

Hot Wheels: Part 2 Skill Builder

1. Which has more momentum, a 1000 kg car moving 30 m/s or a 2000 kg truck moving 10 m/s? _____



2. Predict the outcome of this collision: A 75 kg tailback running 2 m/s is hit directly by a 100 kg linebacker moving 1 m/s. _____



3. According to Newton's Second Law of Motion, Force = _____ X _____.
The equation for momentum is similar; Momentum (p) = _____ X _____.

Summarize the relationship between force / momentum, speed of an object, and the mass of the object:

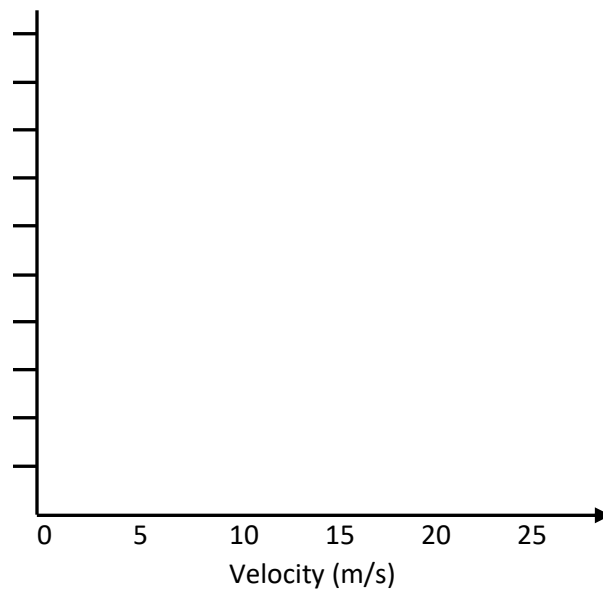
4. $p = mv$ is the formula for
- A. Acceleration
 - B. Momentum
 - C. Force
 - D. Percussion
5. $F = ma$ is the formula for
- A. Newton's First Law of Motion
 - B. Newton's Second Law of Motion
 - C. Force
 - D. B & C are correct

6. Summarize the Law of Conservation of Momentum:

7. Momentum:
- A. The change of rate of an object
 - B. Can be transferred from one object to another
 - C. Depends on mass and velocity
 - D. None of the above
 - E. B & C

8. Calculate the momentum of a 100 kg linebacker running 12 m/s
- 12000 kg·m/s
 - 1200 kg·m/s
 - 8.3 kg·m/s
 - .12 kg·m/s
9. Calculate the force of a 75 kg skydiver accelerating at the speed of gravity (9.8 m/s^2). You should be able to figure this by estimating products.
- 7.5 N
 - 7.65 N
 - 0.13 N
 - 735 N
10. A 50 kg student is skiing down a hill. Calculate and graph the momentum of the skier at the following velocities. Label the y axis (include units) and include a title:

- 2 m/s
- 4 m/s
- 6 m/s
- 12 m/s
- 15 m/s
- 20 m/s



11. A toy train runs consistently at 2 m/s. The engine weighs 2 kg and each additional car weighs 1 kg. Calculate and graph the following. Add all necessary labels and units. Include a meaningful title.

- The engine alone
- The engine + 1 car
- The engine + 2 cars
- The engine + 4 cars
- The engine + 7 cars

