like A, B also travels at a constant rate in a circle. Uniform circular motion, therefore, centripedal acceleration towards the center.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. they both experience the same velocity in the same direction.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. each individual string experience their own tension and since the mass of A equals the mass of B, the tensions also equal each other.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. A is going faster which means that there is a component of acceleration in the direction of motion. A also experiences the change in velocity (acceleration) when it goes around in a circle.

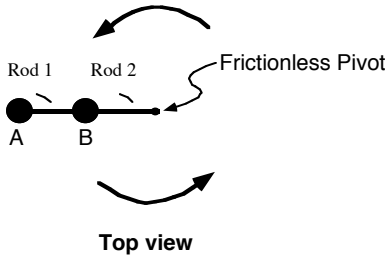
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain THere is an acceleration in the direction of motion as well as the tension of the string.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

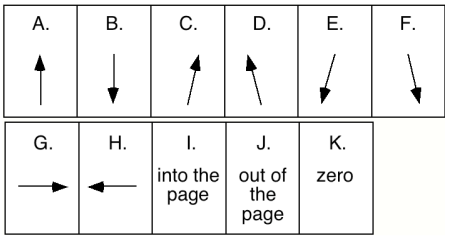
It is not speeding up so there is no acceletation up or down

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

It is the same



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A has a larger turning radius

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Greater accel. greater force therefore greater tension.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.It now has a centrifigal component and a tangental component.

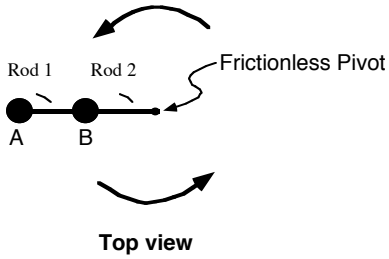
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The same direction as the acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

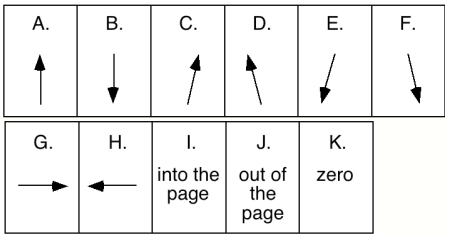
The acceleration (centripetal) is always towards the center of the rotational axis.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as question 6



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B?

Unanswered

Explain. Since the angular velocities of both objects are equal. A will have a greater acceleration because it has a greater radius.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. The objects have the same mass, so the Tension in 1 is greater because of the greater acceleration.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain. Same as before.

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

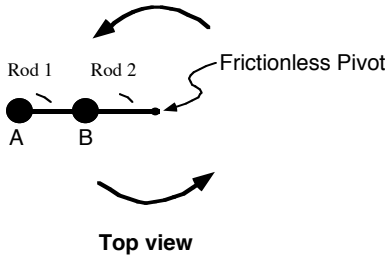
Explain It is in the direction of the acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.



Top view

Figure G

Explain.

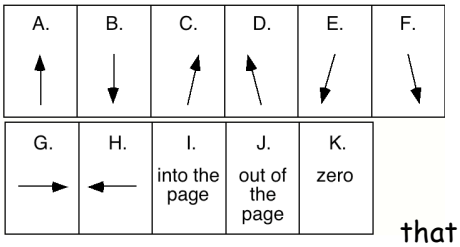
because A is not speeding up, the only force that acts on A is the centripital acceleration which points perpendicular to the path of motion

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

because B is not speeding up, the only force that acts on B is the centripital acceleration which points perpendicular to the path of motion



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. because centripital acceleration equals mv2/r and given that A has twice the r and twice the v of B then the centripital acceleration of A is 2 times the cent. acceleration of B

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. because the tension in rod 2 is equal to the centripital acceleration of A + B where the tension in rod 1 is just the centripital accelerration of A

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.because A is speeding up and moving in a circle the acceleration is between 0 and 90 deg pointing towards the inside of the circle

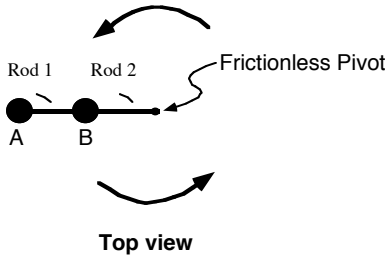
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain because net force points in the same direction as acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

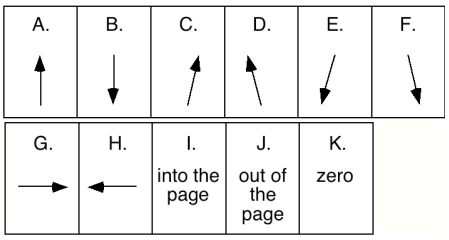
Since the system is spinning at constant rate, speed of A is constant, and the only acceleration is perpendicular to the tangent line.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Since the system is spinning at constant rate, speed of B is constant, and the only acceleration is perpendicular to the tangent line.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. Because the distance from A to pivot is longer.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Because A has a higher acceleration, therefore higher force.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. Because the system is spinning faster and faster, the speed of A is increasing. Therefore acceleration of A has components tangent and perpendicular to the circle.

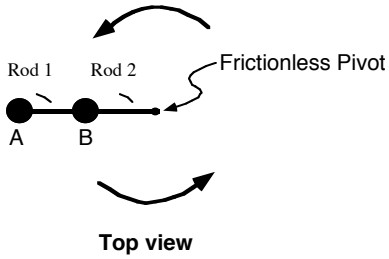
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Net force is in the same direction of net acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

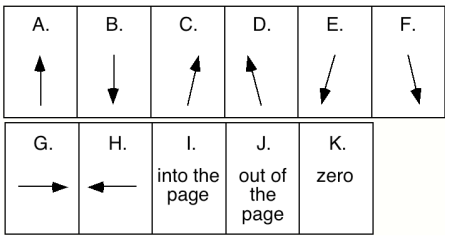
For object A to have uniform circular motion the acceleration for the object must always be directed towards the center.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same reason as question six.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. Both A and B have the same angular velocity, and thus the same acceleration.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Rod two has one attached and hanging from it. The tension in rod two should reflect that.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain. The acceleration would be the same it would just have a larger magnitude.

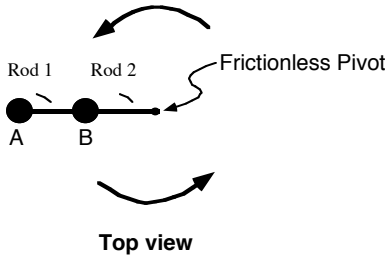
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain Same reason as question 14.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

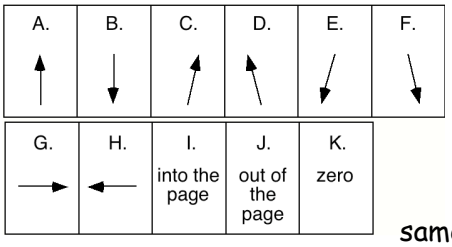
towards the pivot point

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same as object B, acceleration is perpendicular to the displacement vector, or towards the pivot point



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. acceleration is the change in velocity divided by the change in time. object B must travel a smaller distance during the same time interval as A, so its change in speed is greater than the change in speed of B.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Objects A and B have the same mass and the tension force is equal to the mass times the acceleration. The tension in rod 2 is the sum of the forces exerted by both objects A and B while the tension in rod 1 is only the force exerted by one object

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.the acceleration is now made up of two components, one perpendicular to the displacement vector, same as before, and one in the direction of the displacement vector causing it to speed up.

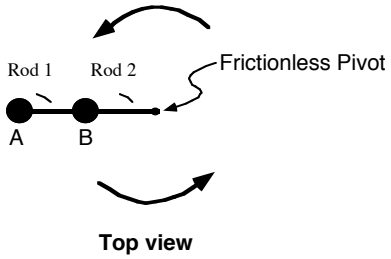
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain force is mass times acceleration. Acceleration is a vector, but mass isn't. force is a vector in the direction of the acceleration of the object

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure K

Explain.

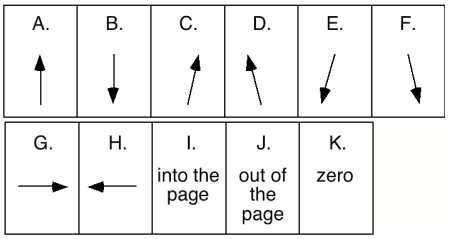
constant speed = no acceleration from chapter 2 anyway

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure K

Explain.

constant speed = no acceleration



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. zero = zero ?

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. r is larger

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.in circular motion, they accelerate inward

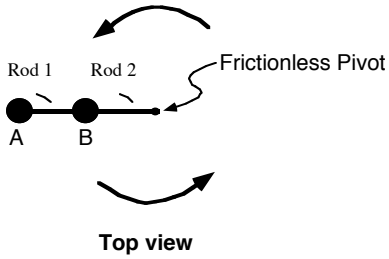
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain force is in the direction of acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

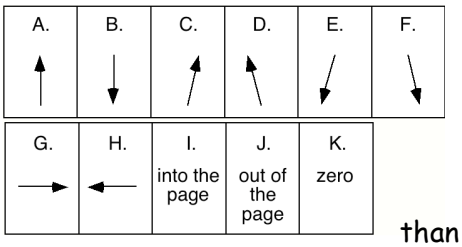
The direction of change of velocity is to the right because the object is not 'speeding up'.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

The direction of change of velocity is to the right because the object is not 'speeding up'.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. It's change in velocity is determing by both the rotational velocity and the radius of the motion. The radius of A is larger than that of B.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Because the acceleration is greater and the mass is the same, the force needed to cause that acceleration is greater.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. There are two components of the acceleration, the acceleration towards the center and the acceleration in the direction of the velocity.

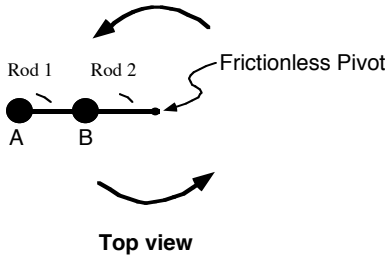
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The net force is always in the same direction as the acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

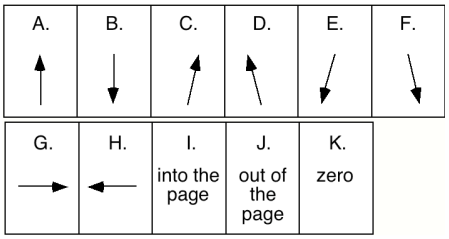
Centripetal?

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure B

Explain.

Acceleration stays the same regardless of radius length?



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. larger change in velocity

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. hmmm don't know

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. Velocity is changing in two directions forward and inward

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

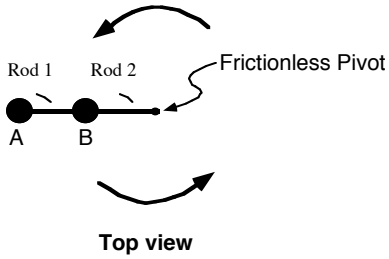
Explain In the direction if the acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.



Top view

Figure G

Explain.

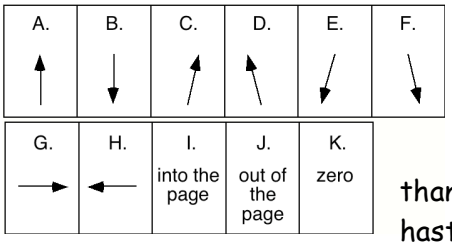
if you draw two velocity vectors for two time intervals close together, the resulting change in velocity vector will be pointing toward the center of the center of rotation. this is also the acceleration vector.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

for the same reason as A



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. the distance between two points on the path of object A that are separated by a sall interval of time are farther apart than that of B. this is because they ave the same angular speed so A hasto travel a farther distance than B inm the same amount of time.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. because the acceeleration of A is greater than that of B, the tension in rod 1, which is a force described by F=ma, would be greater than the tension in rod 2.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.the acceleration is still toward the center of the system because it is an object in circular motion

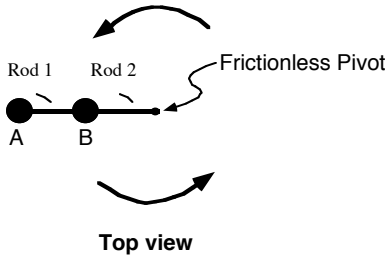
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain the net force is determined by the direction and magnitude of the acceleration on that object.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure K

Explain.

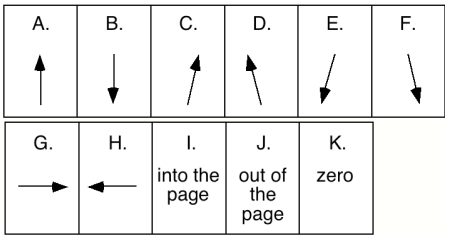
velocity constant, so no a

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure K

Explain.

v constant, so no a



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. both equal to zero

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. equal a

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure K

Explain.it's circular so just like the race track, no displacement, no a

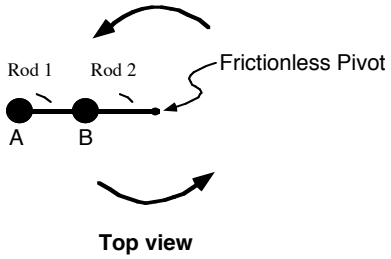
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure K

Explain a equals zero so net force equals zero

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

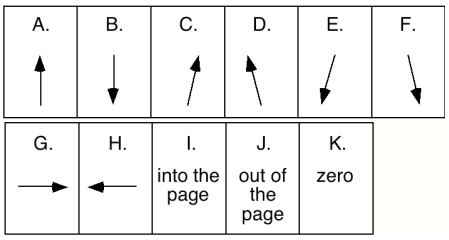
The object spins at a constant rate, so it must be uniform circular motion.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

B is also experiencing uniform circular motion also.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. velocity of A is more than B.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Rod 2 is the force holding the system consisting of A and B while Rod 2 only holds A

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. Since the velocity of the object is increasing there must be a force tangent to the circular path of the object. This force combined with the centripetal motion creates Figure F

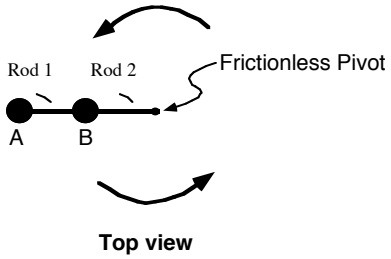
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The same as answer to 14

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

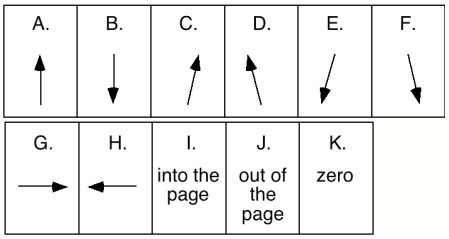
Which is vertical to the tangent line.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same as previous answer



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. The velocity of a is greater than b

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod 2 has to support both a and b

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.same as answer 6

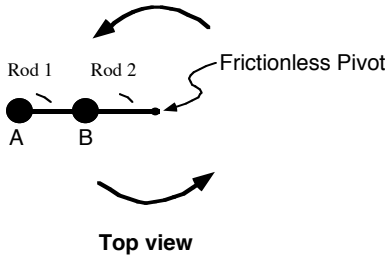
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain same as answer 6

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

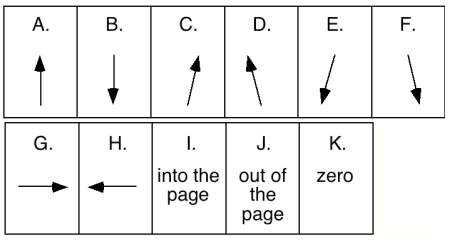
since the object is spinning, there is a centripetal acceleration...which is directed to the center of the circle.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

object B is also moving in a circular motion, and therefore has a centripetal acceleration



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. equal since they are part of the same system

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. rod one has more attached to it than rod 2

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.the movement is still circular and there is a centripetal acceleration

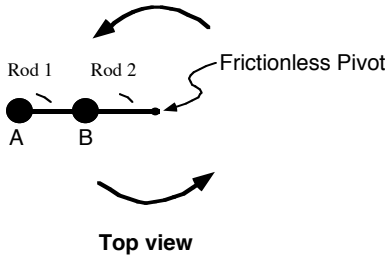
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain the force is in the same direction as its acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure H

Explain.

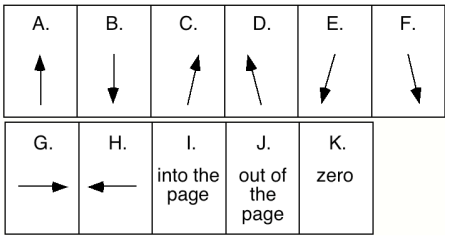
it is oposite the direction it is moving

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure H

Explain.

same reason



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. f=ma, they have the same mass and force

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. both being forced outwards

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure H

Explain.oposite the direction

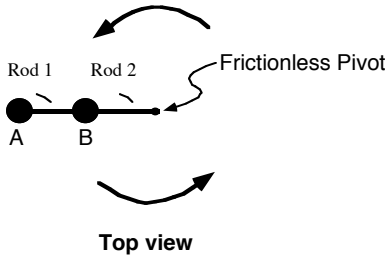
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain at that instant it is b because in the next instant that is the direction it ends up going in

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

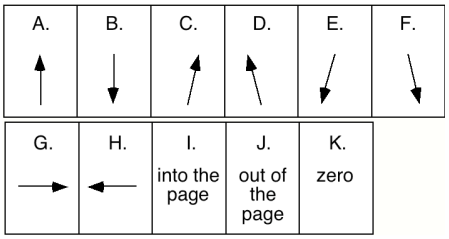
it is a centripedal acceleration which is toward the center.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

it is the same as A since A and B are on the same horizontal line and have the spherical motion



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. They both move at constant speed

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Since the length of rod 1 is shorter the length of rod 2

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.it toward the center

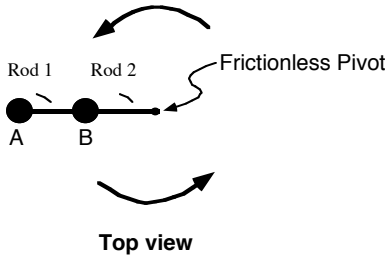
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain it toward the center

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

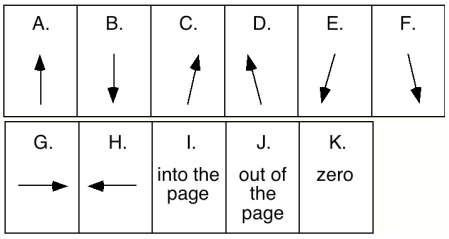
in uniform circular motion the acceleration is alwas toward the center of the circle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

in uniform circular motion the acceleration is alwas toward the center of the circle



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. a's acceleration is less because it is further away rom the center of the circle than b is

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.the direction of the acceleration stays the same, but since it is spinning faster the magnitude of the acceleration increases

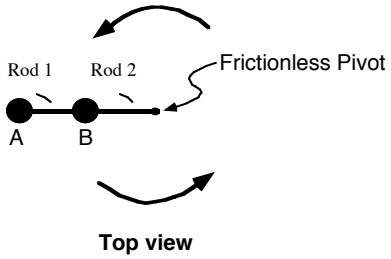
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain the net force is in the direction of the tangent of the circle

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

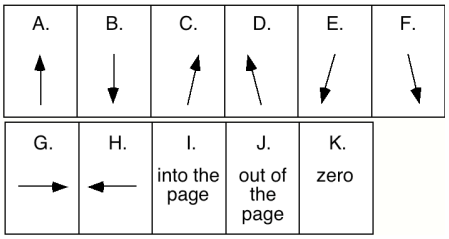
toward center, circular motion

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

circular motion toward center



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. I can't answer this question either

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. I don't know

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure C

Explain. Maybe acceleration points toward the center

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure C

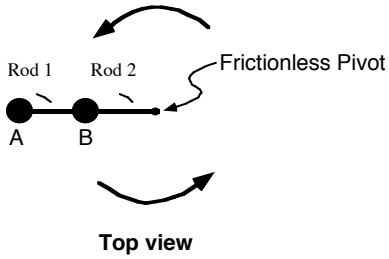
Explain I am not sure

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.



Top view

Figure F

Explain.

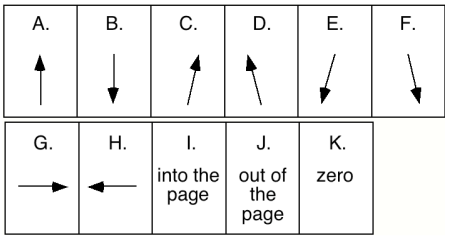
Object A has a tangential acceleration and an inward acceleration, so the over all acceleration would be pointing somewhat inward

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure F

Explain.

since it is on the same rod as A it would have the same acceleration. B has a tangential acceleration and an inward acceleration, so its net acceleration would be inward.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. both objects have the same change in velocity, but the magnitudes of each velocity differ.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. because the rod is longer it would have a larger inward component of acceleration, and thus making the force larger.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure F

Explain. A still has a tangential acceleration, but now it is bigger than before. And it has a component of acceleration inward.

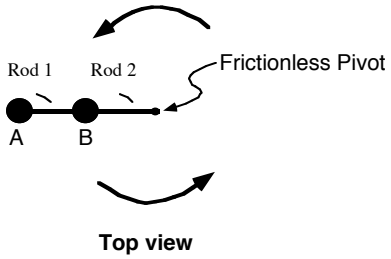
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain the direction of the net force would be in the same direction as the acceleration because F=ma and m is a scalar so it wouldn't influence the direction of the acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

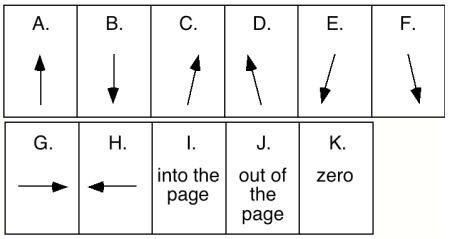
Acceleration is towards the center of the path of motion.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Acceleration is towards the center of the path of motion.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Unanswered

Explain.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.

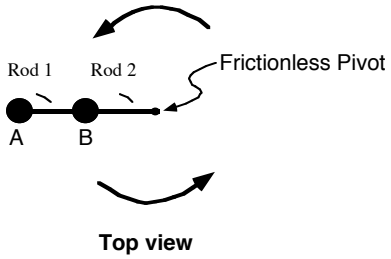
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The velocity vector it tangental to the path of motion.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

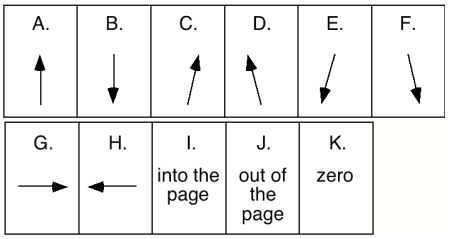
The acceleration in is the tension of the string

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

The acceleration in is the tension of the string



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is farther away from the pivot point

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. Otherwise the sting would be streching

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain. The acceleration in is the tension of the string

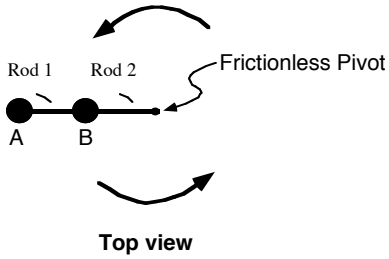
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure K

Explain The block is not moving away or towards the pivot point.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure J

Explain.

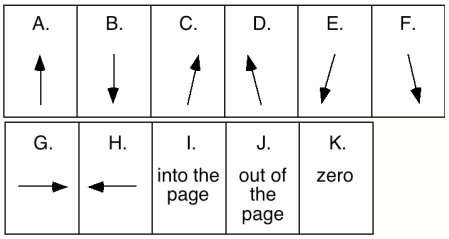
used the right hand rule

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure J

Explain.

same as 6



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. since it has to keep up position wise with b and its further away

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. cause its longer

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure J

Explain.same as 6

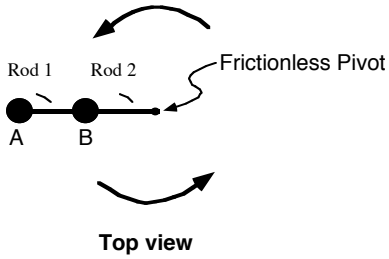
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure J

Explain same as 6

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

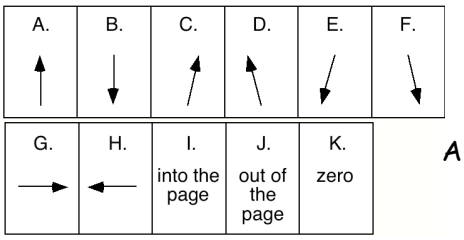
it looks like the same thing as the uniform circular motion and how the acceleration is towards the center

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same idea as above



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. this is so since the distance from the pivot is greater for than B. so yes the distance from it does matter A

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. i think so because the force caused by tension(ma) would be larger since the acceleration of A is larger

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure F

Explain.since the objects are speeding up, the change in velocity over time, which is the acceleration, would not be as towards the center, but rather more in direction of F

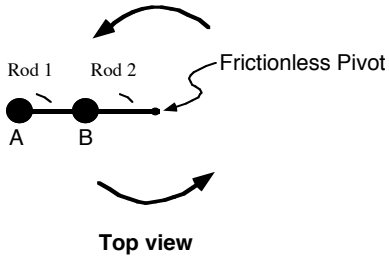
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Unanswered

Explain since F=ma, the only thing creating a direction is the acceleration factor and since the acceleration is in direction of F, the net force would follow that same direction

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

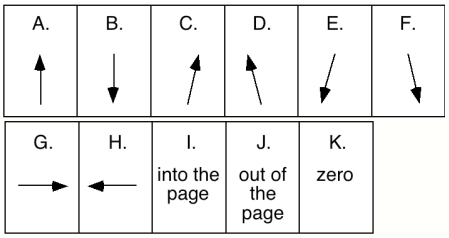
The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure I
Explain.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.
Figure I
Explain.
Attached to the same rod



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B
Explain. A has a further istance an the velocity of the outside is more than the velocity of the insie object

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2
Explain.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure F

Explain.

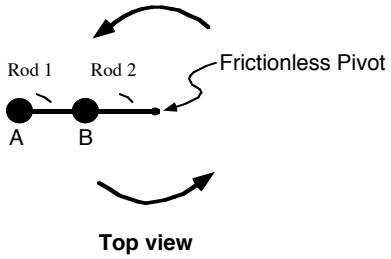
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Same irection as acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

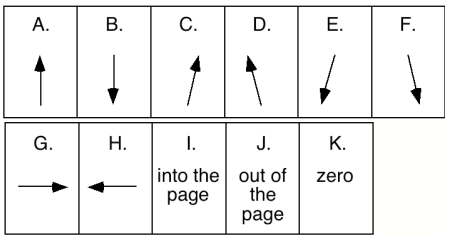
the acceleration of an object moving in a circle has centripital acceleration toward the center.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

it is the same as A



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is on the outside and is moving faster

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. the object farther out has greater speed and there for more force trying to pull it out of the orbit

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.there is still some centripital acceleration, but also some acceleration in the direction of motion.

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain that is the direction in which the acceleration on the orbit is taking place.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

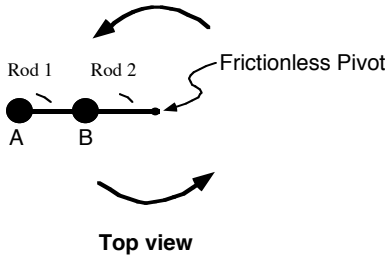
The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

If the rate is constant, then the acceleration must be perpendicular to the motion. Since it is circular motion, the acceleration must be towards the center of the circle.



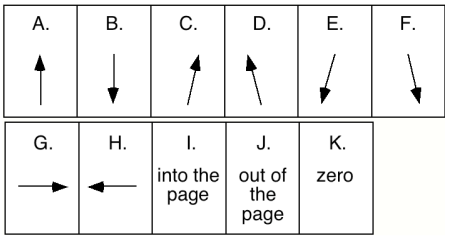
Top view

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

If the rate is constant, then the acceleration must be perpendicular to the motion. Since it is circular motion, the acceleration must be towards the center of the circle.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. The radius of motion for A is larger than it is for B. Acceleration is proportional to radius and to angular velocity.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Rod 2 must support the centrifugal force on both object A and object B. While rod 1 only supports object B.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. The acceleration must have a component toward the center of the circle, to maintain the circular motion, and a component tangential to the line to the center, so that the object will increase in tangential speed.

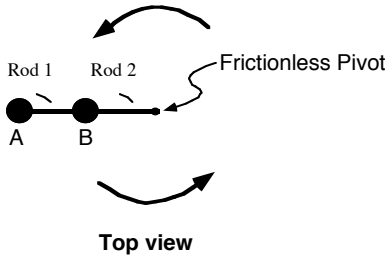
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Acceleration and net force must be in the same direction.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

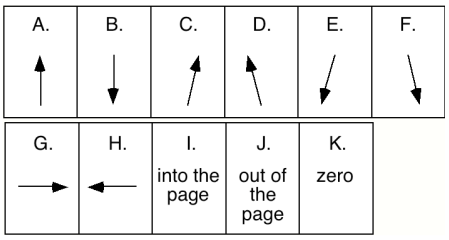
it must have centripetal acceleration, which always points towards the center

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

b must also have centripetal acceleration



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. a has to have greater acceleration to keep up with b because it is farther away from the center

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. rod 1 has more mass and more acceleration acting on it, so it will have more tension

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.now there will have to be a centripetal component and a tangential component

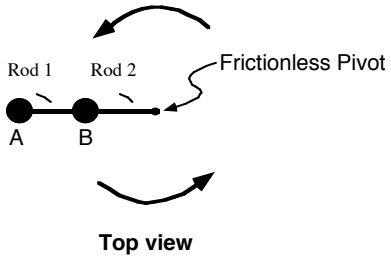
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain force must be same direction as acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

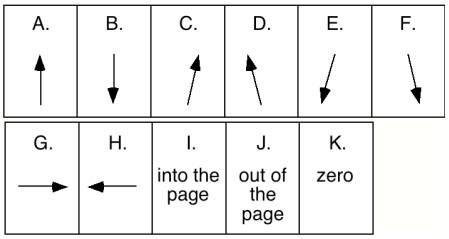
centripital acceleration in a circle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

the same reason as above



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. travels more distance in the same amount of time

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. F = mv^2/r

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.centripital acceleration points inward and the path is a circle

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain net force is in direction of acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

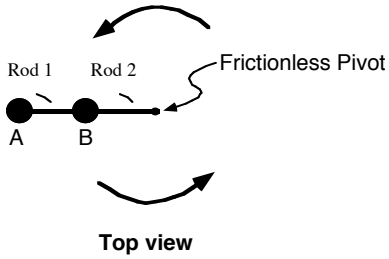
The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

The acceleration of the object is always directed inwards toward the cent of the circular motion. It is perpindicular to the velocity vector at that instant.



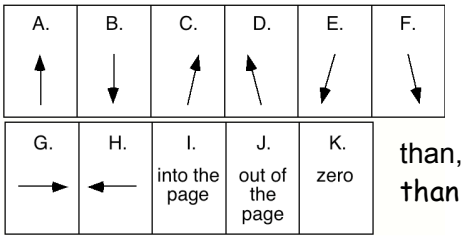
Top view

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

The acceleration would be in the same direction as the acceleration of object B, directed inward toward the center of the circle at that instant. It is perpindicular to the velocity vector at that instant.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than, B

Explain. The acceleration of object a would be greater than the accleration of object b, since it is on the outside of the circle, moving at a faster velocity therefore, it would have a faster acceleration as well.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. Since rod 1 and rod 2 are connected 'they are system' they would have the same tension.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain. The acceleration of object a is always directed inward, toward the center of the cirle in uniform circle motion. It is perpindicular to the velocity vector at that instant.

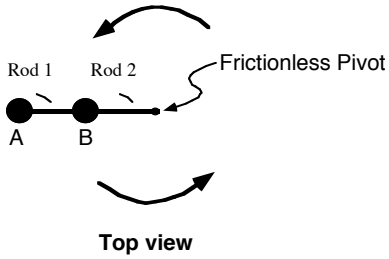
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain At the instant shown, the object is moving faster and faster in the clockwise direction, so at that instant the net force would be directen straight downward, in the direction of the velocity vector.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

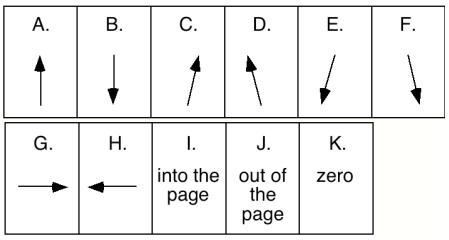
It is circular motion therefore its acceleratio is perpendicualr to velocity

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure B

Explain.

Same as A.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A has a greater velocity than B.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Rod 2 has the forces of both masses, whereas Rod 1 has one mass to hold.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.It is still uniform circular motion.

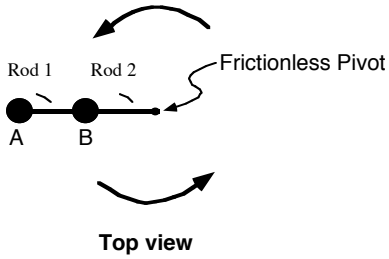
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain It must be accelerated in the direction of the net force.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

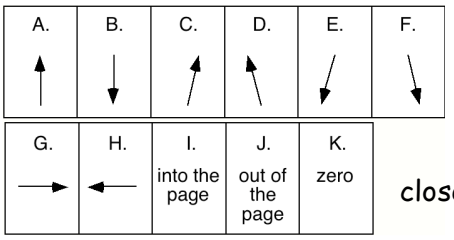
Because A is revolving in a circular path, the acceleration must be towards the center due to centripetal acceleration.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Because B is revolving in a circular path, the acceleration must be towards the center due to centripetal acceleration.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. I believe B's accleration is greater than A's because it's closer to the center.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Tension in 2 must be greater because it is supporting the mass of A and B

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain. A is still revolving in a circle, so the acceleration is still towards the center due to centripetal acceleration

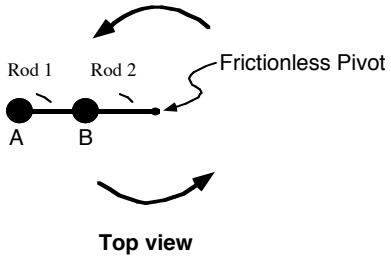
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain The net force is always in the direction of the acceleration when you're dealing with centripetal acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

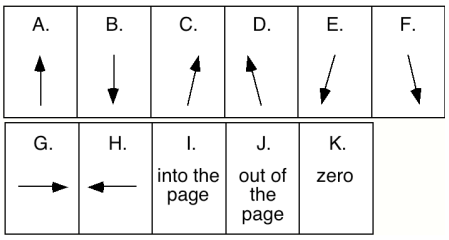
If this is uniform circular motion then the object acclerates towards the center.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

If this is unifrom circular motion then the object accelerates towards the center.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. The larger the radius the smaller the magnitude of acceleration.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Object B is putting more force on rod 2 than object A is putting on rod 1, therefore the resulting tension is greater in rod 2 than rod 1.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.Now there is not uniform circular motion, but I guess that it would behave similarly.

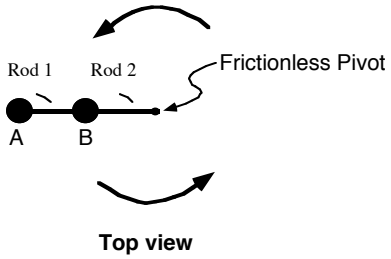
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain In order to be consistent with my response to question 15, this must be the case.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

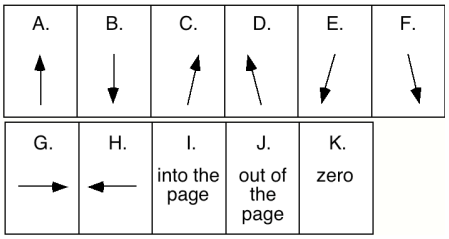
accerate toward the pivot in uniform circular motion

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same acceration



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is farther away from the pivot point, must move farther

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Acceleration magnitude is greater so the tension must also be greater

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.must have a component tangent to the direction and a component toward the pivot point

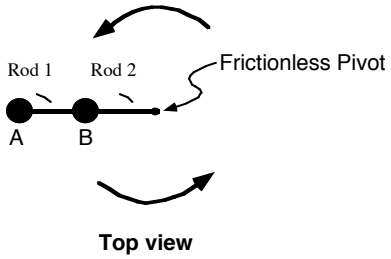
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain must be in the direction of motion, tangent to the circular path

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

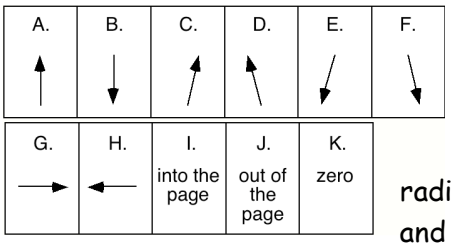
this is uniform circular motion; therefore, the acceleration is towards the center or pivot point.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

B is on the same rod as A, so the acceleration is the same as A.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is farther away from the pivot point, which means it's radius is larger and therefore it's speed is higher than B (v = 2*pi*r/T) and therfore it's acceleration is larger (a = v^2/r)

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. There is more force on rod 1 because A is being accelerated more than rod 2.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.speed does not effect the direction of acceleration; therefore, like in the beginning, the acceleration is towards the center.

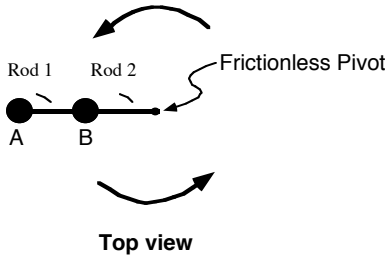
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain net force is in the direction of the acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure K

Explain.

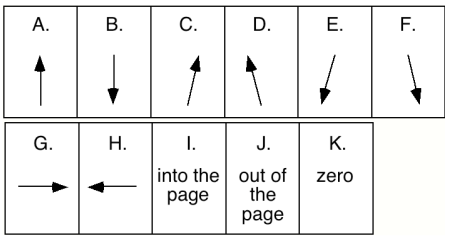
since the object 'spins at a constant rate' the velocity is constant which means that the acceleration is zero.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure K

Explain.

since the object spins at a constant rate the acceleration must be constant.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. They are both zero so they have the same magnitude.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. since tension is roughly the same thing as force and f=ma and the acceleration is zero, then the tension or force must be zero.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure B

Explain.the direction of acceleration when the object is speeding up is the same as the direction of the velocity and the velocity is a 'straight line 'in the current direction.

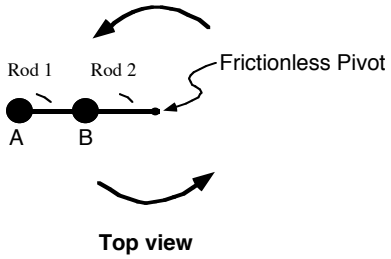
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain since force and acceleration are vectors and mass is a scalar, the force has the same direction as the acceleration but just a different magnitude.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

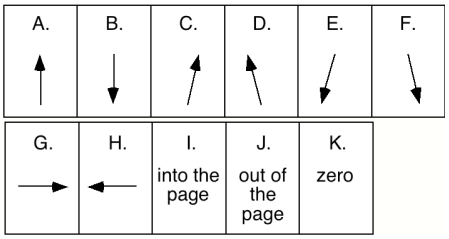
Centripital force

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

centripital force



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is further distance from center

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod 2 is closer to the center

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.centripital + acceleration

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

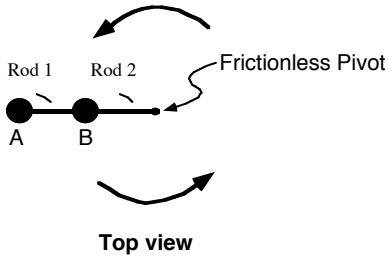
Explain f = ma

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.



Top view

Figure G

Explain.

it speed along the circular track isnt changing, but velocity has a direction and magnitude and there is a cnstant change in direction when the rod is in motion, the change in direction is toward the pivot point

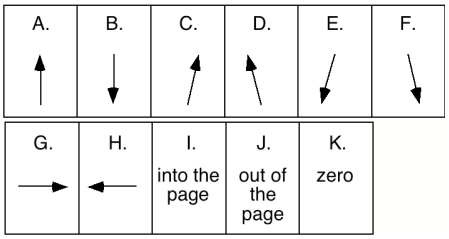
Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same as a

Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B



Explain. the radius of a is larger, when rotated at a certain amount, a would have a greater change in direction

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. there is more acceleration on a therefore the force is greater

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure F

Explain.the direction does not point towatd the orgin because the circular speed is changing, but the direction is also changing so the direction of the acceleration is not exactly tangent to the path.

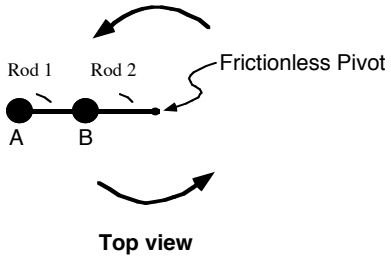
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain force acts at the same direction as the acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure B

Explain.

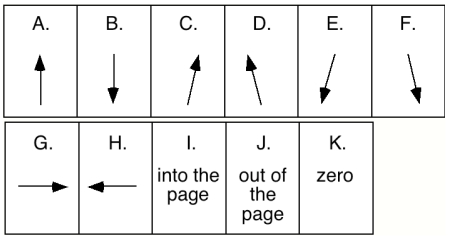
Initially, gravity is pulling the object down.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure B

Explain.

Initially, gravity is pulling the object down.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. Because they are both being pulled down by gravity.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. They are equal because they both have no tension when the objects are dropped initially.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.If object A is spinning faster and faster, then there will be a centripital acceleration increasing.

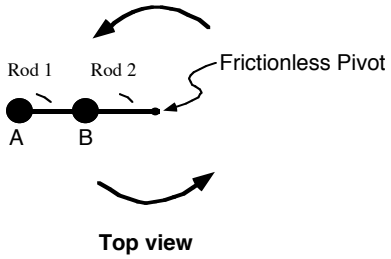
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain It is the same as the direction of acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

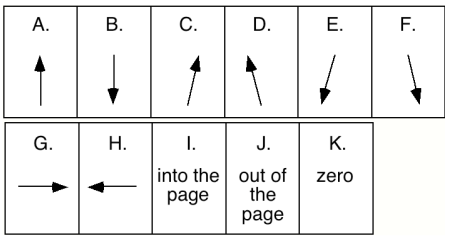
The acceleration is to the pivot because A is performing a uniform circular motion.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure H

Explain.

The acceleration is to the pivot because B is performing a uniform circular motion.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is moving in a circle with greater radius than B.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. T2 - |T1| = Tension on BT1 = T2 - Tension on B < T2

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. A is spinning faster and faster.

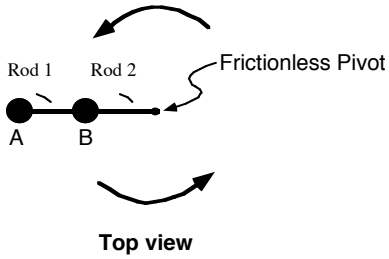
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain b is spinning faster and faster.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

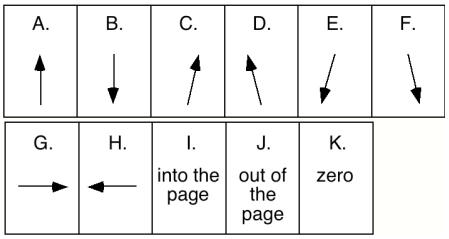
cause it is in a circular motion...

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same reason...



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. cause A's velocity is always greater than B...

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.it is going faster and faster... so instead of the a toward the center.. there is another one tangent to the circle...so the sum of two is best shown in figure F

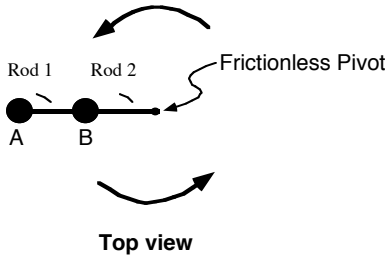
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain same reason...

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

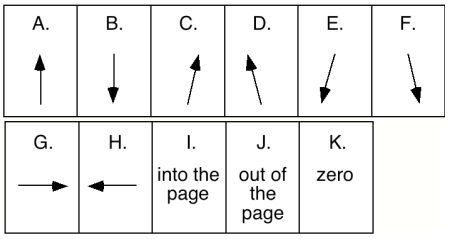
For centripital motion the acceleration always points towards the middle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as above



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. The radius is larger

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Rod two has to support both forces of A and B

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.IT still has to point towards the middle

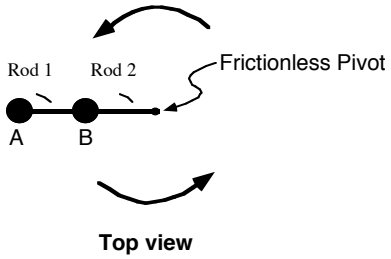
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain F=ma and m is scaler where a is a vector so net froce will be in same direction

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

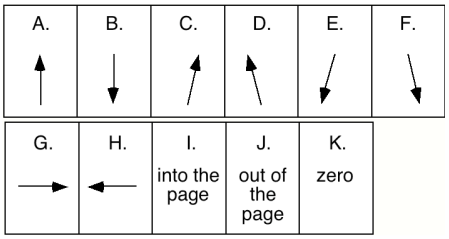
Centripetal Motion means inward acceleration

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as above



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is moving with a greater velocity over, and it moves over the same time period, so it must have more acceleration.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Since A has more acceleration, and both masses are the same, the tension in rod 1 must be greater.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.It's the only way I can think of to compensate for an accelerating centripetal motion. The acceleration can't be pointing inward, but must be directed towards the motion.

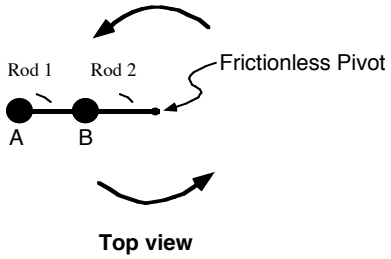
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain I'm probably wrong, but since I choose F in the previous, net force is = mass * acceleration, so I'm going to stick with my previous answer's direction.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

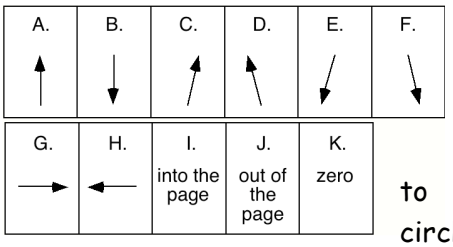
Acceleration direction is perpendicular to the velocity's direction

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Its acceleration direction is perpendicular to its velocity direction



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. Because A is farther away from the pivot then B so it has to travel a larger distance to reach the same point as B along the circle so its acceleration is larger (radius is bigger)

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Because A has a greater acceleration and since F=ma then tension is greater where the acceleration is greater which is for rod 1

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.toward center of circle

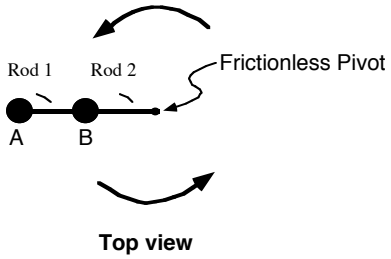
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain same direction as acceleration since F=ma

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

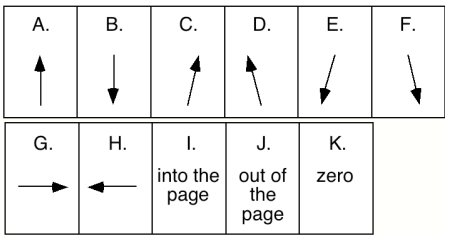
For constant speed acceleration must be canaled by the change in direction.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as question 6



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. Because A has to travel a farther distance int he same amount of time.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. It is the comination of the two forces.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.It must be greater then the change in direction.

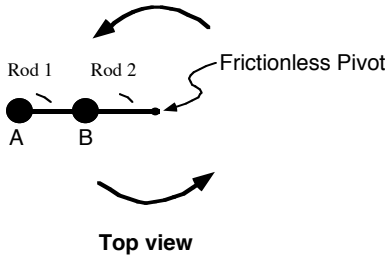
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain If you stop it the force would be tangent to that point.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure K

Explain.

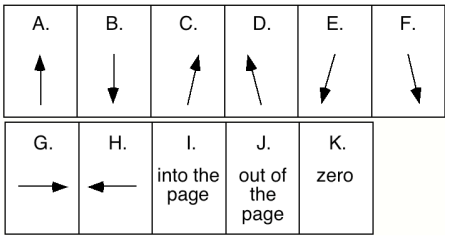
with constant speed no acceleration

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

constant speed so be no acceleration



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. because they are both equal to zero

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. shouldn't they both be equal to zero

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.because acceleration is perpendicular to the velocity

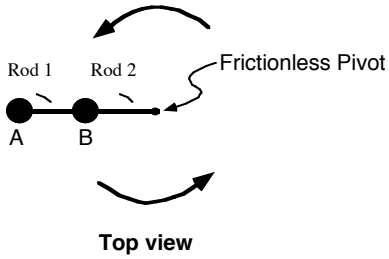
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain because in a free-body diagram that, the only force holding it in is the tensional force

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

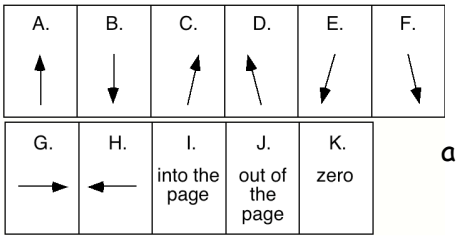
acceleration is towards the center because they move in a circle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same as six



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. same because both turn same number of degrees to make a circle

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. no opposite force on tension 2

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.some component perpendicular to keep in circle, other parallel to path to spped it up

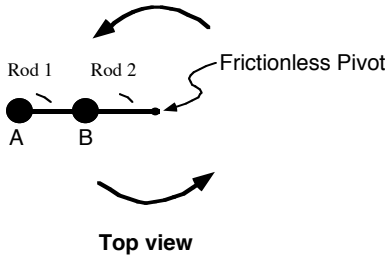
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain net force must be in direction as acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

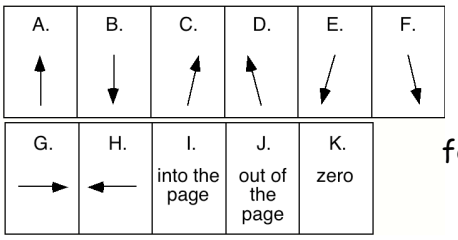
Since the object is moving at a constant speed in a circle the acceleration points in toward the center.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as for object A becuase they are attached.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. This is because the change in velocity over time is greater for A, due to the fact it must travel for a larger arc length.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. This is because the acceleration for A is greater and therefore the force by the rod must be greater.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. This results from adding the acceration vector pointing in and the acceleration vector tangent to the path.

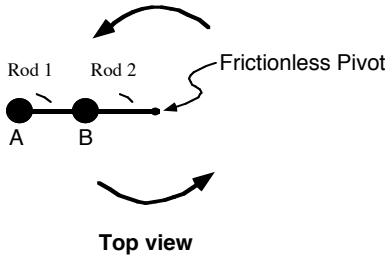
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The net force should be in the same direction as the acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

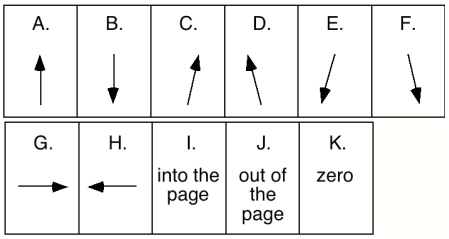
the accelleration is to the center for circular motion.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

the accelleration is to the center for circular motion.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. centripital acceleration is velocity squared divided by radius so since A has a larger radius

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. tension is mass times acceleration = mass x velocity squared divided by radius. Higher accelleration = higher force.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.speed does not determine the direction.

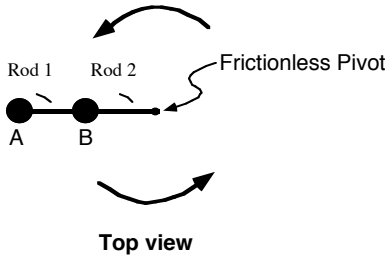
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain it has to be in the same direction as the accelleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

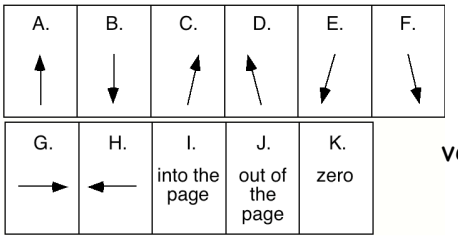
spins in a circle so the accel is tward the center

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same as A



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is farther away from the center then B so it's change in vel is greater over the same change in time (d=r*t)

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod 2 has tension from the center and from rod 1.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.accel is in same direction, but is gradually getting bigger

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain the net force is tangent to the circle at the time.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

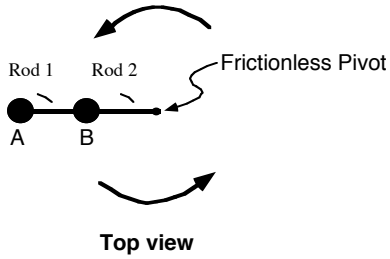
The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

The only acceleration acting on object A is centripetal, and that always points towards the center, perpendicular to the velocity (in uniform circular motion as seen in the picture).



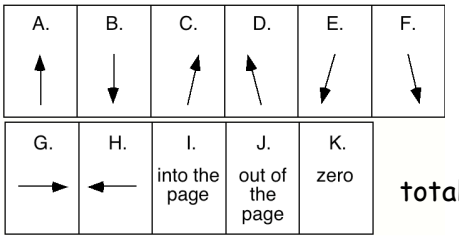
Top view

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

As with object B, only the centripetal acceleration is present, which points perpendicular to the velocity.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. The centripetal acceleration is the same throughout the system in order to keep the system rotating total

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. There is two components of acceleration acting on object A, tangential and centripetal, which create a net acceleration in the direction chosen.

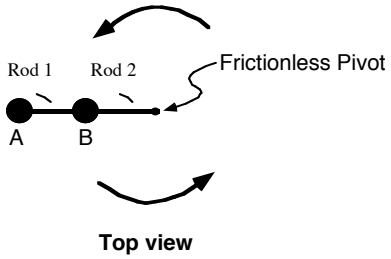
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The net force is in the same direction as the net acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

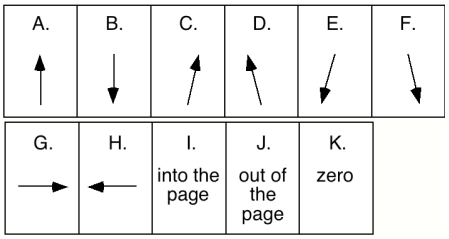
The acceleration points towards the center of the circle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as above



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. Object A is further from the center than object B so i has more acceleration

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. The tension should be the same

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain. Towards center

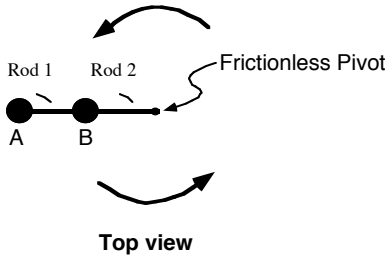
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain The net force is always in the same direction as the acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

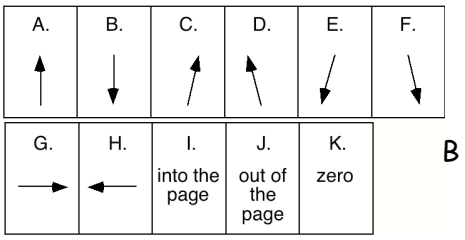
Centripital acceleration points to the middle of the circle or makes a 90 degree angle with the velocity

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

for the same reason as above



B

Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. they will both make 1 rev in the same amount of time but is closer to the center so the circumference it will cover or the distance it will cover will be less so A will have a greater velocity

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. I really don't know how the tensions will compare i would think that the tension in rod 2 is greater because it has to hold both A, B, and rod 1 in the path of motion and that is just my guess

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.i really don't know it was mainly a guess and i decided that it was F because it was the direction of the motion

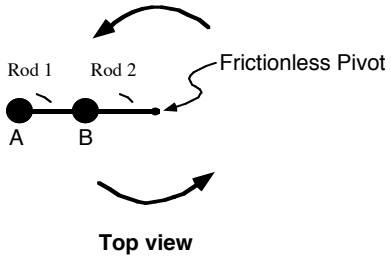
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain the net force is in the same direction as the acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

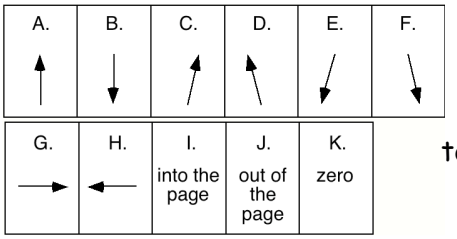
The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure K
Explain.
Constant speed is equal to 0 acceleration.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.
Figure K
Explain.
Constant speed is equal to 0 acceleration.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B
Explain. Both A and B are moving in constant speed which is equal to 0, therefore, the acceleration is the same.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2
Explain. Tension 1 only has mass A, but tension 2 has both mass A and B.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.
Figure G

Explain. The acceleration is toward the center.

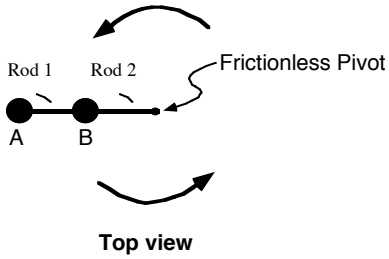
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain Since there are two different motions acting on the system,

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

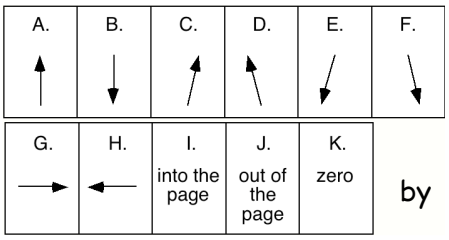
A is experiencing uniform circular motion, therefore, the acceleration is pointing towards the pivot.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

B is experiencing uniform circular motion, therefore the acceleration is pointing towards the pivot.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. Acceleration is defined as the change in velocity divided by time. The change in A's velocity (at least in terms of the change in direction) is greater than the change of B's velocity, therefore, the acceleration of A is greater.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. The tension in rod results from the acceleration on object A. Because A's accelration is the greatest, so is the tension in rod 1.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.now the object is not only accelerating towards the pivot, but also in the direction of the tangental velocity, therefore the direction of acceleration points inward (towards the pivot) and downward (in the direction of the tangental velocity)

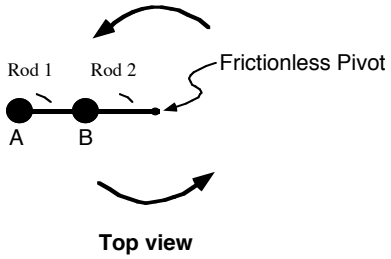
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain there is force causing the object to both speed up and have acceleration towards the pivot, therefore the combinatin of these two forces points both in the direction of the velocity at that instant and towards the pivot.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

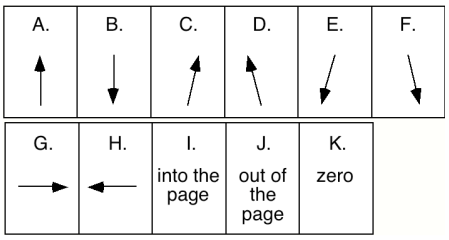
uniform circular motion the acceleration is always pointed toward the center

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

uniform circular motion the acceleration is always pointed toward the center



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. because they are both travleing at a constant rate

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. because 1 is traveling at a greater veolcity than 2.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.because uniform circulare motion the acceleration is towards the center

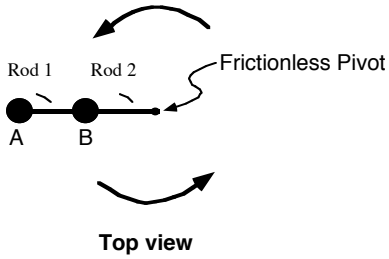
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain because that is the direction of the veolcity and the net force produces the veocity

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

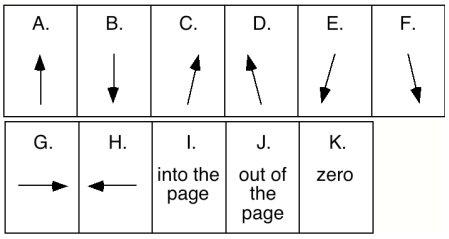
acceleration in circular motion is always towards the center of the circle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

it is the same as A, towards the center



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A has more distance to cover and is therefore going at a greater velocity, the direction of which is constantly changing. therefore, it has a greater acceleration.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod two has the weight of both A and B on it, therefore it has more tension.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.it doesn't matter if it's velocity is increasing, the acceleration should still be towards the center of the circle.

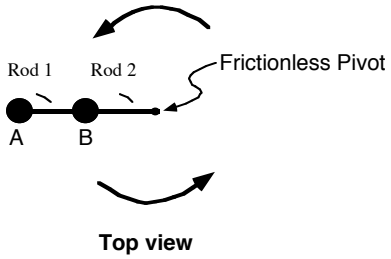
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain well, f=ma, and mass is a scalar quantity while acceleratino is a vector, therefore the direction of the force must be the same as the acceleration, it just has a different magnitude.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

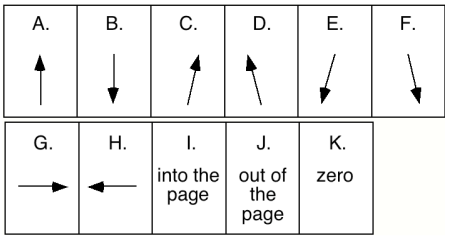
force alwyas toward the center of rotational stuff

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

force alwyas toward the center of rotational stuff



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A has a rod with a great radius

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. A has a greater tendancy to move away, so it needs more force to keep it on the track

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.a combination of acceleration in tangent to the curve and the acceleration toward the center

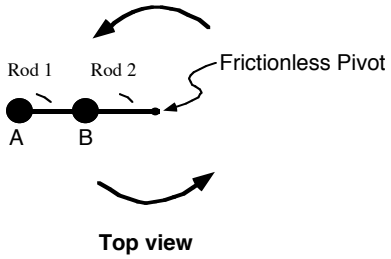
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain a combination of force in tangent to the curve and the force toward the center

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

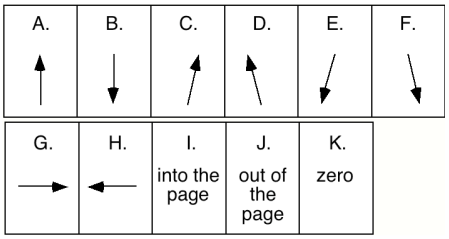
That's the way it's going at that time.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure H

Explain.

That's the way it's going at that time



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. If the are going the same, then they should be the same magnitude

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. It has to pull both so it must be bigger

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure H

Explain.It's the same but going the other way now.

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure H

Explain That's te irection it's zaccelerating in./

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

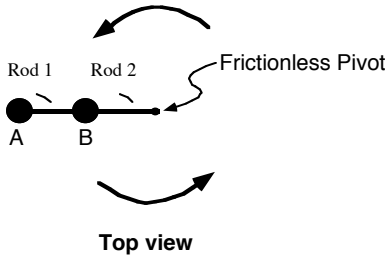
The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

this is an example of uniform circular motion. the acceleration of any object travelling in such a way is directly inward toward the center point about which the object moves.



Top view

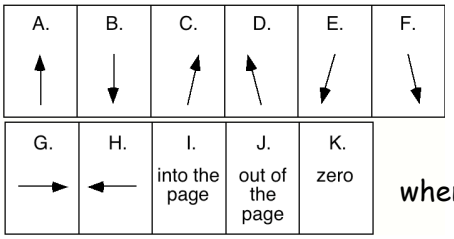
Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same reasoning as in part 6

Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B



Explain. acceleration in uniform circular motion is given as the product of radius. thus, a greater radius merits a greater product when the two objects have the same rotational period.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod 1 bears the tension created by just one of the two balls. although this ball creates more tension in the system than the other ball alone, it does not create a tension greater than the sum of itself plus the other ball while both acting on rod 2.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.now in non-uniform circular motion, the acceleration of the ball must be at some angle between 0 and 90 degrees with the line from the ball to the enter of rotation. thus, a component of acceleration in the direction of instantaneous velocity exists.

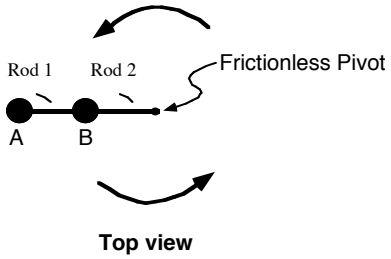
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain in the equation F=ma, force (F) and acceleration (a) must be in the same direction when speaking in terms of net value. this is the case here.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

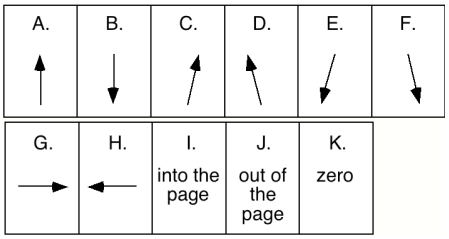
Acceleration is towards the center of the circle.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Acceleration is towards the center of the circle.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is further from the center of the circle, so it needs more acceleration to remain at the constant speed.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. The force on A is greater.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain. The acceleration must be towards the center of the circle and in the direction the object is spinning.

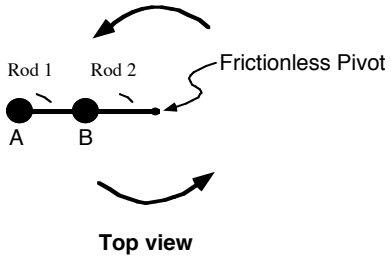
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain The dirction of the force is the same as the direction of acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

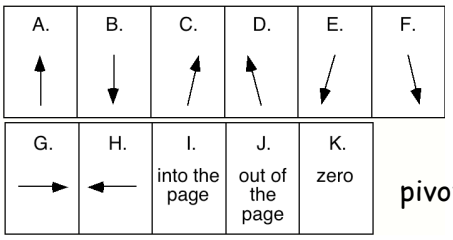
there is no rotational acceleration... the centripedal acceleration is pointing 'twards the center'

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

there is no rotational acceleration... the centripedal acceleration is pointing 'twards the center'



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. Given equal masses, the further a body gets from the pivot, the more acceleration needed to accelerate it.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. if we set ourselvs in the refference frame w.r.t. A (or B) then we see a set of rods being pulled by A and B with forces equal to the cenrapedal acceleration of each respectivly. from this standpoint it seems clear that the tensions balance out, thus being equal

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure J

Explain. By the right hand rule of rotational acceleration

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure J

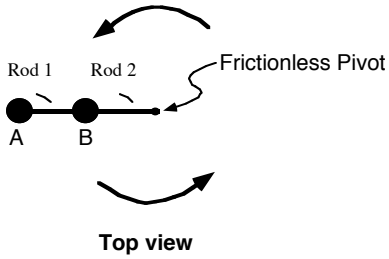
Explain By Newton's second law, force is a mere scalar mulitple (and a positive one at that) of acceleration, therefore has the same direction as acceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.



Top view

Figure G

Explain.

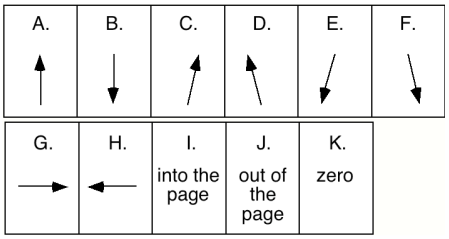
when the velocity is constant, there must be a force holding the objects in a circular path. Subtracting the velocity vectors for two points close to the position gives the acceleration vector.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same as above- It has a greater radius but the direction of the acceleration (the velocity change vectors) is the same.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. If v=a/r then vr is the acceleration. The greater the radius, the greater the acceleration.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. If th above answers are correct, the two balls, to be held in position, must be exerting equal and opposite force on eachother. Since there is a net acceleration inward, the tension in 1 must be greater. ???

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure C

Explain. Subtracted the velocity vectors assuming increasing velocity.

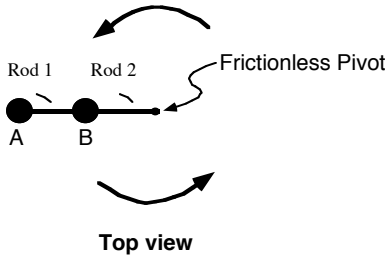
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure C

Explain The net force must be in the direction of the acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

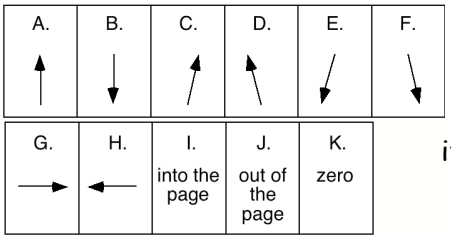
since it's rotating with the pivot point

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

the same reason as above



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. since it's further away from the pivot point which causes it to have more acceleration

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. the same reason as above

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure B

Explain.since it gets faster and faster, which means that the velocity and the acceleration vectors are in the same direction.

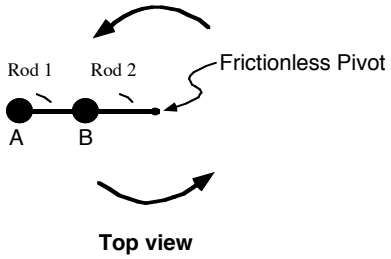
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain it's a ratational force

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

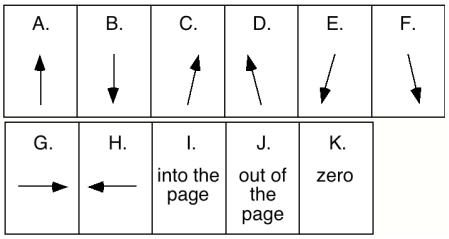
It is toward to the center.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

It is toward to the center.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A has the greater radius.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. tension 1 = tension 1 + tension 2

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure J

Explain.the right hand law.centripetal acceleration works.

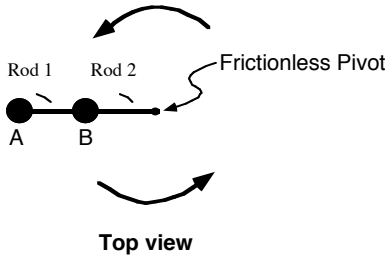
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain The centripetal force works.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

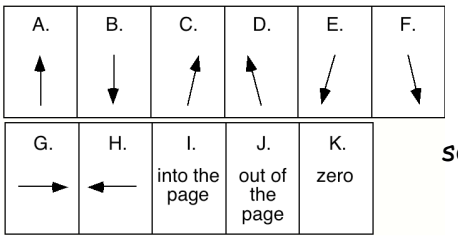
Uniform Circular Motion says it will be pointing to the center of the circle.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Same rea soning as above.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. Object A has to cover more distance than object B does so it must be accelerating faster.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. Rod 1 has to hold both objects A and B, while Rod 2 only has to hold one of them.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.It will be between the arrow pointing at the center and the arrow pointing in the direction the object is moving because it has to account both for uniform circular motion and speed acceleration.

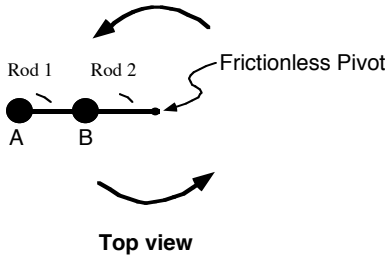
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain There is a tension force pulling to the right and gravity pulling down.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

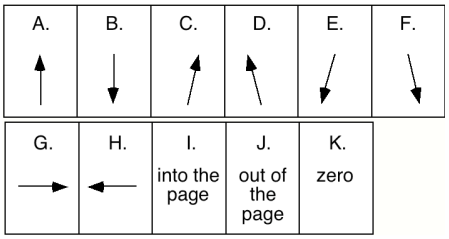
perpendicular to the tangent

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. b takes a sharper corner

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. it is farter from the centripital force

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.now there is also a component of acceleration that is tangent

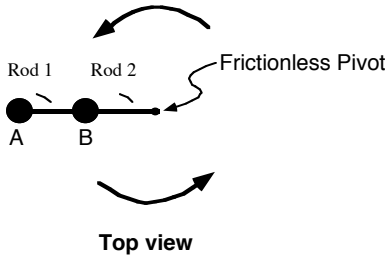
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain same

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

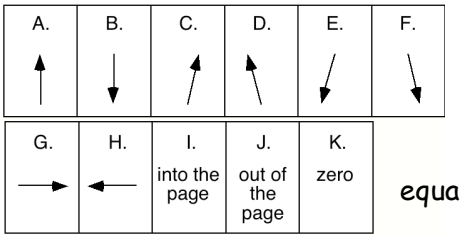
with uniform circular motion, acceleration is always towards the center of the circle.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same reason as before



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. b has to change direction more than a does in a given distance, but they also are going at different velocities, so they out, in a given time interval they both go over the same theta.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. there is more circular force on rod 1 then there is on rod 2

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.it is not only accelerating toward the center of the circle but also in the direction of motion.

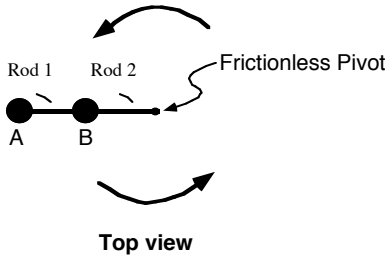
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure F

Explain net force on the object is in the direction of motion

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure K

Explain.

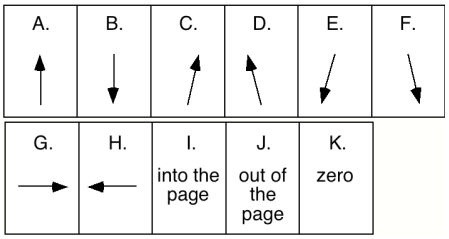
constant rate means there's no acceleration.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure K

Explain.

constant rate means there's no acceleration.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. both has a zero acceleration.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.this is uniform circular motion, so acceleration is always pointing to the center of a circle.

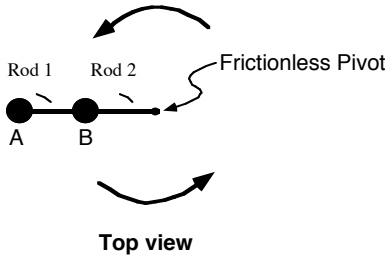
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain acceleration is the same as the net force.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure H

Explain.

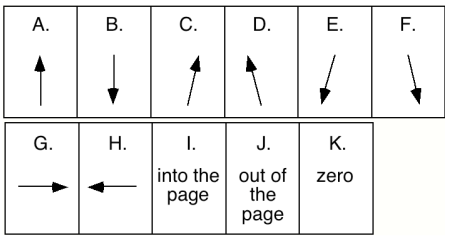
moving in a circular direction, the acceleration is to the middle of the circle

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

also moving in a circle



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. b moves through a smaller circle thus a greater change in velocity

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. rod two, supports twice as much mass

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.circular motion

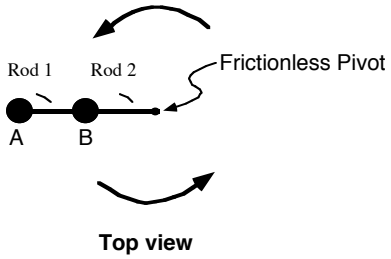
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure H

Explain must be in same direction as accceleration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

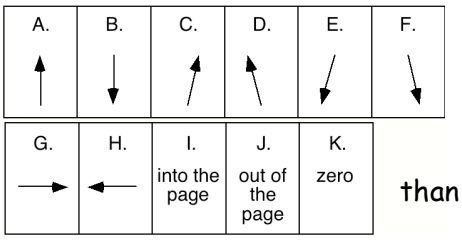
Object A was moving in a circular track, so object A needed a acceleration toward the pivot.

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Object B was also moving in a circular track, so object B also needed a acceleration toward the pivot.



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A less than B

Explain. During the same time, object A travled a longer distance than object B did.

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 equal to tension 2

Explain. Based on the Newton's Third Law, the tension in rod 1 must be the same as the tension in rod 2.

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.Object A was moving in a circular track, so object A needed a acceleration toward the pivot.

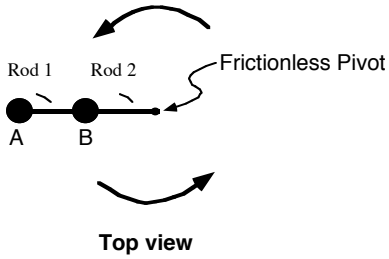
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure G

Explain Since F=ma and a is a vector value, so the net force must have the same direction of the acceleration.

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

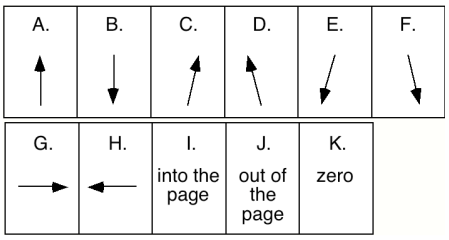
Acceleration is always pointing to the center in uniform circular motion

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure A

Explain.

Always points to center in uniform circular motion



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A equal to B

Explain. spinning at a constant rate

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. less mass

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure J

Explain.Right hand rule

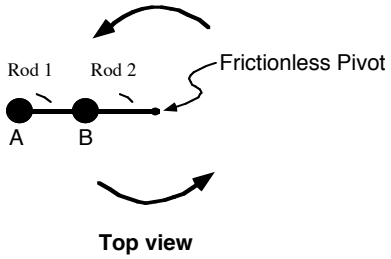
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure J

Explain right hand rule

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

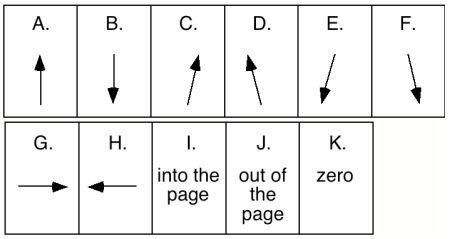
acceleration always points in the direction of center point

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

same, accelration always towards center



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. A is longer

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 greater than tension 2

Explain. because the central pedal point in relation to the side of the perameter with respect to weight is determined in this manor

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure G

Explain.acceleration still towards center point

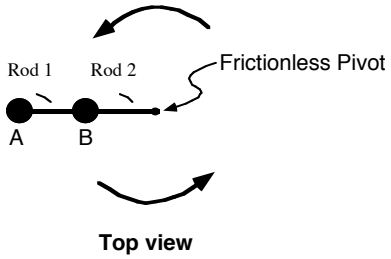
Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure A

Explain net force always towards accelration

END OF RESPONSE

Two identical objects A and B are attached to two massless, rigid rods as shown. The system is attached to a frictionless pivot.

The system spins at a constant rate.



Top view

Q5. Select the arrow that best represents the direction of the acceleration of object A at the instant shown.

Figure G

Explain.

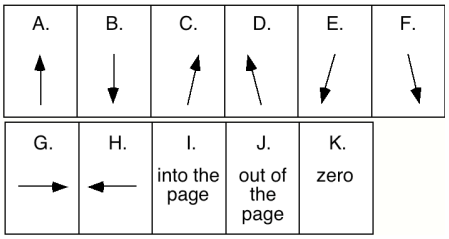
Radial acceleration is always inward

Q7. Select the arrow that best represents the direction of the acceleration of object B at the instant shown.

Figure G

Explain.

Radial acceleration is always inward



Q9. Is the magnitude of the acceleration of object A greater than, less than, or equal to the magnitude of the acceleration of object B? A greater than B

Explain. The acceleration of a is larger because it is pivoting on a longer swing arm

Q11. Is the tension in rod 1 greater than, less than, or equal to the tension in rod 2? Tension 1 less than tension 2

Explain. Tension 2 has force of both balls, tension 1 has only ball a

The system in the previous problem is made to spin faster and faster.

Q13. Select the arrow that best represents the direction of the acceleration of object A at the instant shown. Figure F

Explain.Radial acceleration +tangential acceleration

Q15. Select the arrow at right that best represents the direction of the net force on object A at the instant shown. Figure B

Explain raidal acceleration is negated by normal force from rod, thus there is only the force from tangential acceleration

END OF RESPONSE