

$$p = mv$$

Part I. Relationships and Units

- 1) Momentum is _____ proportional to mass.
- 2) Momentum is _____ proportional to velocity.
- 3) Mass is _____ proportional to the velocity.

- 4) The unit of mass is _____. The unit of velocity is _____. The units of momentum are _____ and _____.

A bowling ball of 10 kg rolls down the street with a momentum of 60 Ns.

- 5) What will the new momentum be if the mass is cut in half?
- 8) What will the new momentum be if mass of the book is quadrupled and the velocity is reduced by a fourth?

factor changed	new momentum
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factor changed	new momentum
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- 6) What will the new momentum be if the velocity is cut by a third?
- 9) What will the new momentum be ball is brought to the moon (gravity 1/6 of Earth)?

factor changed	new momentum
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factor changed	new momentum
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- 7) What will the new momentum be if the mass tripled and the velocity is quadrupled?
- 10) What will new momentum be if the ball rolled the same distance but in half the time?

factor changed	new momentum
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factor changed	new momentum
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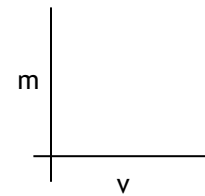
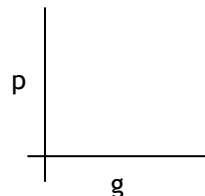
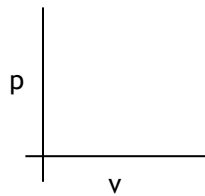
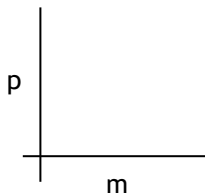
- 11) The momentum was increased to 600 Ns. List three scenarios that could have occurred for this to happen.

Scenario 1

Scenario 2

Scenario 3

Part II. Graphs



Part III. Practice Problems

- 12) What is the momentum of a 12000 kg car moving at a speed of 40 m/s?

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- 13) What is the speed of 100kg football player moving with a momentum of 6500 Ns?

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- 14) What is the mass of a sailboat moving at 12 m/s with a momentum of 15000 kgm/s?

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