

Brett Robbins Academic Consulting

Physics 30 Practice Test

Unit A: Momentum & Impulse

10 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

A hockey puck with a mass of 0.16 kg is sliding across the ice at 25 m/s.

The magnitude of the momentum of the puck is

- A) 0.16 kg · m/s
- B) 25 kg · m/s
- C) 4.0 kg · m/s
- D) 1.6×10^2 kg · m/s

Question 2

A 0.40 kg ball moving at 12 m/s is caught and brought to rest by a player.

The magnitude of the impulse delivered to the ball is

- A) 4.8 N · s
- B) 3.0 N · s
- C) 0.40 N · s
- D) 30 N · s

Question 3

On a force – versus – time graph for an object, the area under the curve represents the

- A) work done on the object
- B) impulse experienced by the object
- C) power delivered to the object
- D) acceleration of the object

Question 4

A constant net force of 250 N acts on a crate for 0.80 s.

The magnitude of the impulse delivered to the crate is

- A) 31 N · s
- B) 3.1×10^2 N · s
- C) 20 N · s
- D) 2.0×10^2 N · s

Question 5

A 1.2 kg ball moving east at 5.0 m/s strikes a wall and rebounds directly west at 3.0 m/s.

The magnitude of the change in momentum of the ball is

- | | |
|-----------------|-----------------|
| A) 2.4 kg · m/s | B) 9.6 kg · m/s |
| C) 6.0 kg · m/s | D) 3.6 kg · m/s |

Question 6

A 0.50 kg ball moving at 12 m/s toward a wall rebounds directly away from the wall at 8.0 m/s.

If the ball is in contact with the wall for 0.010 s, the magnitude of the average force exerted on the ball by the wall is

- | | |
|------------------------|------------------------|
| A) 2.0×10^2 N | B) 4.0×10^2 N |
| C) 1.0×10^3 N | D) 1.0×10^4 N |

Question 7

A 1 200 kg car travelling at 8.0 m/s rear – ends a stationary 900 kg car.

The two cars lock together. Their common speed immediately after the collision is

- | | |
|------------|------------|
| A) 4.6 m/s | B) 3.4 m/s |
| C) 6.2 m/s | D) 8.0 m/s |

Question 8

Two carts rest on a frictionless track with a compressed spring between them.

When the spring is released, the 1.2 kg cart moves away at 2.0 m/s.

The speed of the 0.80 kg cart, in metres per second, to the nearest tenth, is ____

Question 9

A 1.0 kg ball moving at 6.0 m/s undergoes an elastic collision with a stationary 3.0 kg ball.

The speed of the 3.0 kg ball immediately after the collision is

- | | |
|------------|------------|
| A) 1.5 m/s | B) 6.0 m/s |
| C) 4.5 m/s | D) 3.0 m/s |

Question 10

A 5.0 kg cart moving at 6.0 m/s collides with a stationary 5.0 kg cart and sticks to it.

The kinetic energy lost in the collision is

- | | |
|---------|---------|
| A) 0 J | B) 45 J |
| C) 90 J | D) 22 J |

Answer Key

- | | | |
|------|--------|-------|
| 1. C | 5. B | 9. D |
| 2. A | 6. C | 10. B |
| 3. B | 7. A | |
| 4. D | 8. 3.0 | |

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