

Momentum Concepts

Concepts

- A. What is momentum?
- B. What are the units of momentum?
- C. Is momentum a *vector* or a *scalar*?

Equation

1. What is the momentum of a 1200 kg car moving at 20 m/s?
2. What is the momentum of a 0.5 kg cart moving at 1.2 m/s?
3. What is the momentum of a 40 gram bullet traveling at 350 m/s?
4. Who has more momentum, a 75 kg person running at 3 m/s or a 150 kg person running at 3 m/s?
5. Who has more momentum, a 75 kg person running at 3 m/s or 225 kg person walking at 1 m/s?
6. How fast is a 5 kg ball moving if it has a momentum of 75 kg•m/s?
7. What is the mass of a car that has a momentum of 38,000 kg•m/s when it is moving at 20 m/s?
8. How fast does a 75 kg person have to travel to have a momentum of 400 kg•m/s ?
9. What happens to your momentum if you double your speed?
10. What happens to your momentum if you triple your speed?
11. Two objects have the same momentum, but different masses. How could this be?
12. Is it possible for two things to have different speeds, yet have the same momentum?
13. Which is going faster, a 1200 kg car with a momentum of 30,000 kg•m/s or a 1750 kg car with a momentum of 35,000 kg•m/s?

Answers: 1) 24,000 kg•m/s 2) 0.6 kg•m/s 3) 14 kg•m/s 4) 150 kg person 5) same! 6) 15 m/s
 7) 1900 kg 8) 5.33 m/s 9) also doubles 10) also triples 11) smaller one is faster
 12) sure - if masses different 13) 1200 kg car (25 m/s vs 20 m/s)