

Physical Science Chapter 3
Wkst: Momentum Practice

Show all Steps in solving problems, given, equation, and all work with units

1. Calculate the momentum of a 75 kg speed skater moving forward at 16 m/s (L2)

Given:
 $p = ?$
 $m = 75 \text{ Kg}$
 $v = 16 \text{ m/s}$

Soln:
 $p = m v$
 $p = (75 \text{ Kg})(16 \text{ m/s})$
 $p = 1200 \text{ Kg} \cdot \text{m/s}$

2. Calculate the momentum of a 135 kg ostrich running north at 16.2 m/s (L2)

Given:
 $p = ?$
 $m = 135 \text{ Kg}$
 $v = 16.2 \text{ m/s}$

Soln:
 $p = m v$
 $p = (135 \text{ Kg})(16.2 \text{ m/s})$
 $p = 2187 \text{ Kg} \cdot \text{m/s}$

3. Calculate the momentum of a 5.0 kg baby on a train moving eastward at 72 m/s (L2)

Given:
 $p = ?$
 $m = 5.0 \text{ Kg}$
 $v = 72 \text{ m/s}$

Soln:
 $p = m v$
 $= (5.0 \text{ Kg})(72 \text{ m/s})$
 $p = 360 \text{ Kg} \cdot \text{m/s}$

4. Calculate the velocity of a 0.8 kg kitten with a momentum of 5 kg m/s forward (L2)

Given:
 $p = 5 \text{ Kg} \cdot \text{m/s}$
 $m = 0.8 \text{ Kg}$
 $v = ?$

Soln:
 $p = m v$
 $v = \frac{p}{m}$
 $v = \frac{5 \text{ Kg} \cdot \text{m/s}}{0.8 \text{ Kg}}$
 $v = 6.25 \text{ m/s}$

5. If a car with a velocity of 30 m/s has a momentum of 36,000 kg m/s southwest, what is the car's mass? (L2)

Given:
 $p = 36,000 \text{ Kg} \cdot \text{m/s}$
 $m = ?$
 $v = 30 \text{ m/s}$

Soln:
 $p = m v$
 $m = \frac{p}{v}$
 $m = \frac{36000 \text{ Kg} \cdot \text{m/s}}{30 \text{ m/s}}$
 $m = 1200 \text{ Kg}$

6. Calculate the momentum of a seated 48.5 kg passenger on a train that is stopped (L3)

Given:
 $p =$
 $m =$
 $v =$

7. Explain the difference between an object having momentum and an object having inertia. (L4)

Momentum is a quantity of an object that is the object's mass x velocity

Inertia is a property that describes how much an object resists changing its motion & only depends on the mass of the object.