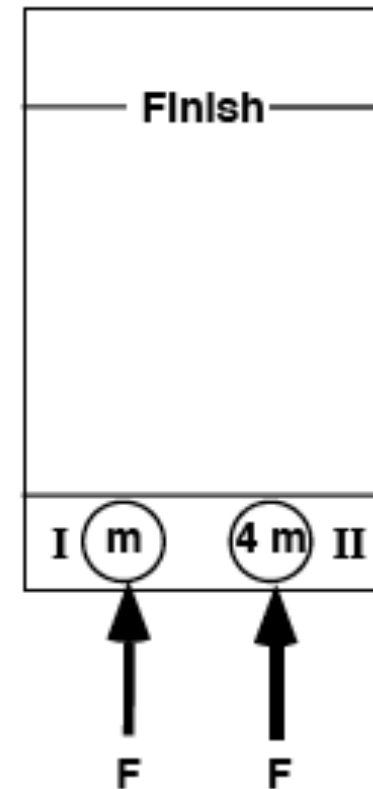


The diagram depicts two pucks on a frictionless table. Puck II is four times as massive as puck I. Starting from rest, the pucks are pushed across the table by two equal forces.



Which puck will have the greater KE upon reaching the finish line?

1. Puck I
2. Puck II
3. Both will have the same.
4. There is not enough information to decide.

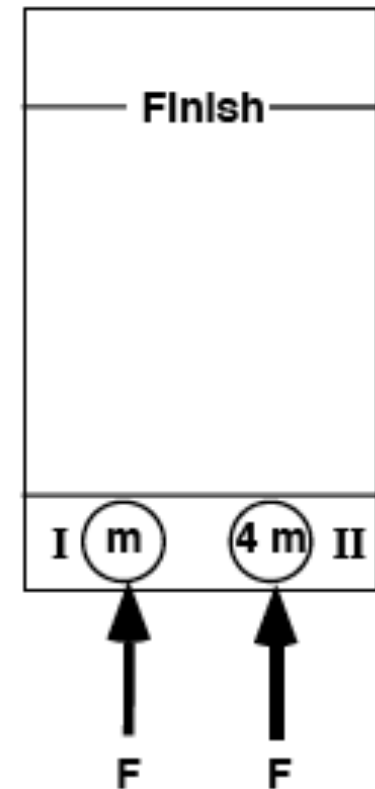


The diagram depicts two pucks on a frictionless table. Puck II is four times as massive as puck I. Starting from rest, the pucks are pushed across the table by two equal forces.



Which puck reach the finish line first?

1. Puck I
2. Puck II
3. Both will have the same.
4. There is not enough information to decide.

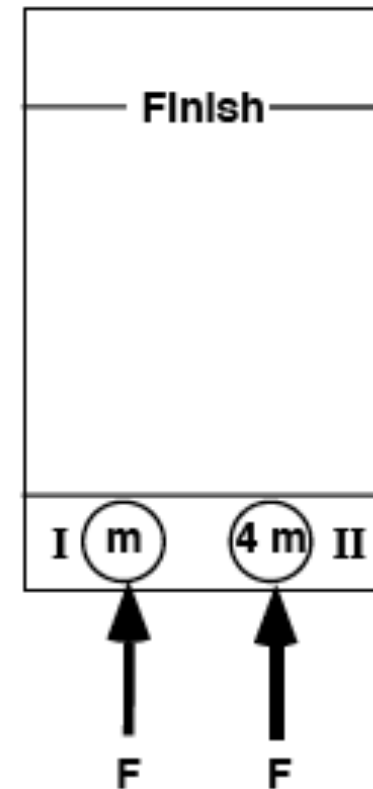


The diagram depicts two pucks on a frictionless table. Puck II is four times as massive as puck I. Starting from rest, the pucks are pushed across the table by two equal forces.



Which puck will have the greater momentum upon reaching the finish line?

1. Puck I
2. Puck II
3. Both will have the same.
4. There is not enough information to decide.



You drop a ball from a high tower and it falls freely under the influence of gravitational force. If you can ignore resistive forces, which of the following statements are true?



1. The kinetic energy of the ball increases by equal amounts in equal times.
2. The kinetic energy of the ball increases by equal amounts over equal distances.
3. There is zero work done on the ball by the gravitational force as it falls.
4. The work done on the ball by the gravitational force is negative as it falls.
5. The total mechanical energy of the ball decreases as it falls.
6. None are true.
7. More than one statement is true.

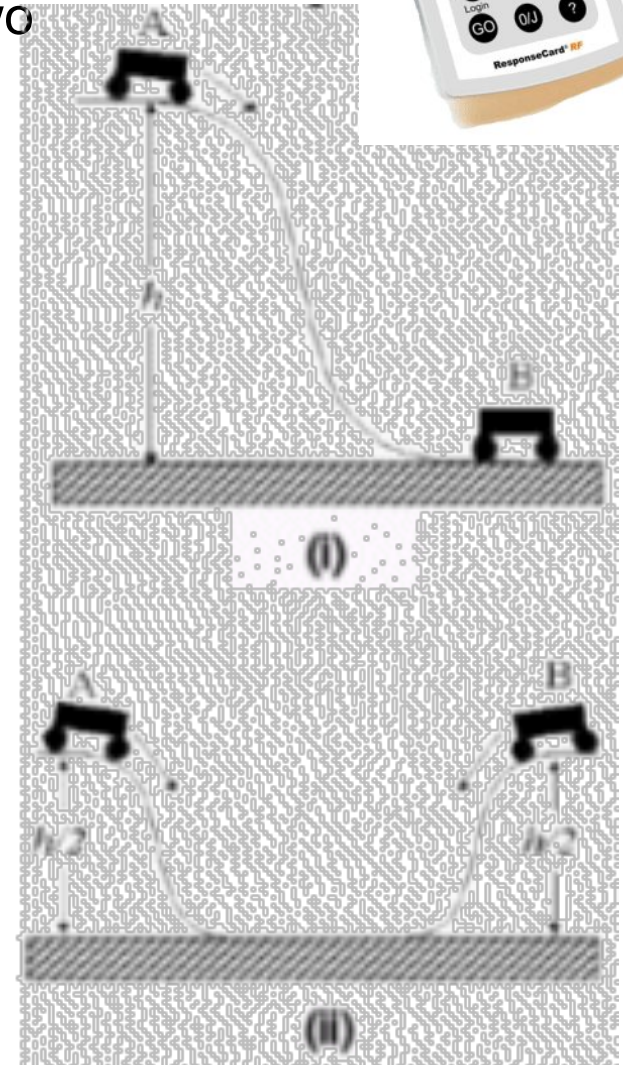
Two identical carts A and B roll down a hill and collide as shown in the figures at the right.

(i): A starts from rest. It rolls down and collides head-on with B which is initially at rest on the ground. The two carts stick together.

(ii): A and B are at rest on opposite. They roll down, collide head-on and stick together.

Which statement is true about the two-cart system just before the carts collide in the two cases?

1. The kinetic energy of the system is zero in case (ii).
2. The kinetic energy of the system is greater in case (i) than in case (ii).
3. The kinetic energy of the system is greater in case (ii) than in case (i).
4. The kinetic energy of the system is the same in both cases (but not 0).
5. More than one statement is true.



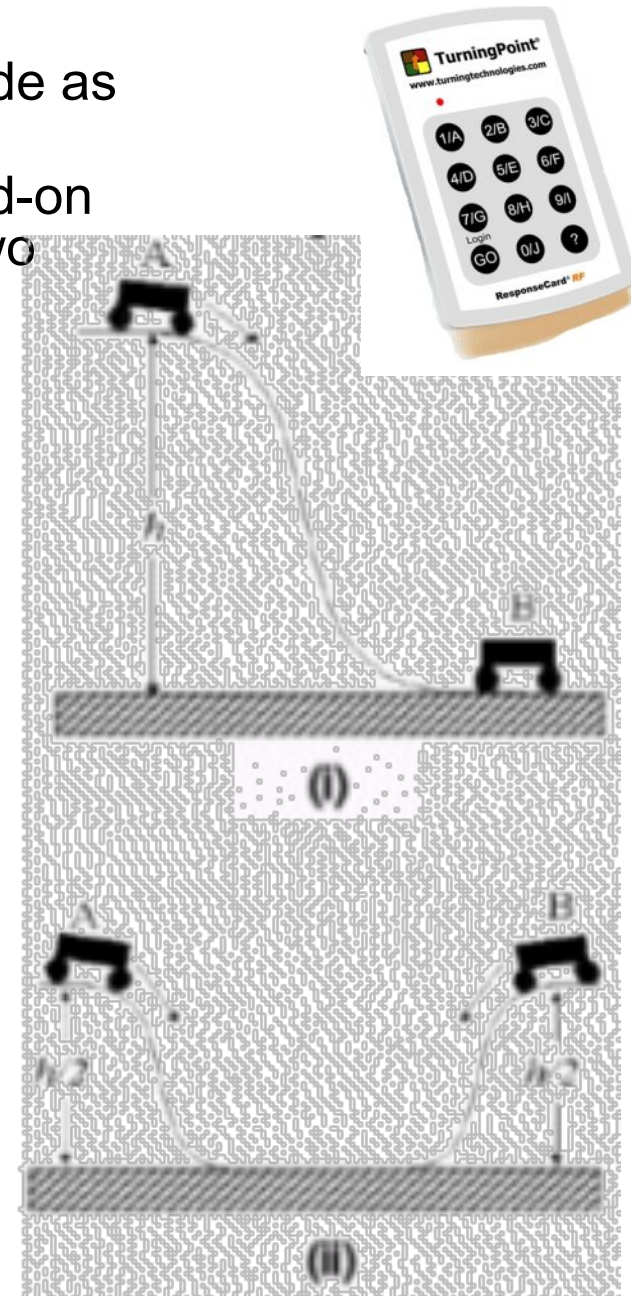
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Which statement is true about the two-cart system just after the carts collide and stick in the two cases?

1. The kinetic energy of the system is zero in case (ii).
2. The kinetic energy of the system is greater in case (i) than in case (ii).
3. The kinetic energy of the system is greater in case (ii) than in case (i).
4. The kinetic energy of the system is the same in both cases (but not 0).
5. More than one statement is true.



A spring-loaded toy dart gun is used to shoot a dart straight up in the air, and the dart reaches a maximum height of 24 m. The same dart is shot straight up a second time from the same gun, but this time the spring is compressed only half as far before firing. How far up does the dart go this time, neglecting friction and air resistance and assuming an ideal spring?

1. 96 m
2. 48 m
3. 24 m
4. 12 m
5. 6 m
6. 3 m
7. Something else







When a positive (test) charge is released from rest near a fixed positive (source) charge what happens to the electric potential energy of the test charge?

1. It will increase because the test charge will move towards the source charge.
2. It will decrease because the test charge will move away from the source charge.
3. It will increase because the test charge will move away from the source charge.
4. It will decrease because the test charge will move towards the source charge.
5. It will remain constant because the test charge remains at rest.
6. There is not enough information to tell.





When a negative (test) charge is released from rest near a fixed positive (source) charge what happens to the electric potential energy of the test charge?

1. It will increase because the test charge will move towards the source charge.
2. It will decrease because the test charge will move away from the source charge.
3. It will increase because the test charge will move away from the source charge.
4. It will decrease because the test charge will move towards the source charge.
5. It will remain constant because the test charge remains at rest.
6. There is not enough information to tell.