



## Momentum and Impulse Practice Problems

$$\text{mom} = mv \quad Ft = mv_f - mv_i$$

- 1) A 700 kg car is moving at 30 m/s. What is its momentum?
- 2) If the momentum of a 20 kg toy boat is 150 kg m/s, what is the speed of the toy boat?
- 3) If the momentum of an object moving at 30 m/s is 750 kg m/s, what is the mass of the object?
- 4) A 3 kg soccer ball is accelerated from rest to a speed of 15 m/s in a time of 0.40 s. What was the size of the force that caused this change in momentum?
- 5) A 1500kg car applies its brakes for 3s and slows from 4m/s to a stop. What was the force applied by the brakes?

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- 6) The ion thrusters on a space ship provide 4000 N of force for 15s. If the spaceship has a mass of 15000 kg and starts at rest, what will its final velocity be?
- 7) A large model plane had a net force of 300 N act on it for 3s. Its velocity changed from 15m/s to 20m/s. What was the mass of the model plane?
- 8) A net force of 10 N acted on a 25 kg object moving at 15 m/s. The new speed of the object was 17 m/s. How much time did this take?
- 9) Assume a 1000 kg car moving at 30 m/s must come to a stop within a distance of 15 m. What force must the brakes supply?

Answers: 6) 4 m/s    7) 180 kg    8) 5 s    9) -30,000 N