

0 1 . 1

State the equation for the momentum of an object.

[1 mark]

0 1 . 2

A speedboat of mass 2000 kg has a momentum of 52,000 kg m/s. Calculate its velocity.

Velocity = _____ m/s

[3 marks]

0 1 . 3

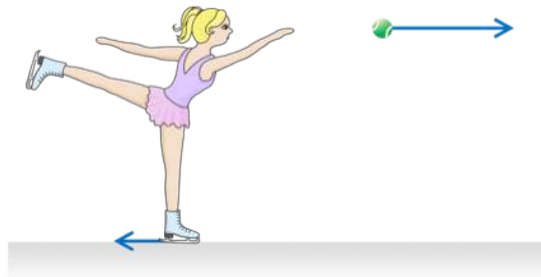
You read in a textbook that the electron in the hydrogen atom orbits the nucleus at approximately 2,200 kilometres per second, and that the mass of the electron is 9.11×10^{-31} kg. Calculate the momentum of one of these electrons.

Momentum = _____ kg m/s

[3 marks]

0 2

An ice skater is balancing at rest on an ice rink. She then throws a tennis ball forwards and starts to move backwards, as shown below.



0 2 . 1

State the Principle of Conservation of Momentum.

[3 marks]

0 2 . 2

Explain why the ice skater moves as shown in the above diagram.

[3 marks]

0	3
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A car of mass 1500 kg is about to crash into the back of a lorry of mass 6000 kg, as shown below.



0	3
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1

Show that the combined momentum of both vehicles before the collision is 90,000 kg m/s.

[3 marks]

0	3
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2

After the collision the car and lorry stick together and travel with a common velocity of 10 m/s. Calculate their combined momentum after the collision.

Combined momentum after collision = _____ kg m/s

[3 marks]

0	3
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3

Compare and comment on the previous two answers.

[3 marks]