



Curiosity Guide #303

Momentum

Accompanies Curious Crew, Season 3, Episode 3 (#303)

Momentum Rulers

Investigation #3

Description

Use simple materials to demonstrate momentum and collision.

Materials

- Ruler or paint stirrer
- Large metal washer
- Small metal washer

Procedure

- 1) Lay a ruler on a smooth surface or table.
- 2) Placed a small bit of tape on the stick to hold the stick in place.
- 3) Place the small washer against one end of the ruler so that it is touching the ruler.
- 4) Strike the opposite end of the ruler with the large washer.
- 5) What happens?
- 6) Now place the large washer against the end of the ruler. Strike the opposite end with the small washer.
- 7) How did the second collision compare with the first collision?

My Results

Explanation

Whenever something is moving, it has momentum. The faster the object is moving, the more momentum the object has. The more mass an object has, the more momentum the object has as well. So, momentum is equal to an object's mass times its velocity.

In a collision, momentum transfers from one object to the next, but the total momentum stays the same in the system. This is referred to as the Law of Conservation of Momentum, and both momentum and kinetic energy are conserved. So long as there is no additional external force acting on the system, the total momentum does not change.

When the small washer strikes the stationary ruler, the energy moves through the ruler to the large washer. However, the energy will move more slowly and will travel less distance because the large washer has more mass. Striking the ruler with the large washer makes the small washer move much more because the small washer has less mass.

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