# Conservation of Momentum Worksheet   Name _____

Do your work on another page!!! Assume that the sum of any external forces acting on the system is zero. *Note: The arrows are just supposed to show the direction of the car's movement. They do not represent the magnitude of the velocity.*
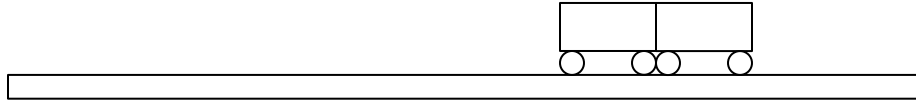
1) Find the final velocity of the car on the right hand side.

Before the collision

After the collision
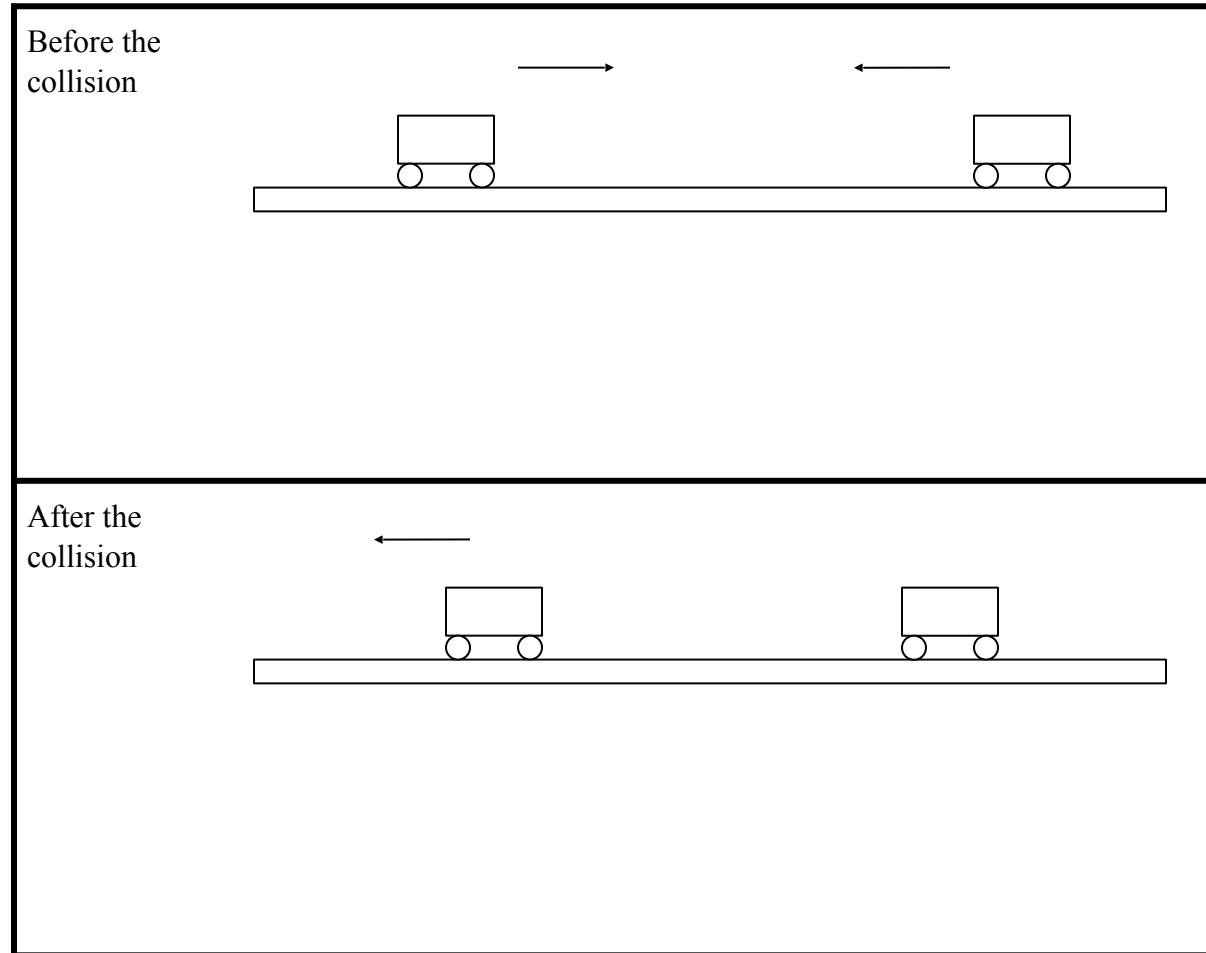
2) After the collision, the two cars stick together. Find the final velocity of the two cars.
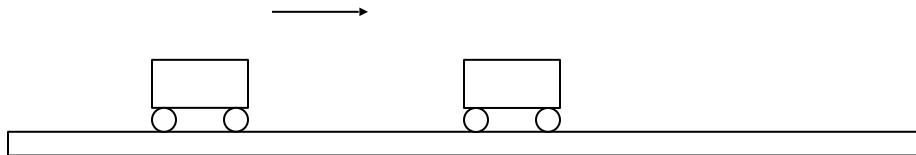
Before the collision
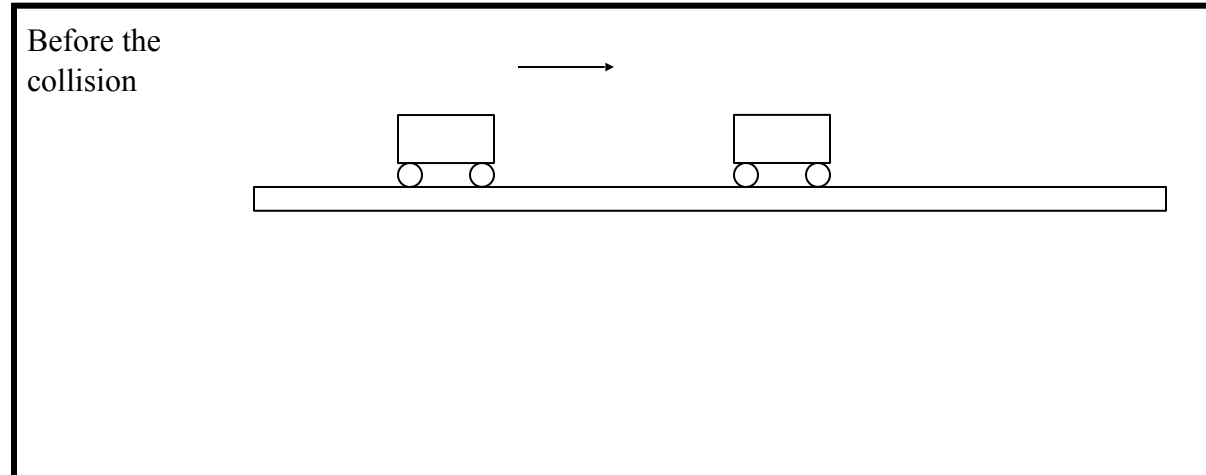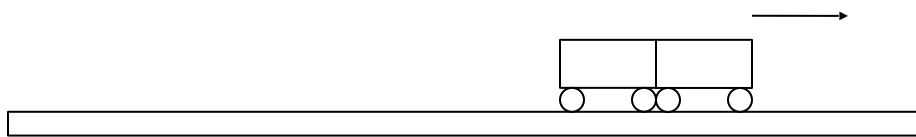
After the
collision

3) After the collision, the two cars stick together. Find the initial velocity of the car on the right hand side.
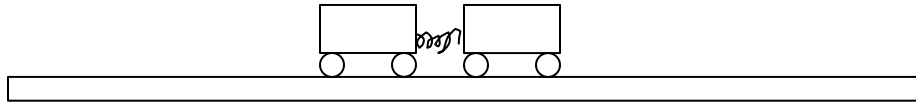
Before the
collision

After the
collision

4) Two carts are at rest with a spring in between them. The spring is released. Find the mass of the cart on the right hand side.

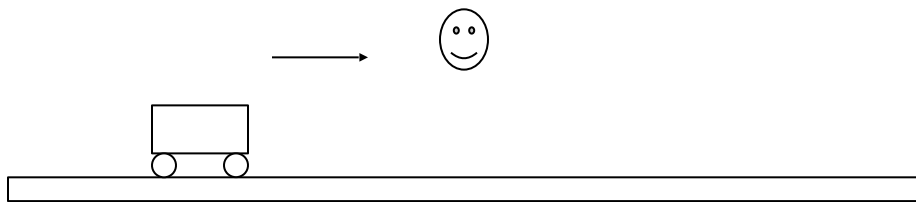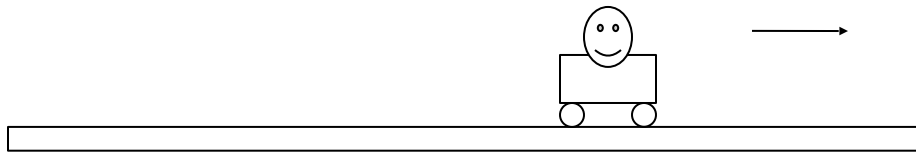|	
Before the spring is released	
After the spring is released	

5) A cart is moving at a constant speed when a frog falls straight down onto the cart and sticks. The frog had no horizontal velocity before landing in the cart.

Before the frog falls onto the cart	

After the frog
falls onto the
cart

$m_{frog} = 0.5$ kg

a) Find the velocity of the cart and frog.

b) The frog then decides to jump straight up to a branch. What is the speed of the cart after the frog jumps up?