

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

In collisions momentum is \_\_\_\_\_ because all of the forces acting are \_\_\_\_\_ forces.

**Remember:** According to the Law of Conservation of Momentum, an \_\_\_\_\_ force is required to change the momentum of a system.

Net momentum before collision = \_\_\_\_\_

Diagram (a) illustrates a collision where a moving object (green ball) strikes a stationary object (yellow ball). The green ball is labeled "at rest" after the collision, and the yellow ball is labeled "at rest" before the collision.

$p_1 =$  \_\_\_\_\_       $p_2 =$  \_\_\_\_\_  
 $p_1 =$  \_\_\_\_\_       $p_2 =$  \_\_\_\_\_  
 $p_{\text{before}} =$  \_\_\_\_\_  
 $p_{\text{after}} =$  \_\_\_\_\_

Diagram (b) illustrates a collision where two objects (green and yellow balls) move towards each other with "same speeds". After the collision, they move away from each other with "same speeds".

$p_1 =$  \_\_\_\_\_       $p_2 =$  \_\_\_\_\_  
 $p_1 =$  \_\_\_\_\_       $p_2 =$  \_\_\_\_\_  
 $p_{\text{before}} =$  \_\_\_\_\_  
 $p_{\text{after}} =$  \_\_\_\_\_

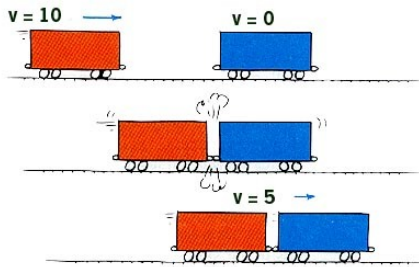
Diagram (c) illustrates a collision where a faster object (green ball) strikes a slower object (yellow ball). After the collision, the green ball is labeled "greater speed" and the yellow ball is labeled "greater speed".

$p_1 =$  \_\_\_\_\_       $p_2 =$  \_\_\_\_\_  
 $p_1 =$  \_\_\_\_\_       $p_2 =$  \_\_\_\_\_  
 $p_{\text{before}} =$  \_\_\_\_\_  
 $p_{\text{after}} =$  \_\_\_\_\_

Each of these examples demonstrates a collision where the objects bounced off each other without any damage.

These are \_\_\_\_\_ - when colliding objects rebound perfectly without heat or damage

More common in the “real world” are \_\_\_\_\_  
 when colliding objects rebound with heat or damage occurring



$$2 \times 5 = 1 \times 10$$



SHAPE \\* MERC

In a perfectly inelastic collision, both  
 objects \_\_\_\_\_

If both of these objects have the

\_\_\_\_\_ they

stop dead in their tracks.

What would happen if the  
 truck on the left had more  
 initial momentum?



\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

The \_\_\_\_\_ applies to both types of collisions.