

Impulse Problems

$$\mathbf{p = mv}$$

$$\mathbf{Impulse = Ft}$$

$$\mathbf{Ft = \Delta p}$$

1. What is the impulse when a 10 N force is exerted on an object for 3 seconds?
2. What is the impulse when a 600 N force is exerted on an object for 5 seconds?
3. A 2 kg mass moving at a speed of 3 m/s is stopped by a constant force of 15 N. How many seconds must the force act on the mass to stop it?
4. A 20 kg cart moving east with a speed of 6 m/s collides with a 30 kg cart moving west. Both carts come to rest immediately after the collision.
 - a. What was the speed of the westbound cart before the collision?
 - b. What was the impulse on the westbound cart from the collision?
 - c. What force was exerted on the westbound cart if it came to rest in 0.5 seconds?
 - d. What force was exerted on the eastbound cart?
5. A student drops two identical cell phones face down from the same height. Phone A lands on the tile floor and the screen breaks. Phone B lands safely on a foam pad lying on the floor.
 - a. Compare the change in momentum of the two phones on landing.
 - b. Compare the impulse experienced by the two phones on landing.
 - c. Which phone experienced a greater force on landing?
 - d. Which phone came to rest over a longer period of time?