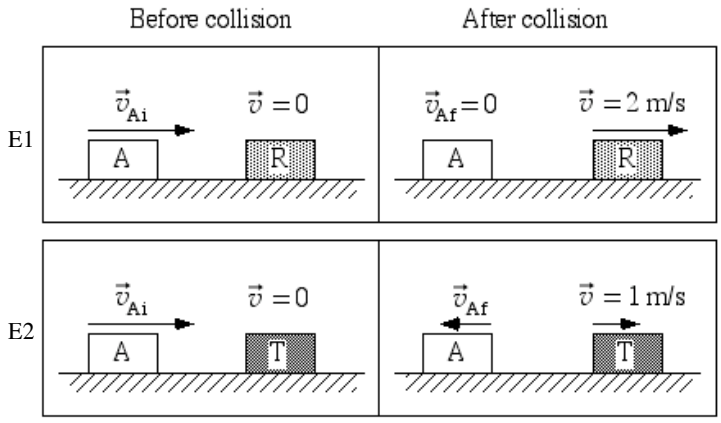
I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. The momentum for glider A will change more than for glider T because it began moving east and changed direction completely, T just began motion.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

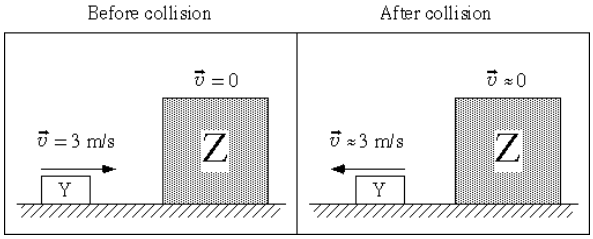
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. Glider A takes some of the momentum in the second experiment so not all of the momentum is converted to glider T. In experiment 1, all of the momentum is transferred to glider R.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. Glider T must be greater in mass than glider R because it doesnt have all of the momentum transferred to it, but it must have a mass less then 6kg or glider A would not be able to transfer any of its momentum to glider T.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. momentum= mass x velocity. And glider Z has a final velocity very nearly equal to zero. Therefore, its final momentum will be ery nearly equal to zero.

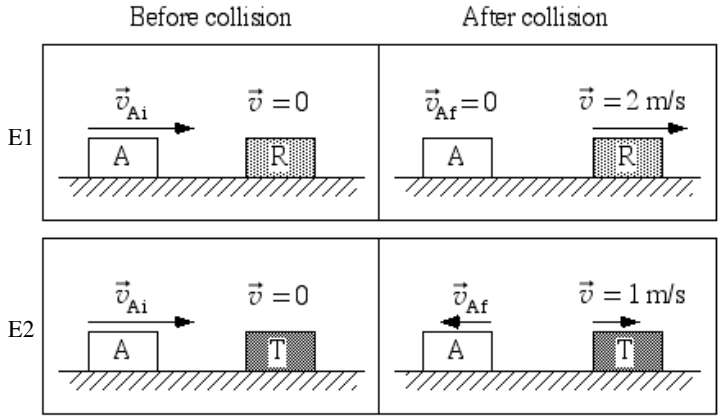
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. By the law of conservation of momentum, the initial momentum is equal to the final momentum and both initial momentums are the same in each experiment.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

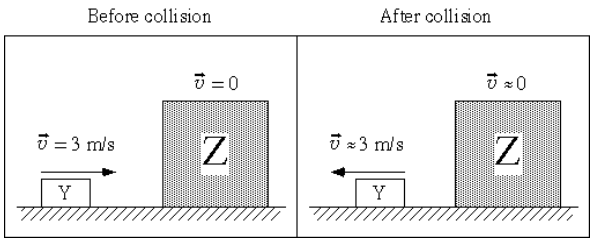
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. By the law of conservation of momentum.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? $mT > 6$ kg

Explain. the mass has to be greater than six because the momentum must be greater than six.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. By the law of conservation of momentum

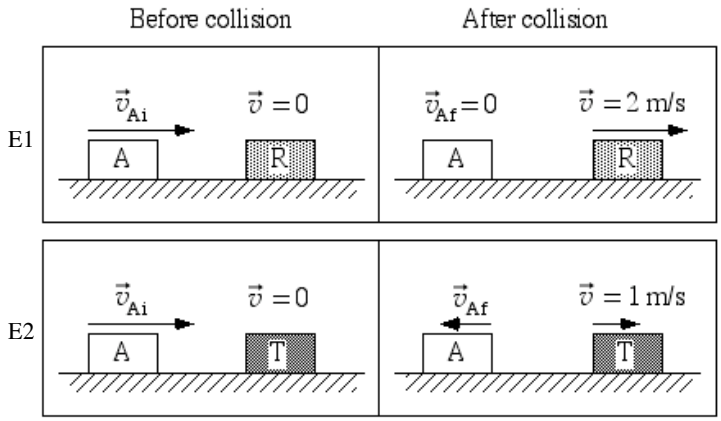
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Momentum is conserved. Changes must equal zero, hence their magnitudes must be equal.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

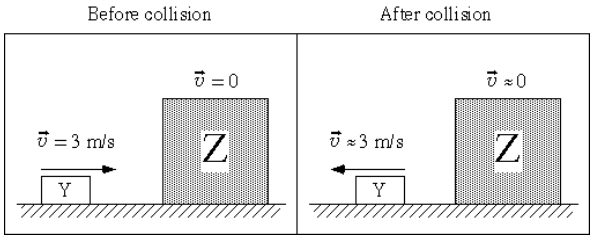
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. Since the change on momentum of glider A was greater in part 21 than in part1, the change in magnitude of glider T must be greater that that of glider R.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. Gliders A and R have the same mass because all of A'a momentum is transfered to glider R, and the final speed of R is equal to the initial speed of A. Since P=mv, it is simple to deduce that their velocities are identical, and to figure that the mass of A = mass of R = 3kg. So P of A = ^kg.m/s. After collision, since A reverses direction, it;s Change of P is greater than 6kg*m/s. So the change of P for T must also be greater than 6. Since it moves at 1m/s, it's Pfinal must be greater than 6.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. Change in P must be the same for both since P is conserved. Since Y has P= 3 initially, and P=-3 after, its change in P = 6. therefore Z has the same DeltaP.

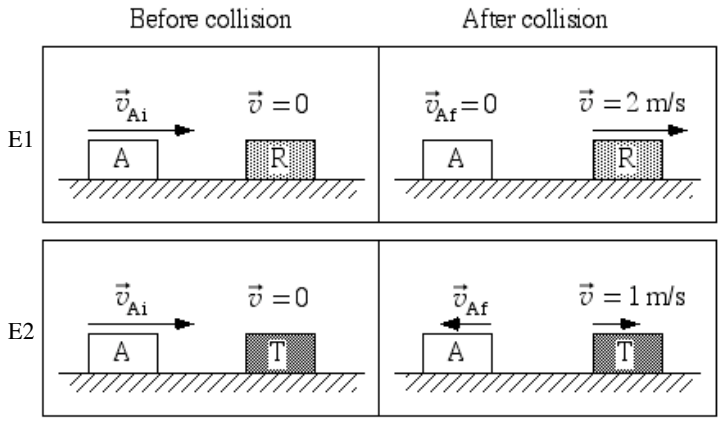
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. The change is momentum of A is greater than the change in momentum of T because glider A goes back the other direction so the change is greater.

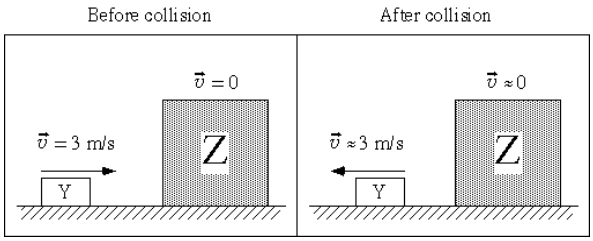
Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. The magnitude of R is greater than the magnitude of T because in the first experiment mvi=mv1 and in the second experiment the momentum of the total system is the momentum of A plus the momentum of T which equal the initial momentum of the system.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? unanswered
Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**
Explain. It is very nearly 0kg*m/s because

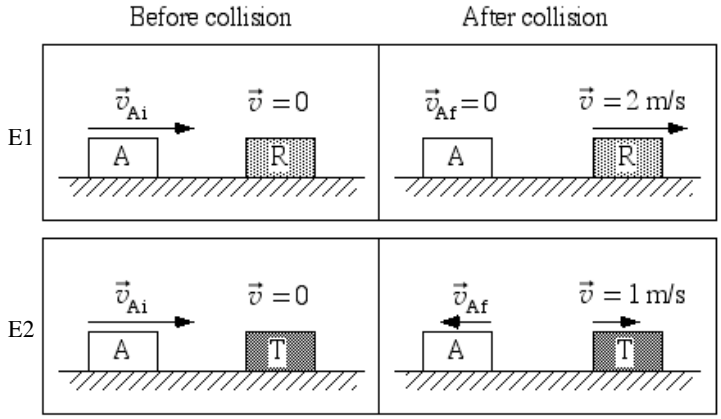
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. Because glider A is not at rest initially, while glider T is sitting at rest initially.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

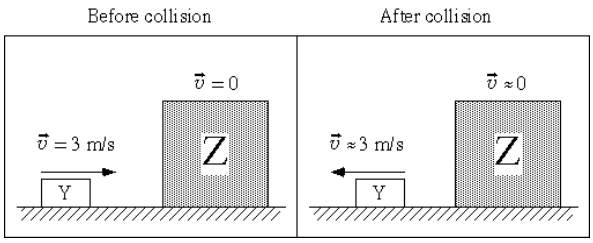
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. It's less than because the mass of glider R is less than glider T.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. Because in experiment 1, glider R is sitting at rest initially and glider A is sitting at rest after the collision, while in experiment 2, glider A is moving before and after the collision.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. Because momentum is equal to the velocity multiplied by the mass, if it's close to zero, then the momentum will be very close to zero also.

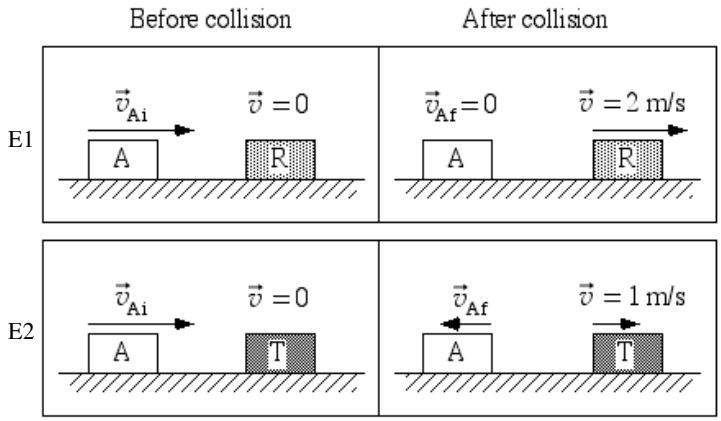
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. The system must have the same momentum since there was no net force. So a change in glider A's momentum must be the same in magnitude to glider T's.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

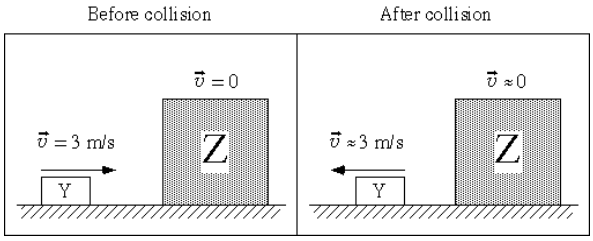
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. The change in magnitude of A is less when it hits glider R so the change in R must be less than when it hits T.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. momentum from A is 6 N*S, which is determined in collision with R. For the collision with T, Psys = 6 N*S = mT(1m/s) + mA(Va). We know that Va is negative so mT must be greater than 6.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. The momentum of the system must be preserved. Since momentum of Y goes from 3 N*S to almost -3 N*S, the change in momentum of Y is almost -6 N*S, so that change must be accounted for by 6 N*S increase in momentum of Z.

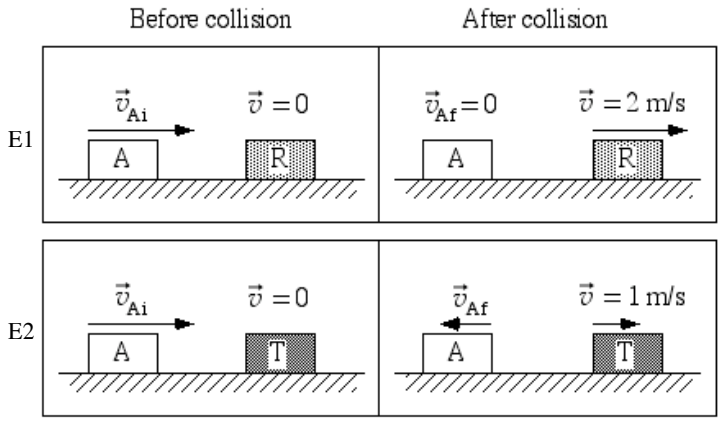
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. The initial velocity of glider A is 2m/s. The change in momontum is mv final - mv initial. The change in momentum for A is one kgm/s which is equal to that of T.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

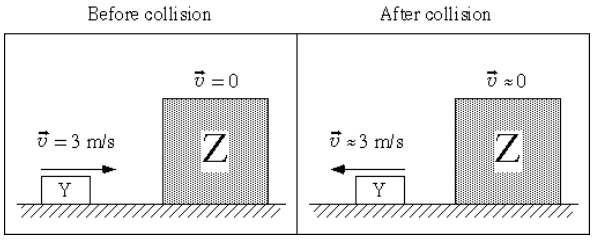
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. The momentum of the system is 6kgm/s. Glider R has all of the momentum in that system, while glider T has some of it, but in experiment 1 glider A also has some, so R must be greater than T.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. It is state that the mass is greater than 3 and must be in order for glider A to have a velocity in the opposite direction. It can not be greater six because if it was than its momentum would be 6kgm/s which is all the momentum the system has. Glider A has some momentum so glider T can not have all of it.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. since glider z barely has any velocity, nearly zero the momentum of Z is nearly zero. Momentum is mass times velocity

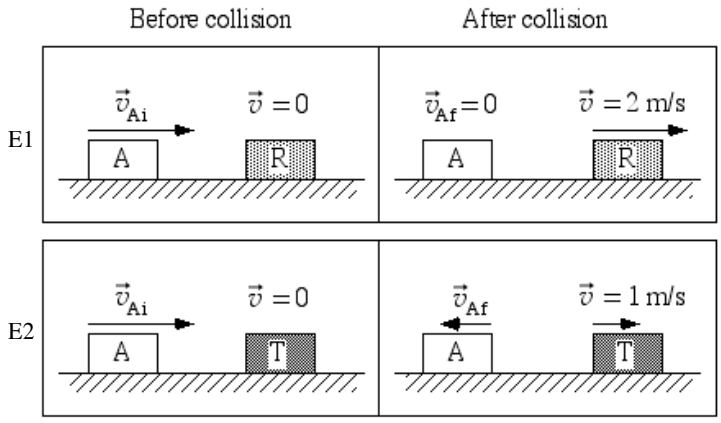
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. vector addition.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

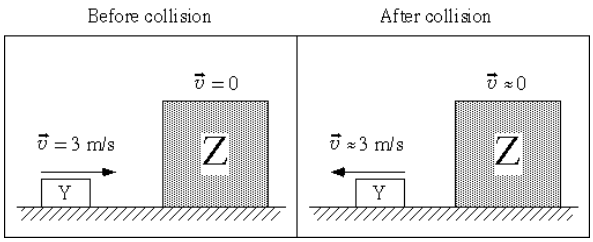
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. A takes some back from T. while R takes the whole momentum

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. it has to be greater than 6 for A to bounce back.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. most of the original momentum is transferred back to Y so there A has none.

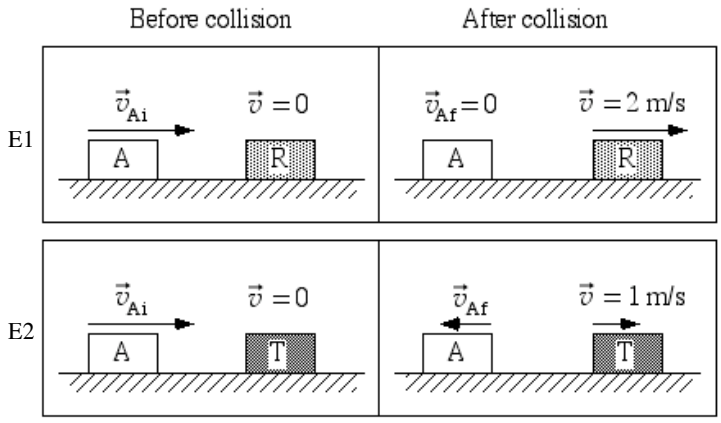
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. looking at the velocity vector you have on top of the block, the velocity vector of A is huge and became small, and momentum is MV so, yes, Change in A is bigger

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

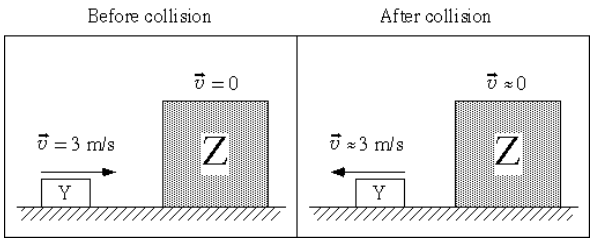
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. greater than because its faster

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. if its too big it won't move

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. mv momentum is censerved and returned

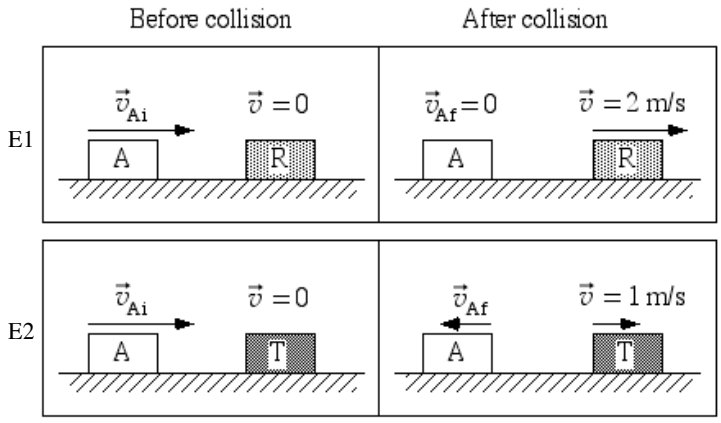
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. Because of the conservation of momentum, the momentum before is equal to the momentum after. That would mean that the change in momentum in glider T is greater than the change in momentum in glider A.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

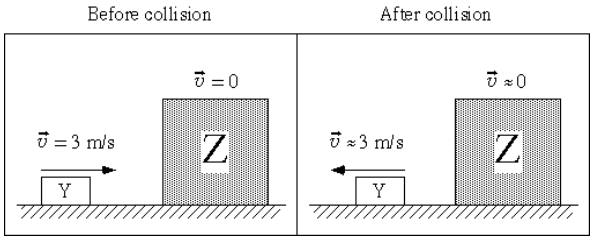
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? unanswered

Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z?
unanswered

Explain.

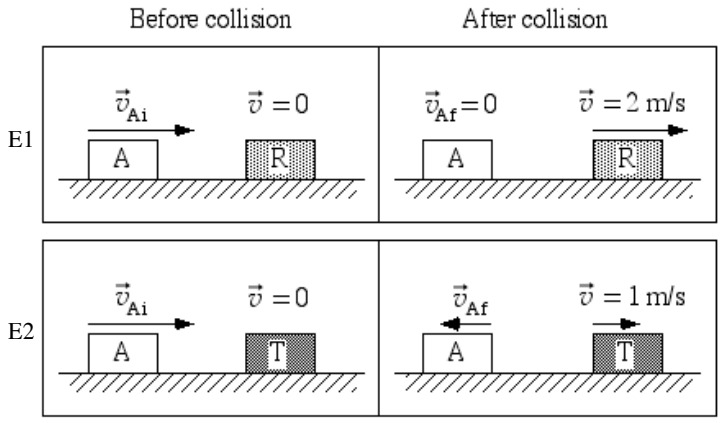
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. I don't really know.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

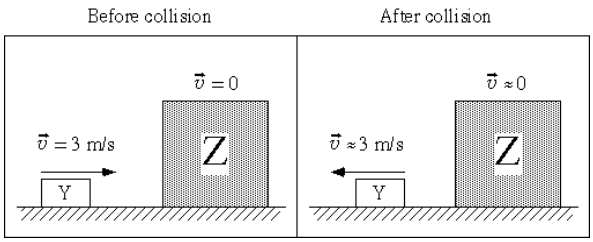
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. I don't know.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. I don't know.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. The momentum is nearly zero, because the velocity is nearly zero.

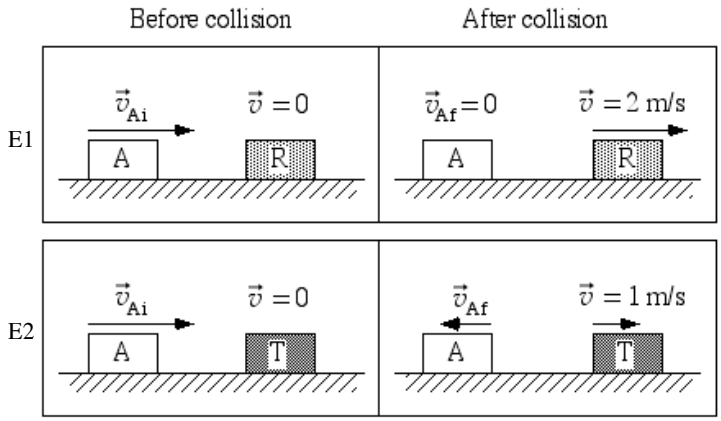
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. Glider A has momentum in the complete opposite direction, a more significant change.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

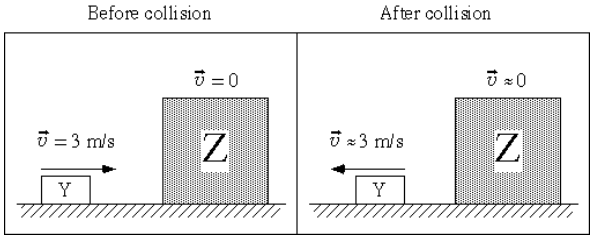
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. A moves left in exp2, so conservation of momentum demands that there is more momentum to the right for T.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. there is the same momentum in both experiments. there is 6 kg*m/s in #1. In #2 therefore, if T moves 1 m/s, and must also compensate for A's momentum backwards, then its mass is greater than 6.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. the whole system has 3 kg*m/s momentum to the right. If Y moves to the left with nearly 3 kg*m/s than there must be nearly 6 kg*m/s momentum for Z to the right, this way added together the system again equals 3 kg*m/s to the right.

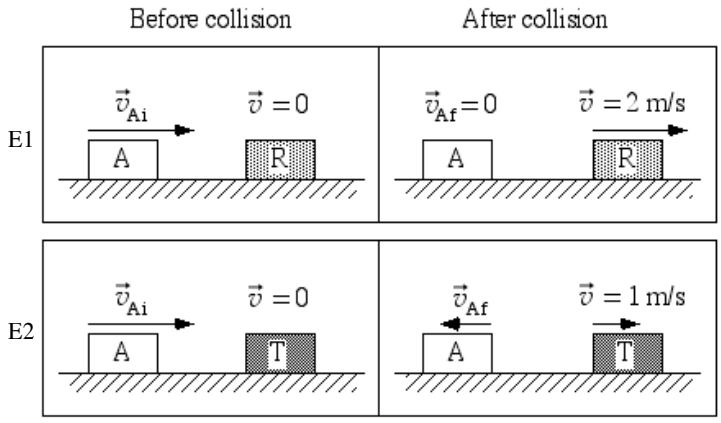
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. The change in momentum of A is greater than the change in momentum of T because change in momentum is equal to (final momentum - initial momentum).

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

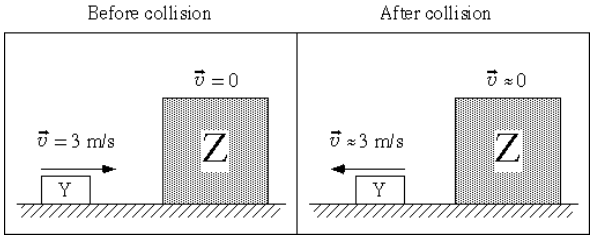
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. This is a head-on elastic collision, and so momentum is conserved. Therefore, since A has the same momentum before the collision, and R & T both have 0 momentum before the collision, both R & T will have the same final momentum.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. A & B have the same mass (3 kg), and if T had a mass of 6 kg, then A would just stop after the collision. But since A rebounds somewhat, mass of T is somewhere between 3 and 6 kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. Ran out of time

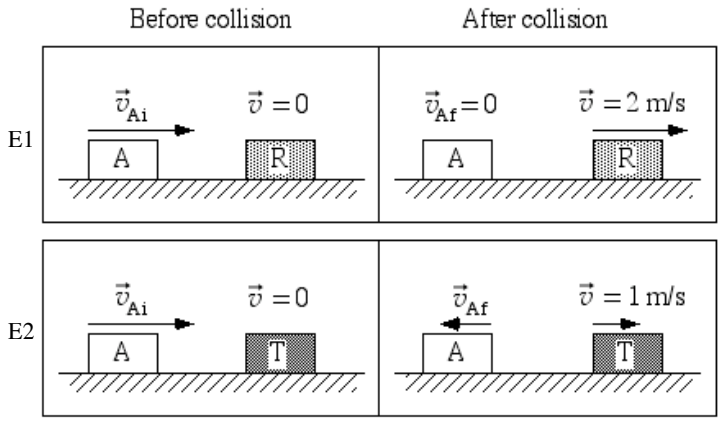
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. The glider completely reverses direction, meaning the change in velocity is greater, meaning also that the change in momentum is greater since momentum is velocity times mass.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

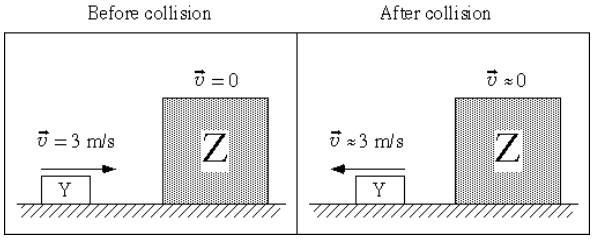
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. Since glider A has a greater change in momentum, glider T must have less momentum than R because momentum is conserved in both cases and A has equal initial momentum in each case.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. The momentum for T must be less than that for glider R because of the reasoning for the previous part of the experiment. Therefore, since the momentum of R is 3*2=6, the mass of T must be less than 6 because of its speed being 1, and also greater than 3 because that is given.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. Because momentum is conserved, the total momentum of the system must be 3 kg*m/s to the right, and Z must counteract the 3 kg*m/s momentum of Y to the left by having its own momentum be enough to have the total momentum be conserved.

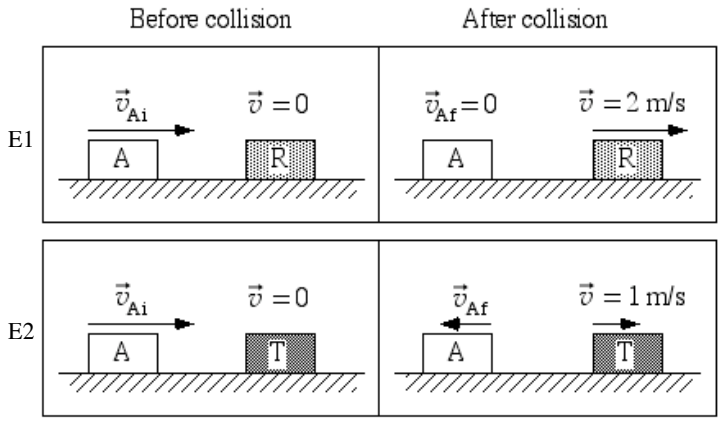
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. since it is frictionless, the initial momentum should equal final momentum in both cases, thus the change for both is zero.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

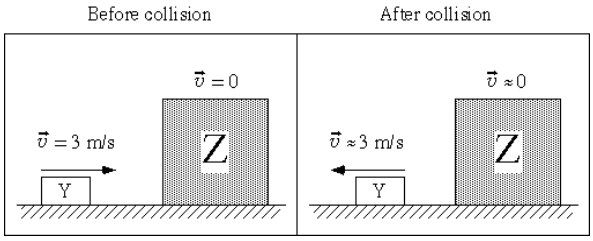
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. for R, momentum is mv=2(3)=6.for T, momentum is mv=1(3+)=3+without knowing how much mass T actually has, you can't say for sure that R's momentum is greater. but assuming it's slightly more than 3, R's momentum is greater.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. mt must be greater than 3kg

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. p=mv=near zero* a lot

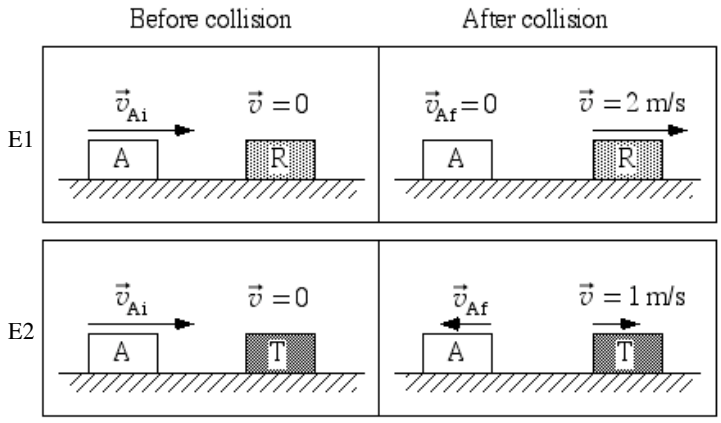
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. Since momentum is conserved, we know that initial velocity of block A is 2 from experiment one. The delta momentum of block A is the vector sum of the two velocities. Therefore, it's greater than block T.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

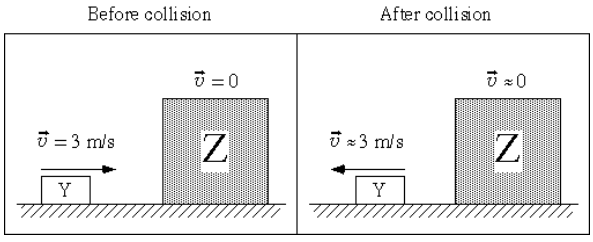
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. The maximum momentum initially is 6; therefore, momentum of block A after collision plus the momentum after of block T can not be greater than 6. We know from experiment one that momentum of block B is 6.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. We know that momentum can not be greater than 6 from question 7 above and block T is greater than 3 from the given information.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. Since momentum is conserved, we know that initial momentum must equal final momentum. The initial momentum is 3 times 1 plus zero which is 3. Therefore, final momentum must also be equal or close to 3. Since y is moving with speed close to 3, that is very close to the intial momentum.

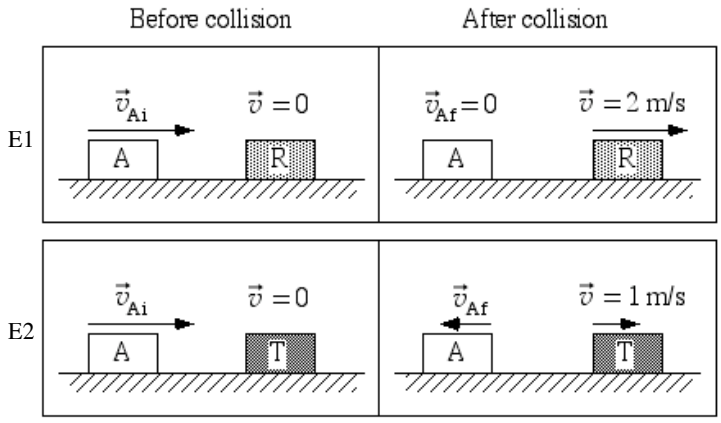
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. because if they are not the same the A would not have be moving toward left

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

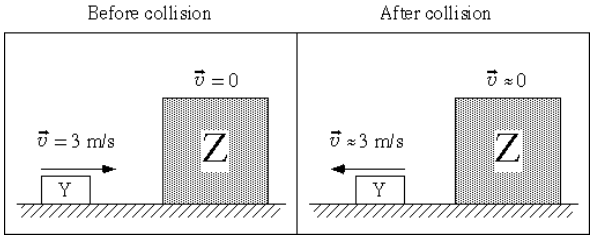
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. Because a+t = r so, r has to be more than t

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. because t is greater than 3 kg so the mT has to be greater than 3

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z?
unanswered

Explain. because the z is moving a little because the collision. So it is almost at rest but not entirly

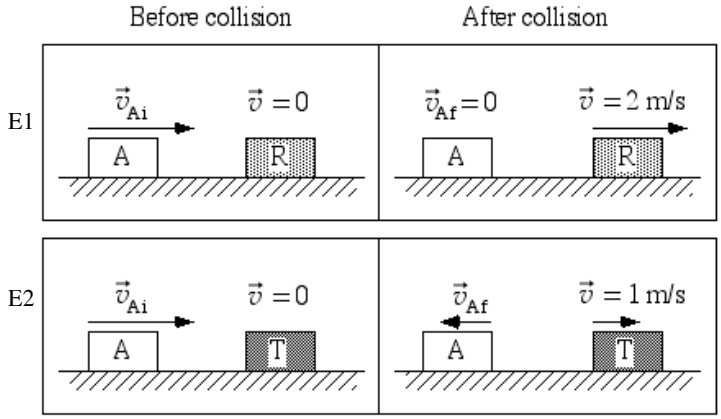
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Because the total momemtums in Experiment 2 are the same before and after the collision to maintain the principle of momentum conservation. If glider A have a different magnitude of the change in momentum than glider T, the total momentum would not be the same before and after the collision.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

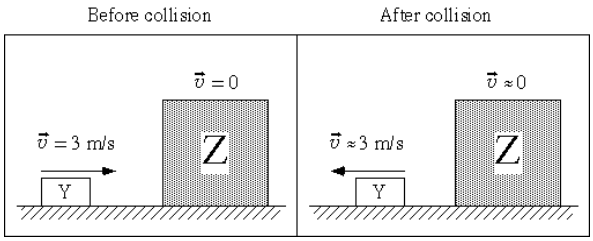
Explain. The change in momentum of glider A in experiment 1 is the mass of A times 'negative Velocity of A initial', which is equal and opposite to the change in momentum of glider R. The change in momentum of glider A in experiment 2, however, is the mass of A times 'Velocity of A final minus Velocity of A initial', which is equal and opposite to the change in momentum of glider T. We know that the change in momentum of A is greater in Experiment2 than in experiment1, so the change in momentum of glider T is also greater than the change in momentum of glider R.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. the Change in momentum of A is -6kg*m/s in experiement 1, but the change in momentum of A is clearly greater than -6kg*m/s, so will the the change in momentum of glider T be greater than 6kg*m/s. We also know that the speed of T is 1m/s, so the mass of T must be greater than 6 kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.

Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.



Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. The total momentum before the collision is 3kg*m/s, therefore the total momentum after the collision should also be 3kg*m/s. Since we know that the momemtum of Y is -3kg*m/s, we can expect the momentum of Z to be 6kg*m/s.

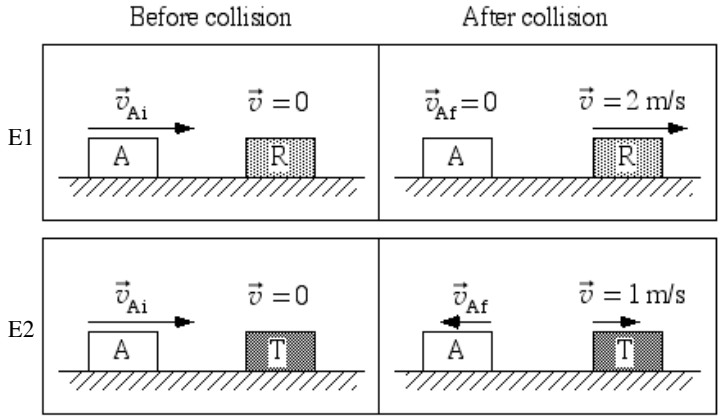
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. Momentum is mass times velocity. From the diagram, both the magnitude of the velocity vector is equal for both gliders A and T. Because the speed of glider A was slowed down, this would indicate that it has a lower mass than that of glider T. This indicates that the change in momentum of glider A is less than that of glider T.

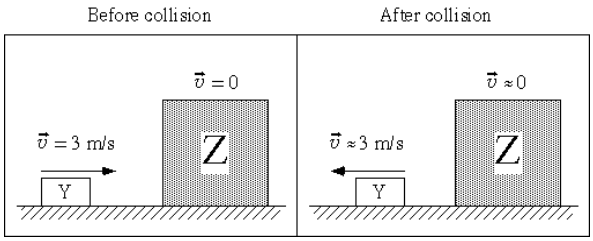
Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?
unanswered

Explain. I believe that there is not enough information provided to come up with an accurate conclusion. We know that the momentum of glider R is 6 Ns because of p=mv. The only known about glider T is that its final speed is 1 m/s. Since its mass is known to be greater than 3 kg and since mass of T could possibly be double that of R. Glider T's momentum could range anywhere between 3-6 Ns, so it could essentially be less than or equal to glider R, that is why i believe that there is not enough information known to come up with an accurate conclusion.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. Because the final velocity of glider T is half of glider R, this would indicate that its mass is double that of R.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. Because the final momentum is almost 0 Ns, that would also indicate that the momentum of the glider would be near zero, because momentum is mass times velocity.

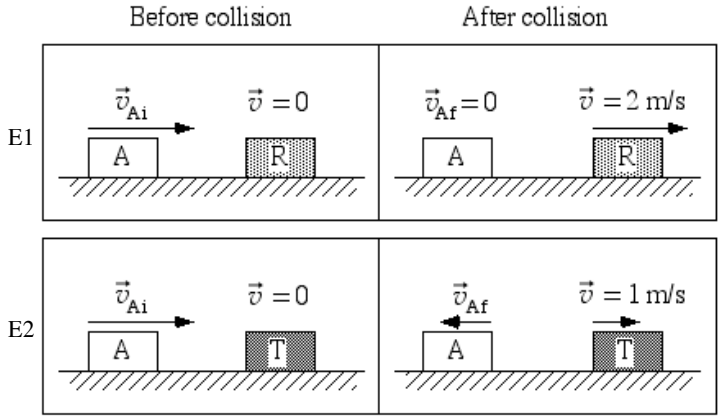
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. The change in momentum of A is greater because it starts out in one direction, but after the collision, A is moving in the opposite direction.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

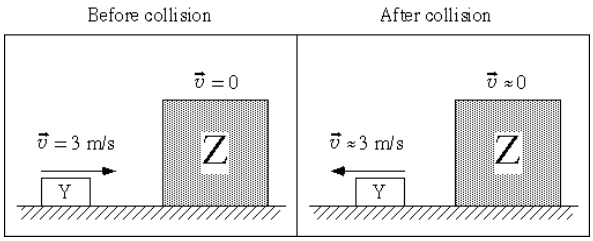
Explain. Since A starts with velocity 2 m/s, but after the collision has a velocity of 0 m/s, this means that the two gliders have the same mass.The instant of the collision, the velocity of A is transgered to R and the vlocity of R is transfered to A. Since the velocities are just transfered, the change in momentum of A and R will be the same.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. The equation for conservation of momentum is: mAvAi + mTvTi = mAvAf + mTvTfDetermined from experiment 1, the mA is 3 kg and the vAi is 2 m/s. It is given that vTi si 0 m/s and vTf is 1 m/s. Putting these values in the equation we get, 3*2 +mT*0 = 3*vAf + mT*1Since the final velocity of A is in the opposite direction as its initial velocity, the only mass that will yeild a velocity in the opposite direction will be any mass greater than 6 kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.

Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.



Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. The equation for final momentum is mf*vf. The mass of Z is unknown but the final velocity is very close to zero. When a number is multiplied by a number that is very close to zero, you will get a number close to zero.

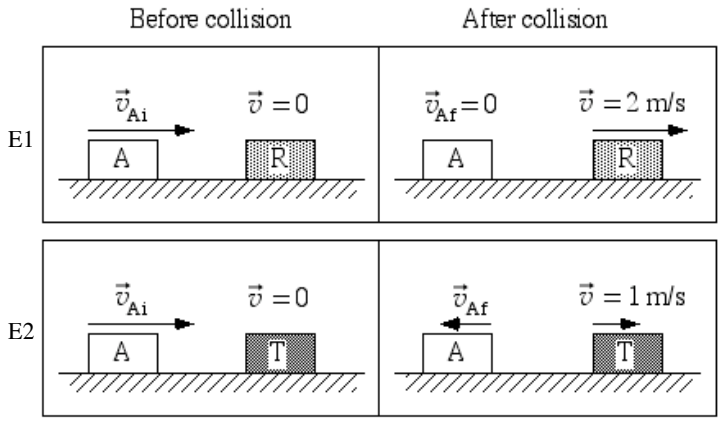
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. Because the momentum of glider A initially is 6 but when momentum is conserved it shows that the mass of T block is greater than 3 that means the momentume is greater than three so the momentum of block A is less than 3.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

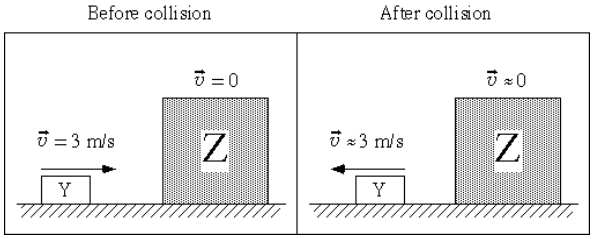
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. Because the initial momentum of A is 6 the final momentum of R is also 6 which is greater than the momentum of T.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. It it greater than three because it states it in the question and it is less than six because block A has a momentum which takes away from the momentum of Block T.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. Becuase momentum is mass times velocity and the closer the velocity gets to zero the closer the momentum gets to zero.

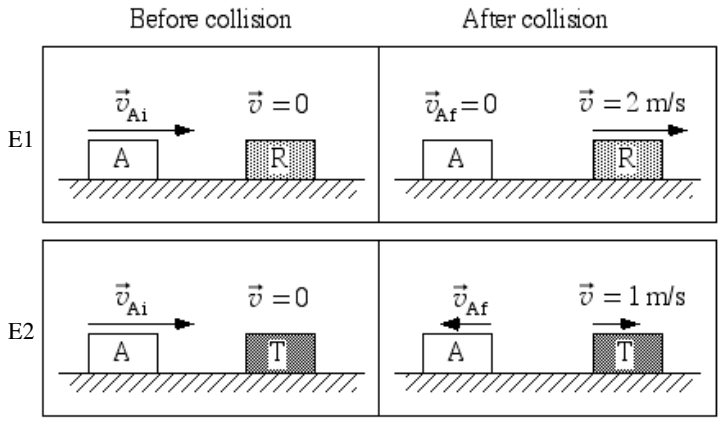
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. We know momentom = mass * velocity. In the 1st experiment we can tell that A has about a velocity of 2 initially. So if thats the case, T being larger in mass and moving at 1 after means A must be having a very little velocity after and thus the change is great.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

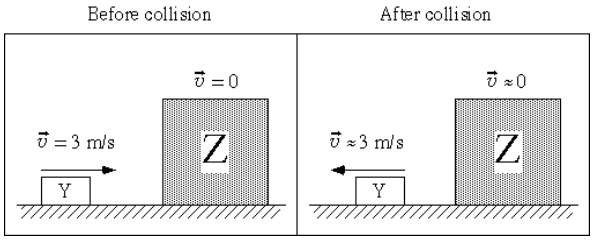
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. The are the same, because they are hit on by the same mass.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. It is stated to be greater than 3kg, and if it has greater than 6kg, the mass wont move at all. So t have to be between 6 and 3.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. momentom before and after the collison should be the same. So since the velocity of Y is mantaining at 3 all throughout the experiment, means Z has still a 0 final momentom.

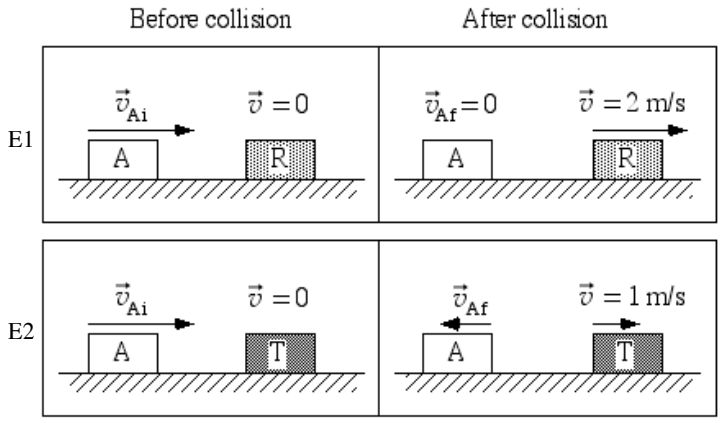
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. the change of momentum is in the opposite direction.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

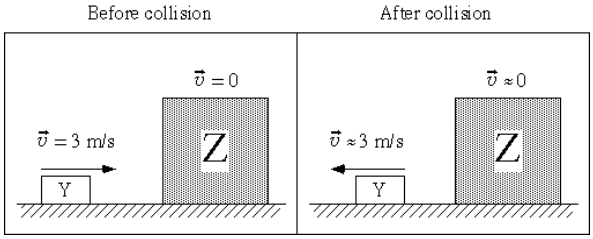
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. T doesn't move. Has no speed

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. the speed is near zero. momentum = mv

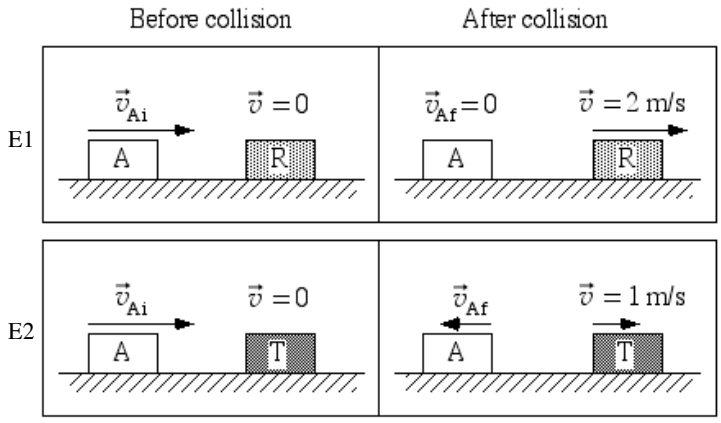
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. A is going slower

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

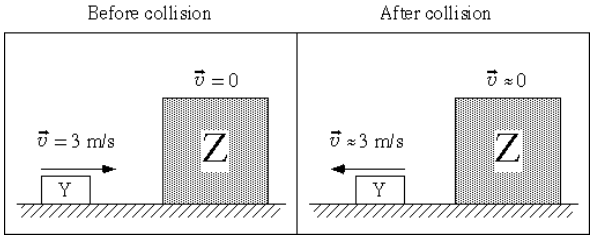
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. R is going faster

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. Z doesn't move

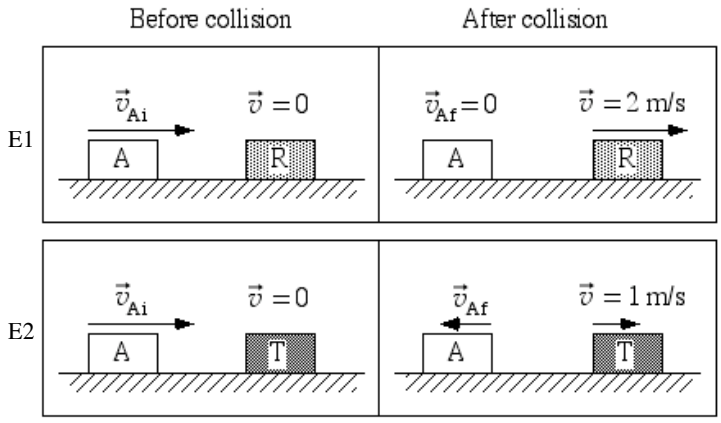
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. conservation of momentun

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

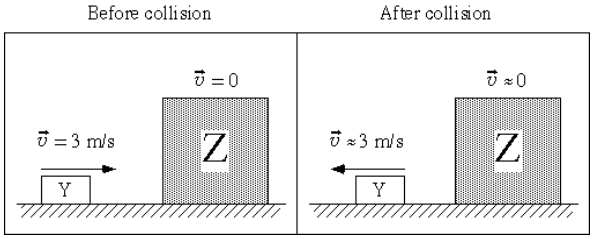
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. because it stops and so its momentum is now zero

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain. the mass id inversly proportional to the velocity for conservation of momentun

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. conservation of momentum, viinitial is equal to v2 initial i.e the syste

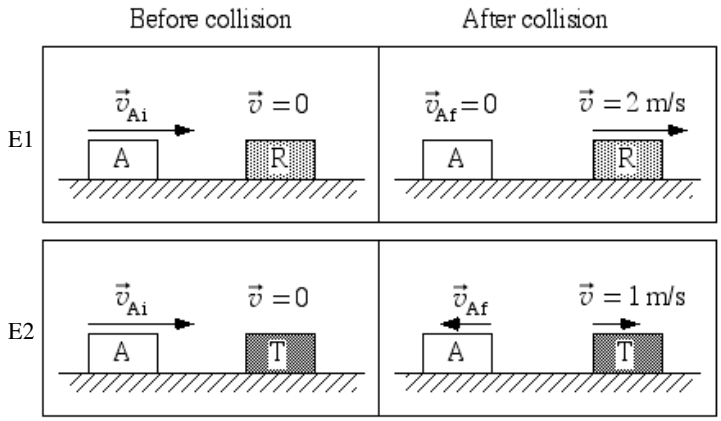
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. The definition of change is final minus initial. In this case, T has no initial momentum... therefore A will have a greater change.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

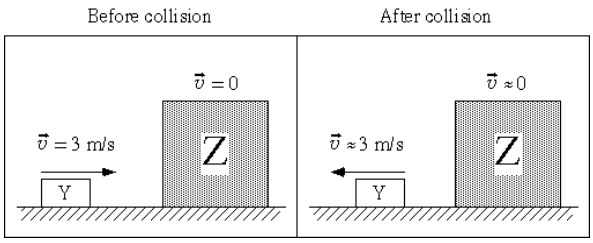
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. Glider R recieves all the momentum of the system, T does not.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. mT * velocity of T final cannot be greater than 6.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. If it's velocity is nearly zero, it's moment, which is the product of it's mass and velocity, will be very nearly zero as well.

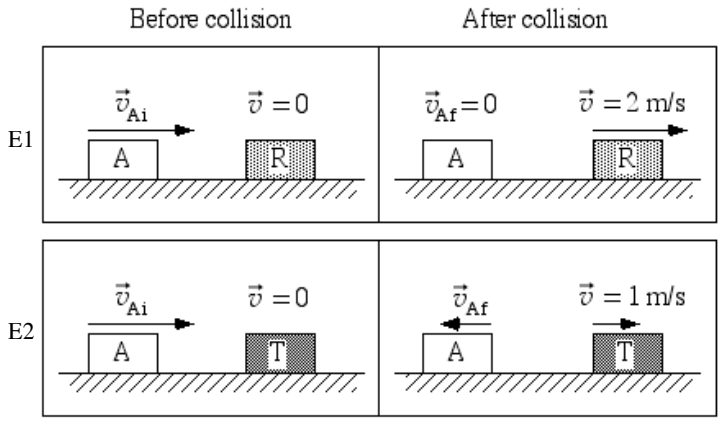
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. b/c A's velocity changed more b/c it is now going in the opposite direction, rather than just stationary.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

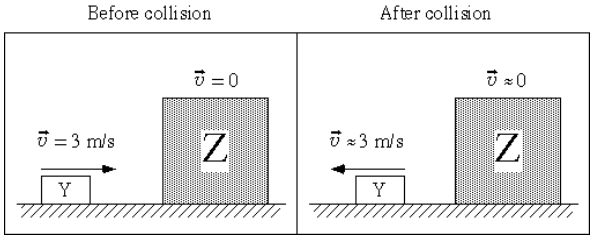
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. due the conservation of momentum, both objects shoudl have equal amount of final momentum at the end.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. it not only moved the block it hit, but it also reversed the direction of its motion.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. the formula is mv + mv/(m+M) and since V is zero, the rest of the answer will be close to zero

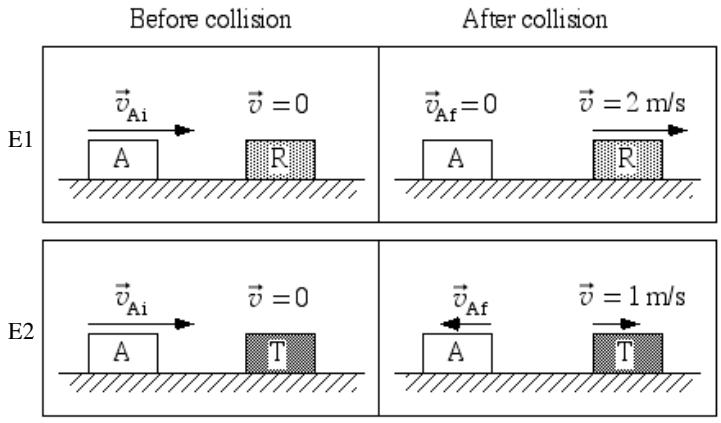
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. Because A changes direction, while T is going from 0 to 1 m/s.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

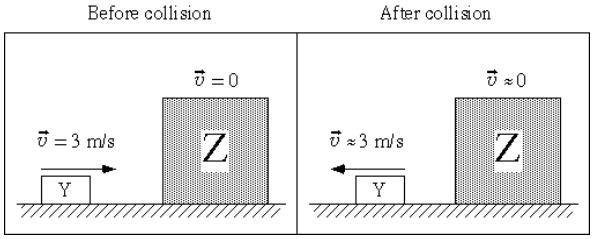
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. Because momentum must be conserved, so its almost like saying T & A of exp2 must be 'sharing' the beginning momentum that was A had. While R carries the entire momentum that A began with in exp1.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. initial momentum of system is As mass of 3kg * velocity of 2m/s. So T is greater than 3kg as stated by problem but because momentum cannot be greater than 6, while its velocity is 1, and A is also carrying momentum, T has to be between 3kg and 6kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 3 kg*m/s**

Explain. Something along the lines of that is Y's momentum?

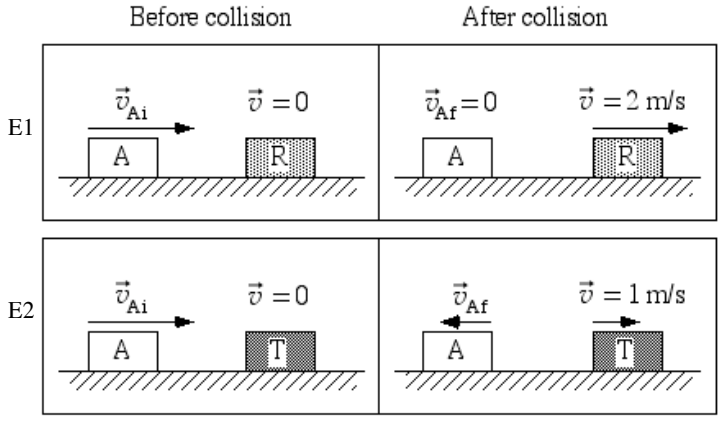
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. Glider A has a mass of 3kg because in experiment 1 it stopped when it hit glider R, and glider R took on the same speed as glider A, thus their masses are equal. Change in momentum for glider T is 3N*s, but the change in momentum for glider A in experiment 2 is atleast 6N*s, because its intial momentum of 6N*s is reversed.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

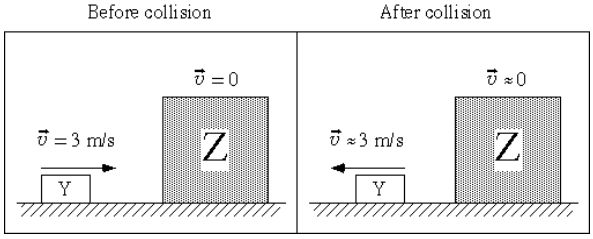
Explain. The magnitude of glider R's final momentum is greater because all of glider A's momentum is transfered to it in the colision, while in experiemtn 2 glider A contributes to the final momentum of the system because it is deflected backwards, thus glider T has not taken all of the initial momentum that glider A had before the collision.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. If the mass of glider T were 6 then the final momentum of the system in experiment 2 would be greater than the initial momentum. The sytem initialy has momentum of 6N*s because of the motion of glider A. After the collision though glider T has momentum of mass*1. If the mass were 6 then glider T's final momentum would be 6N*s. That added to the final momentum of gider A would exceed 6N*s. The mass must also be greater than three or glider A would not be deflected backwards.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.

Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.



Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. If glider z has veloicty of approximatley zero then its momentum must then also be zero by the equation p=mv where v=0.

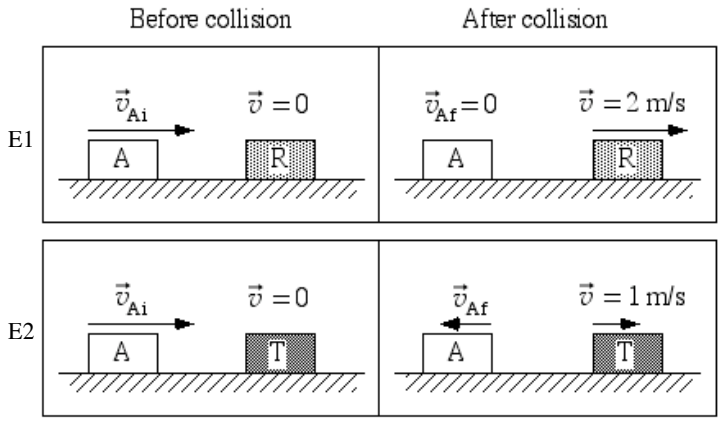
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

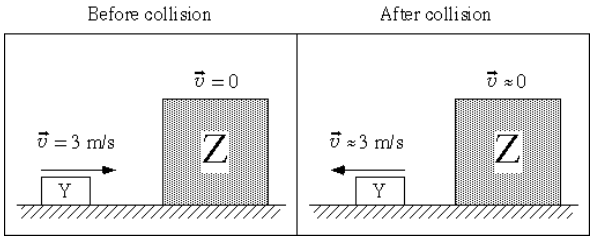
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? unanswered

Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. The mass did not change and the velocity hardly changed so it is equal to the initial momentum which was about 0.

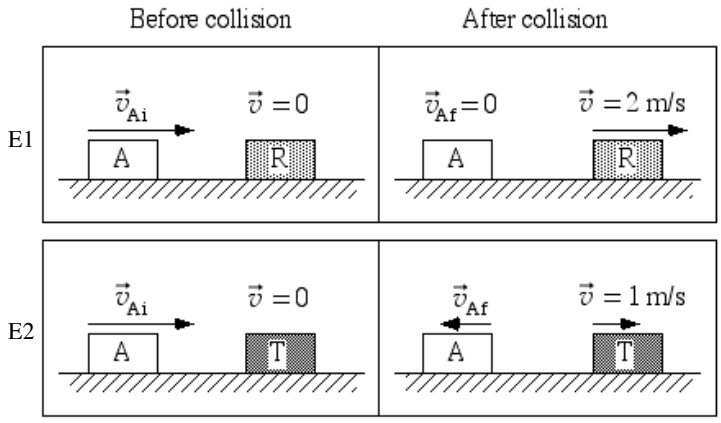
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. The impulse must be equal if the only action is that between two objects. With equal impulse over the same interval (the collision), the change in momentum will be equal.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

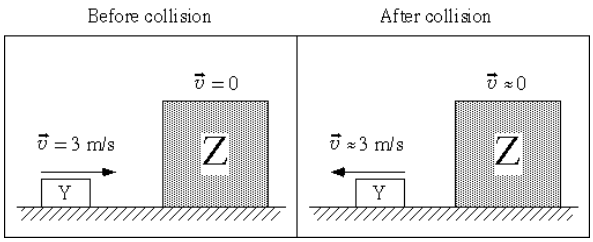
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. the mass of glider T os greater than that of glider R, in the collision to maintain conservation of energy, glider A had to reverse direction and have some velocity, this is a greater change in velocity, thus a greater change in momentum. Glder A transfered more momentum to glider T than to glider R; the magnitude of the final momentum of glider T is greater than that of glider R

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. with 6 N/s of momentum, glider A would have stopped in a complete transfer of momentum to a 6kg glider accelerating it to 1 m/s. Glider A reversed direction, indication that the mass of glider T is greater than 6kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain.

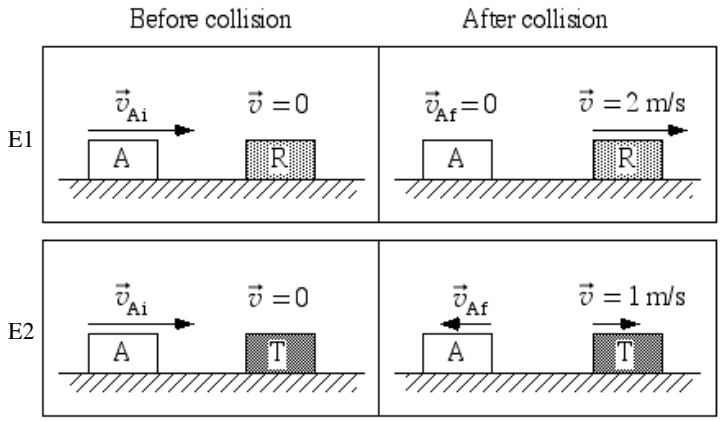
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. In Experiment 1, Glider A only comes to a rest. In Experiment 2, Glider A more than comes to a rest. It turns around.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

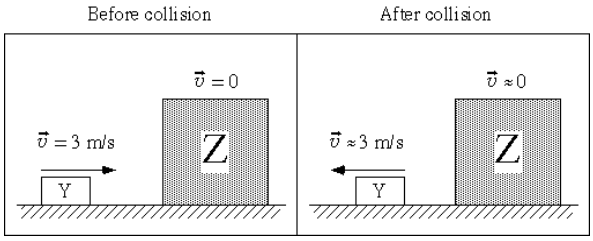
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. Final momentum of R is equal to T because, p = mv where the mass of R is less than T. But R's velocity is greater. (Conservation of Momentum is conserved.)

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. If T were greater than 6, Glider A would rebound off T with it same velocity it had before the collision expect in the opposite direction.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **much larger than 6 kg*m/s**

Explain. m[1]v[1i]+m[2]v[2i]=m[1]v[1f]+m[2]v[2f](1)(3)+(mZ)(0)=(1)(~-3)+(mZ)(~0)6=(~0)(mZ)mZ=6/~0Any number divided by a number very close to 0 is approaching infinity.

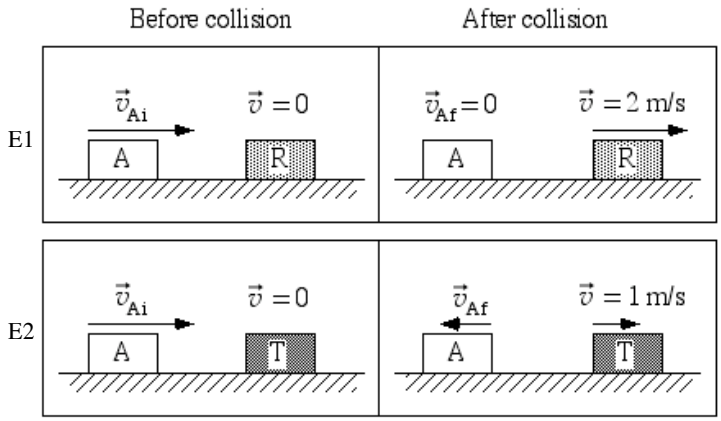
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. By the conservation of momentum, the initial momentum must equal the final momentum--with the change in A's initial momentum being dispersed to T and A. This would be the same regardless of mass or velocity.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

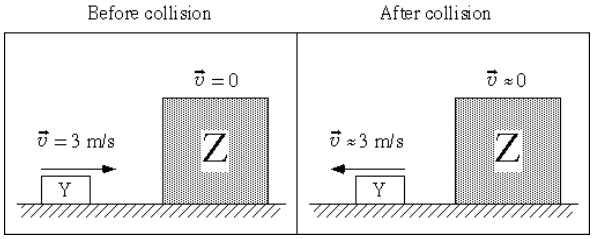
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. There is some momentum from A so the total momentum of 6 is translated to both A and T, whereas R receives the full momentum of 6. If T and R were equal there would be no momentum of A, and if T were greater than A in experiment 2 would have to have a greater initial momentum.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. The momentum of A is equal to R because of the conservation law and R is equal to 3 kg times 2 m/s. So the momentum of A is 6. From this the momentum of T must be less than 6, because there is some movement from A backwards.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. No matter how massive Z is when you multiply a large number with a number between 0 and 1, you get a number close to 0. The number between 0 and 1 is its velocity.

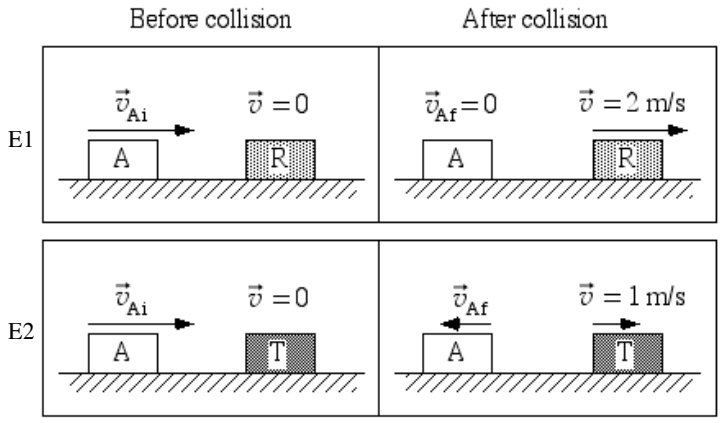
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. Glider T has a greater mass than glider A therefore the momentum is greater since P=MV.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

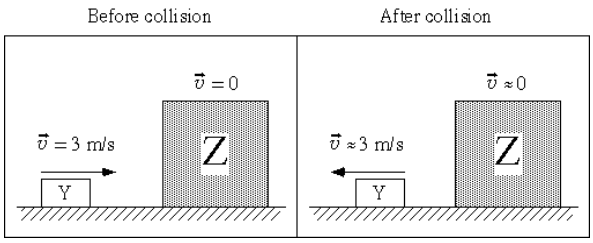
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. The mass of T is greater thus making the momentum greater.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. Because momentum must be conserved the mass of T has to be greater than 6 in order for the negative velocity that is produced when A bounces off to counteract mv on the other side.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. Because momentum=MV since velocity is practically zero P will be very near zero

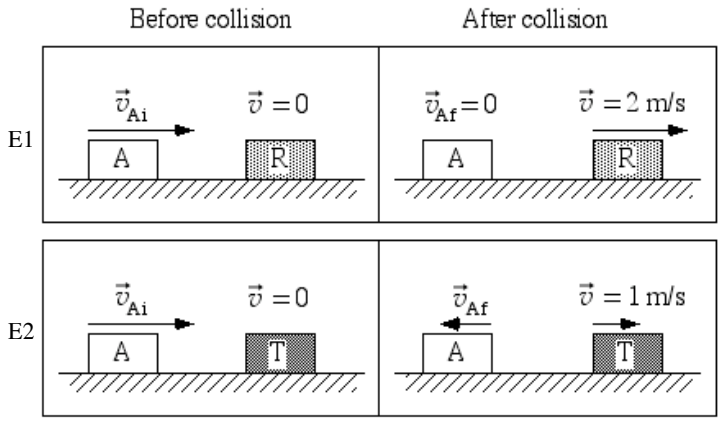
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Due to conservation of momentum and since there is no friction on the track, the change in momentum will be the same

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

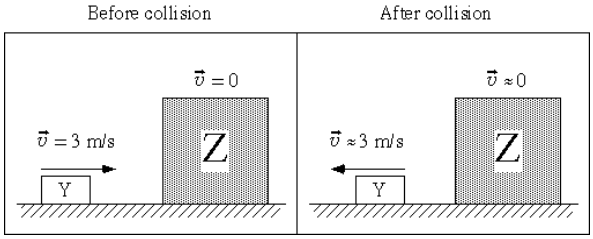
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. Momentum=mv and since R has a final velocity of 2m/s and T has a final velocity of 1 m/s, the final momentum of R will be greater.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. Since A moves backward after the collision in part 2, the change in momentum for A will be greater than part 1; therefore the change in momentum for T in part 2 must be greater part 1. momentum= mv

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. Momentum= mass x velocity; and since the final speed of Z is very close to 0 m/s, its final momentum will be very close to 0 kg*m/s.

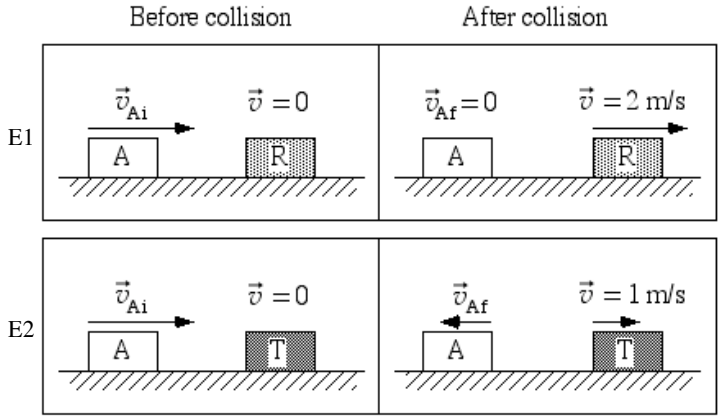
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Momentum is conserved in closed systems. The total momentum before collision is the momentum of glider A. After the collision, it is the combined momentums of A and T. Whatever change in momentum A experiences, that change must transfer to T.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

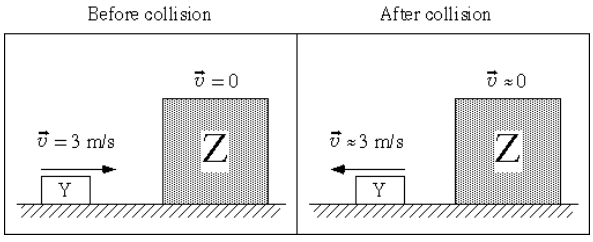
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. glider T has the negative momentum of glider A to conteract, while glider R does not. Since both systems must have the same total momentum, glider T must have a greater momentum that glider R.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. Glider T must have a momentum greater that 6 kg*m/s. The velocity is 1m/s, therefore the mass must be greater than 6kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. The total momentum of the system must stay the same. If Y is very near it's initial speed, but in the opposite direction, than it has nearly the negative of it's initial momentum. Since the system must still have the initial momentum, Z must have a momentum that will counteract Y's negative momentum after the collision. The total momentum of the system is 3kg*m/s, therefore Z must have nearly 6kg*m/s of momentum to counteract Y's nearly -3kg*m/s of momentum.

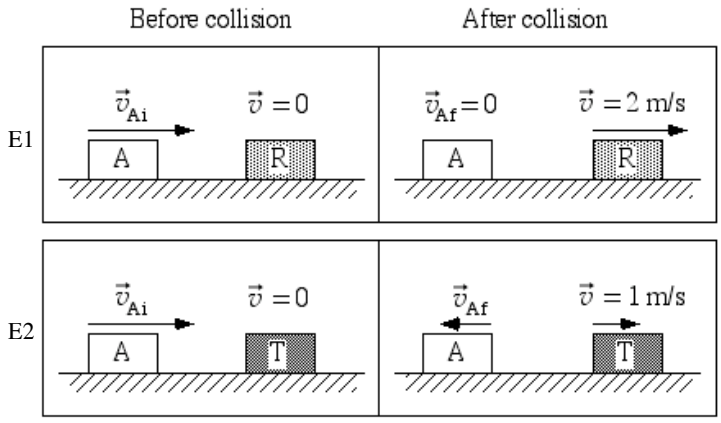
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. A's change of velocity is greater.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

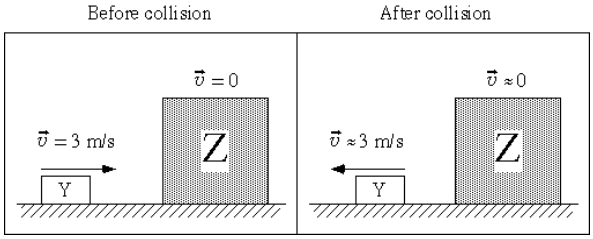
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. A stops, so has zero momentum, while R is moving, and has greater than zero momentum.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. In the first experiment, glider A stops and glider R starts with 2m/s. In the second experiment, A changes direction, so we know that T definitely has a bigger mass than 3 kg. I don't know about the rest though.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. The initial momentum is 3 kg m/s. In order for the final momentum to be the same, momentum of Z has to be close to 6.

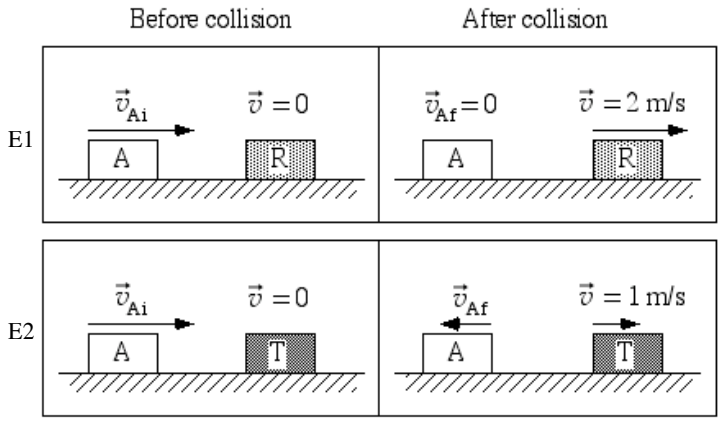
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. momentum is conserved

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

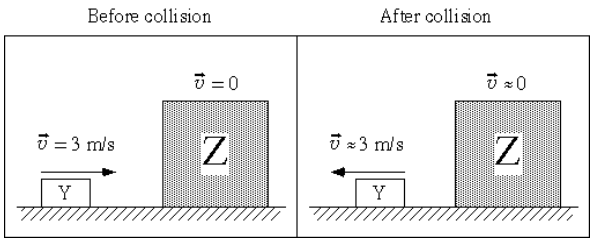
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. because mass of R is less than mass of T

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. because we know that mass of T is greater than mass of R (which is 3kg), and since R move 2 times as much as T, therefore the ratio is 2/1 for mass of T as well

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. because momentum is conserved, therefore since intial momentum of Y is 3m/s and final momentum of Y is about 3m/s so momentum of Z must remain around zero

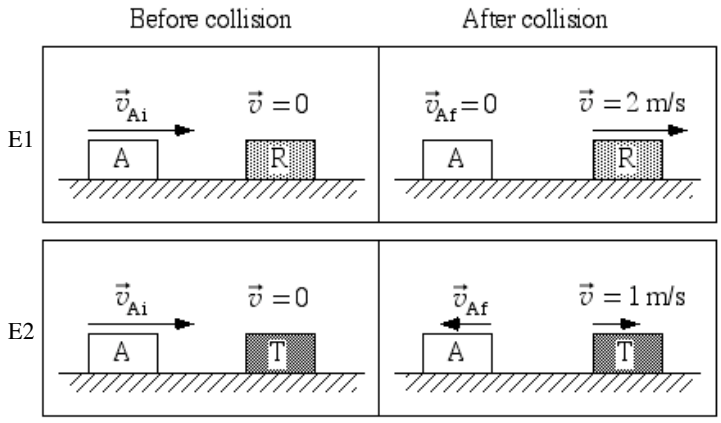
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. All of the momentum is transferred from glider A to glider T when they collide.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

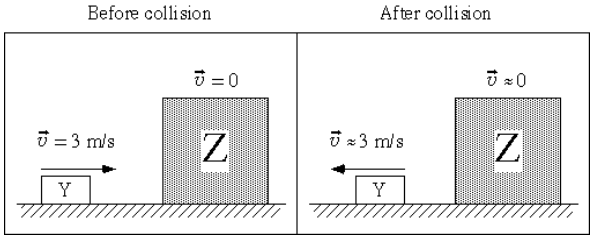
The magnitude of the final momentum of glider R is less than the magnitude of the final momentum of glider T.

Explain. glider R is lighter than glider T, therefore the momentum of T > momentum of R.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. momentum = mT*vT, vT = velocity of TvT = 1m/s^2mT(vT) = mT(1) mT > 2(3)mT >6

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. if the final velcocity of glider Y nearly equals the initial velocity, and if the initial and final velocities of Z stay relatively equal, very little kinetic energy was transferred from Y to Z. the velocity of Z is not going to increase, so it remains near 0.

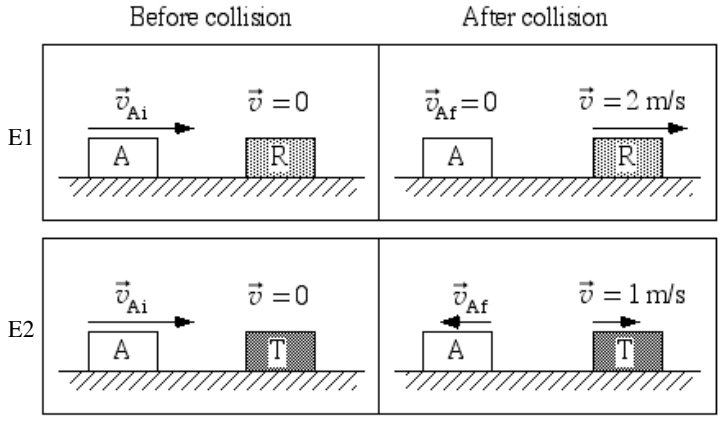
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Conservation of moment is always conserved when there are no external forces acting on it.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

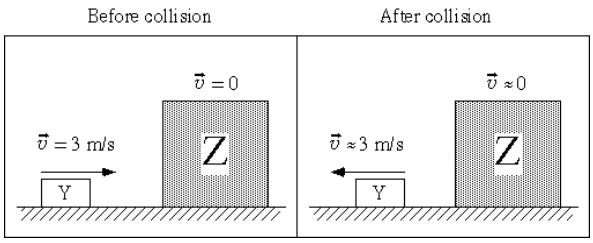
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. The final momentum will be the same as the initial momentum, which in this case is glider A in both cases, meaning they are the same.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. It has to be less then 6 kg otherwise, glider T would not move when glider A collided into it.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. The momentum is denoted by mass multiplied velocity. If the velocity is 0 in glider Z before and after the collision, then the momentum must also be 0.

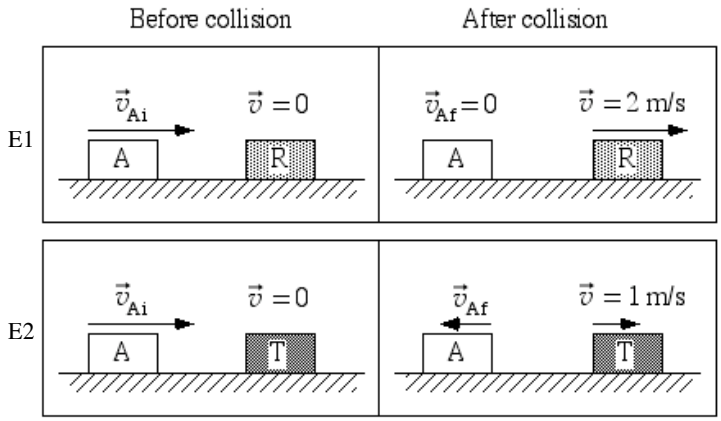
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. They are equal to because of the result of the collision shown in the diagram from up above. It also shows that the objects are elastic.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

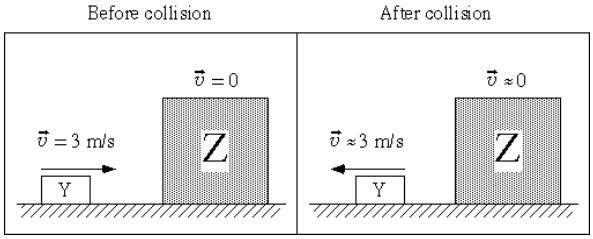
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. They are equal to each other because of the information given from up above. Momentum is p=mv and glider r has more velocity but glider t has more mass. It is uncertain to say if glider r is equal to glider t, but it is a good possibility.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain. T is equal to 6kg because it is stated that it is greater than 3kg and from the digram from up above, it shows that glider t is equal to glider A. So it must be equal to 6kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. It is nearly equal to zero because of the information that was given from up above. And from the defintion of momentum (p=mv),it is clearly shown(in the diagram) that the velocity of glider z is nearly close to zero but there is still some kinetic energy transferred so its not exactly zero but close to zero.

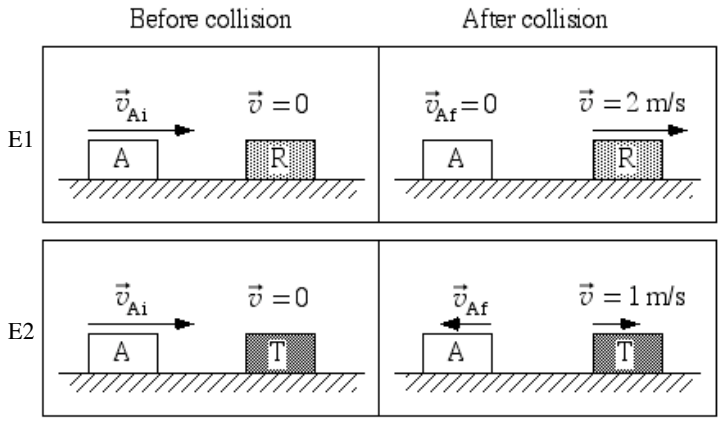
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Momentum is conserved so they are equal in magnitude.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

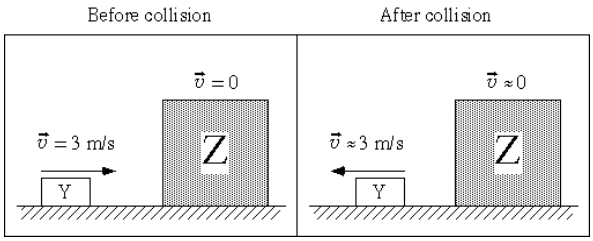
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. Since, momentum is conserved and we know that both T and R has the same total momentum of A. we know they are equal.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain. Momentum is conserved so momentum of R and T is equal. since T goes 1m/s we can calculate it's mass as 6kg.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 3 kg*m/s**

Explain. same

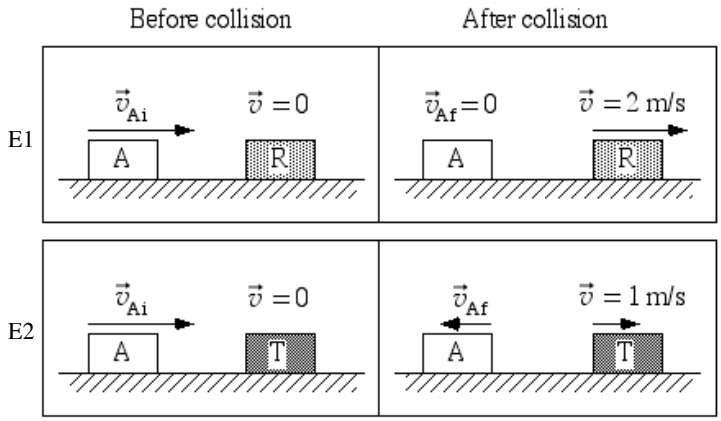
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. The change is equal and opposite in direction. Glider A set glider T in motion and bounced off of glider T in an equal and opposite direction with half its velocity before the collision. The other half went into moving block T.

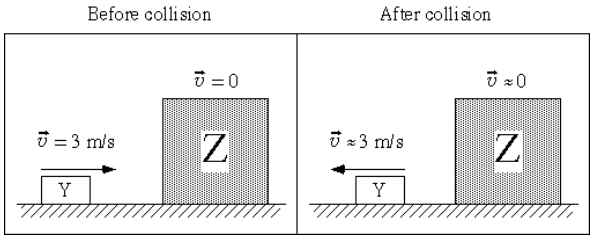
Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. If energy is conserved, then the final momentum is equal to the intial in the experiment. If glider A was in motion and is now resting after the impact, then glider R must have the same momentum as the inital of Glider A.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg
Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**
Explain. If the velocity of Z was 0, the its momentum would be zero. If Z does have a very large mass, multiplying it by a small number for a velocity close to zero will always result in a momentum close to 0.

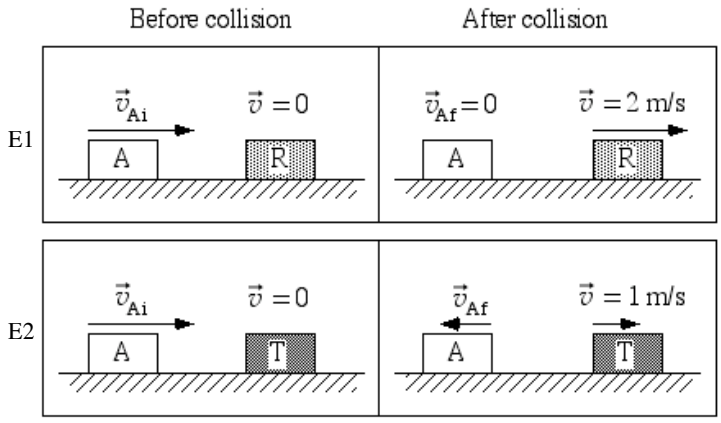
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. Glider A has to fully reverse its velocity.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

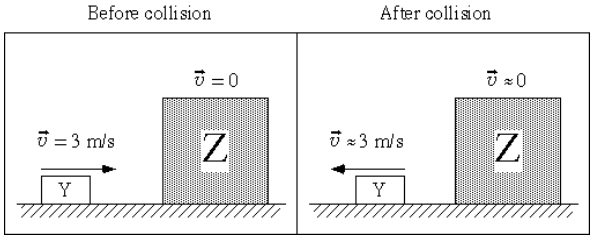
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. Conservation of momentum is observed.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. p = mv

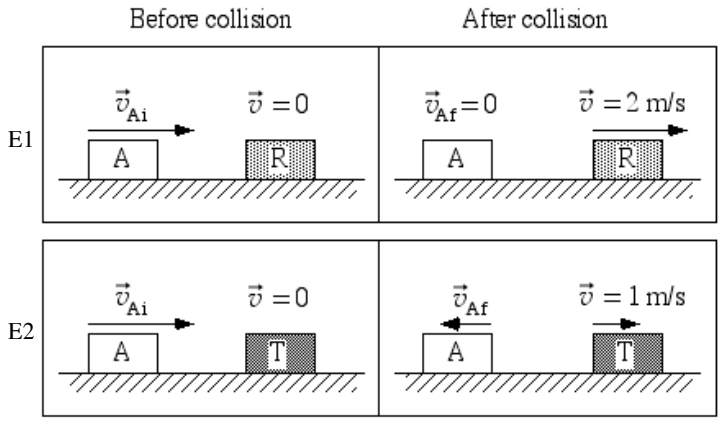
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. because it not only stops but turns around and moves the opposite direction

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

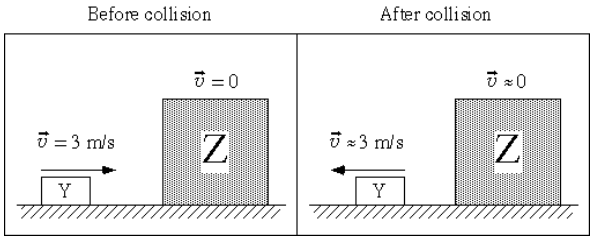
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. because the change in total momentum has to be zero due to the conservation of momentum

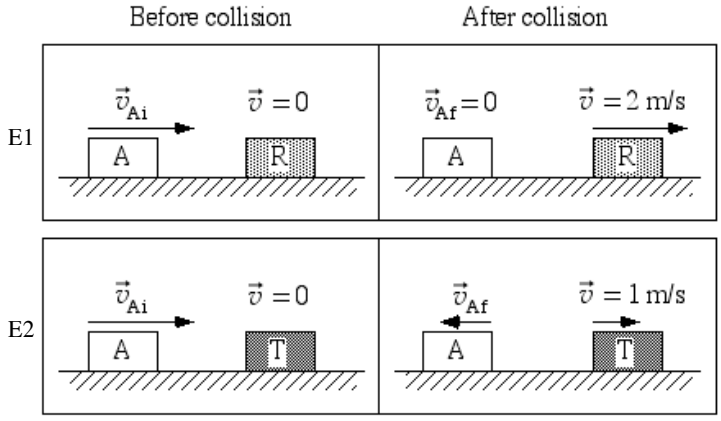
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is greater than the magnitude of the change in momentum of glider T.

Explain. the glider a is 3 times as less mass than glider t, so the velocity for glider a would have to be alot more than glider T, making the change in momentum greater.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

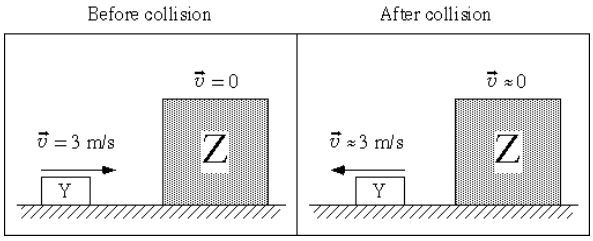
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. conservation of momentum is conserved here and they're both hit with the same amount of momentum, thus creating the same final momentum.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain. the final velocities are moving at half the velocities, so then the masses must be double the amount of each other.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. the block is stationary and barely moves.

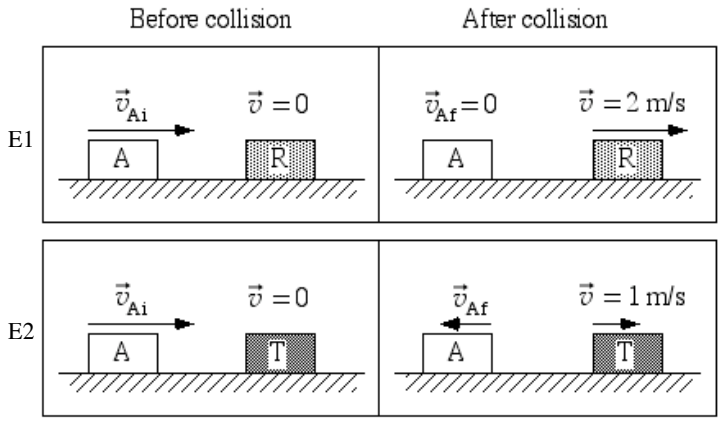
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. conservation of momentum.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

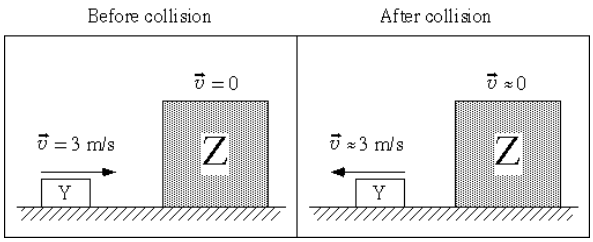
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. conservation of momentum

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain. lucky guess?

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. conservation of momentum.

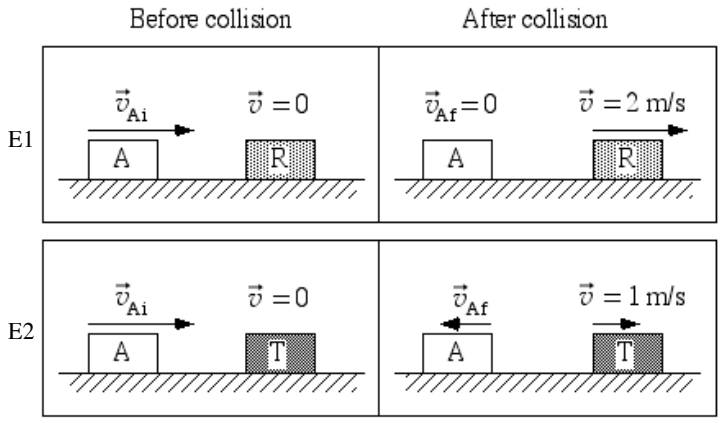
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. momentum is conserved

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

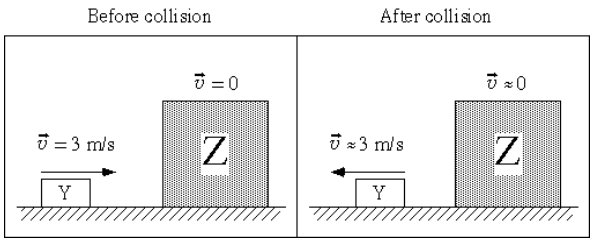
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. momentum is conserved

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT > 6 kg

Explain. m1v1 + m2v2 = m1v1' + m2v2', from the first collision we get that m1v1 = 6. From the 2nd collision we see that 6 + 0 = (neg term) + m2(1), so m2 must be > 6 to make the eqation true.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 6 kg*m/s**

Explain. m1v1 + m2v2 = m1v1' + m2v2'. m1v1' = -3 so m2v2' must = 6

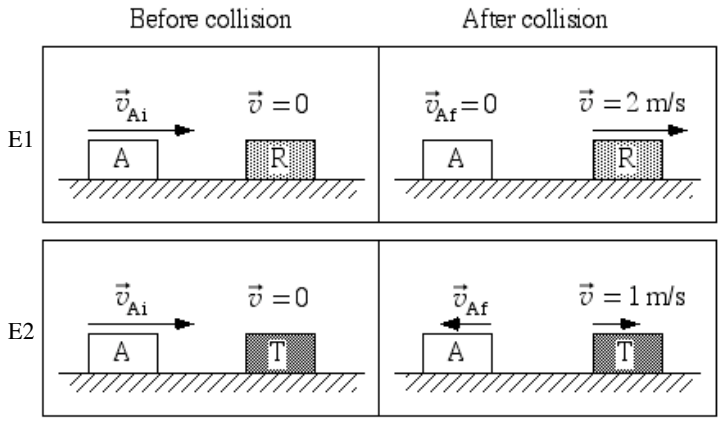
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Conservation of momentum would make it seem that the two should have equal momentum.

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

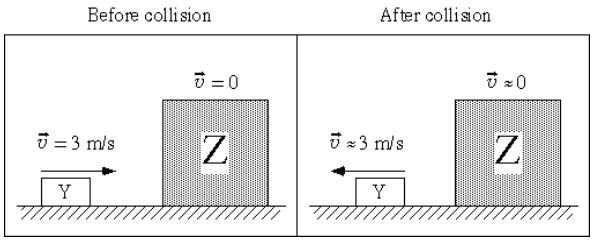
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. Although the masses are different, the velocity of R would be greater than T and the momentum would end up being the same.

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain. mT must be 6 since the velocity of T is 1/2 of the velocity of R, and since the momentum would be the same in both cases and P=mv the mass must be double.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. momentum =mass *velocity, so if the velocity is near zero the momentum must also be very near zero.

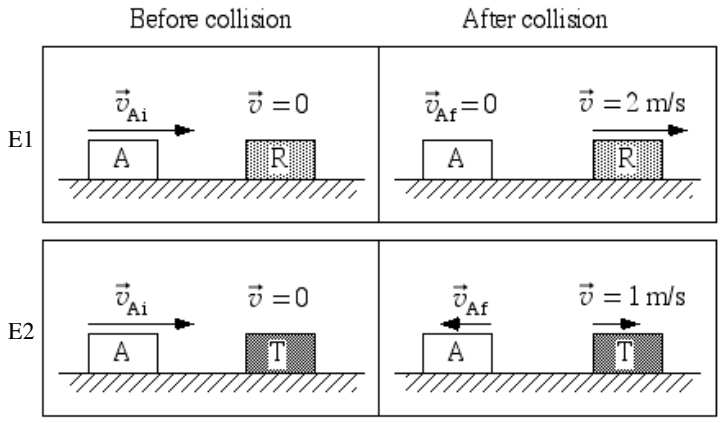
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is equal to the magnitude of the change in momentum of glider T.

Explain. Conservation of momentum

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

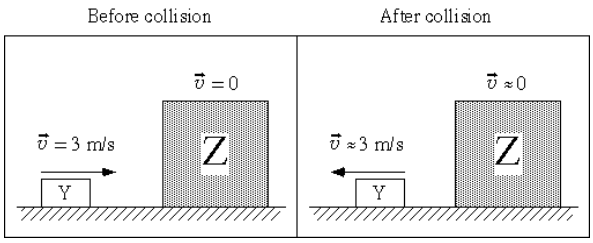
The magnitude of the final momentum of glider R is equal to the magnitude of the final momentum of glider T.

Explain. Because glider A had the same intial momentum for both experiments so both will have the same final momentum according to conservation of momentum

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? mT = 6 kg

Explain. because doulbe the speed of glider R

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. because it is moving very slow

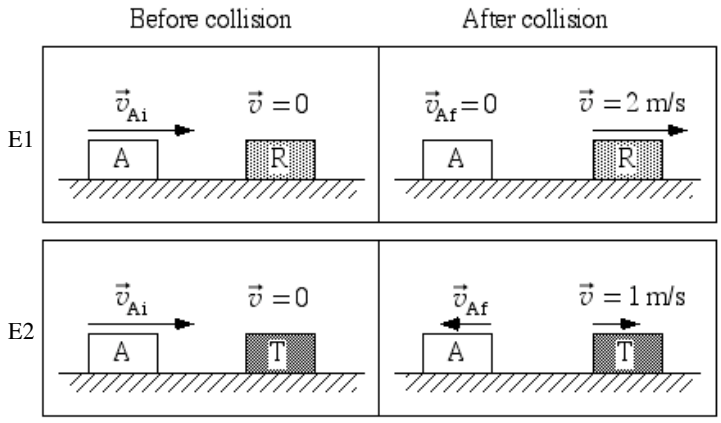
END OF RESPONSE

I. Two experiments are conducted with gliders on a level, frictionless track:

E1: Glider A is launched toward a stationary target, glider R. Afterward, glider A is at rest.

E2: Glider R is replaced by glider T. Glider A has the same initial velocity as in E1. Afterward, glider A has reversed direction.

The final speed of glider R is 2 m/s. The final speed of glider T is 1 m/s. The mass of glider R is 3 kg. The mass of glider T is greater than 3 kg.



Q4. In Experiment 2, is the magnitude of the change in momentum of glider A *greater than*, *less than*, or *equal to* that of glider T? The magnitude of the change in momentum of glider A is less than the magnitude of the change in momentum of glider T.

Explain. should be less than because T is starting from 0, and vel of A will slow when there is contact with T

Q6. Is the magnitude of the final momentum of glider R *greater than, less than,* or *equal to* that of glider T?

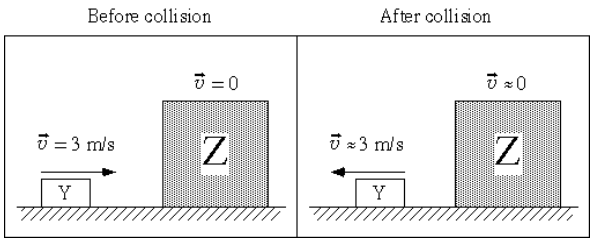
The magnitude of the final momentum of glider R is greater than the magnitude of the final momentum of glider T.

Explain. All the energy was transfered to R and not to T

Q8. Which of the following options best describes the mass of glider T (denoted "m_T")? 6 kg > mT > 3 kg

Explain. It's given that it is 3kg in the problem.

A collision experiment is performed with two gliders, Y and Z, on a level, frictionless track. The mass of glider Y is 1 kg. Glider Z is much more massive than glider Y. Despite the very large mass of glider Z, it is still free to move without friction on the track.



Before the collision, glider Y moves with velocity 3 m/s to the right, toward glider Z, which is initially at rest. After the collision, glider Y moves to the left with final speed very nearly equal to its initial speed, 3 m/s. Glider Z moves with a final speed very nearly equal to zero.

Q10. Which of the following options best describes the magnitude of the final momentum of glider Z? **very nearly 0 kg*m/s**

Explain. p=mv and v = 0 after the collision.

END OF RESPONSE