

Brett Robbins Academic Consulting

Physics 20 Practice Test

Unit B: Dynamics

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 slides across a frictionless ice surface at a constant velocity.

The net force, $\vec{F}_{\text{net}}$, acting on the puck is

- A) in the direction of motion
- B) zero
- C) equal to the weight of the puck
- D) directed toward the ice surface

Question 2

The weight of a 12 kg mass on Earth, where $g = 9.81 \text{ m/s}^2$, is

- A) 118 N
- B) 12 N
- C) 1.22 N
- D) $1.18 \times 10^3 \text{ N}$

Question 3

A book rests motionless on a horizontal table. The gravitational force that Earth exerts on the book forms an action – reaction pair with

- A) the normal force exerted on the book by the table
- B) the gravitational force exerted on Earth by the book
- C) the force exerted on the table by the book
- D) the force exerted on the book by the table due to friction

Question 4

A net force of 36 N acts on a 4.5 kg object.

The acceleration of the object, in m/s^2 to the nearest tenth, is ____

Question 5

A crate slides across a rough horizontal floor. The force of kinetic friction acting on the crate is directed

- A) perpendicular to the floor
- B) in the same direction as the motion
- C) opposite to the direction of motion
- D) in the direction of the applied force

Question 6

A 15 kg box slides across a horizontal surface. The coefficient of kinetic friction between the box and the surface is 0.25. Use $g = 9.81 \text{ m/s}^2$.

The magnitude of the force of kinetic friction acting on the box is

- | | |
|-----------|-----------|
| A) 3.75 N | B) 147 N |
| C) 589 N | D) 36.8 N |

Question 7

A horizontal force of 150 N pushes a 25 kg crate across a floor.

The force of friction opposing the motion is 50 N.

The acceleration of the crate is

- | | |
|------------------------|------------------------|
| A) 4.0 m/s^2 | B) 2.0 m/s^2 |
| C) 6.0 m/s^2 | D) 8.0 m/s^2 |

Question 8

A 30 kg crate rests on a horizontal floor. The coefficient of static friction between the crate and the floor is 0.45. Use $g = 9.81 \text{ m/s}^2$.

The maximum force of static friction, in newtons to the nearest newton, is ____

Question 9

A student pushes against a wall with a horizontal force of 200 N.

The force that the wall exerts back on the student is

- A) 0 N, because the wall does not move
- B) 200 N in the same direction as the push
- C) 200 N in the direction opposite to the push
- D) 400 N in the direction opposite to the push

Question 10

An astronaut has a mass of 80 kg. On a planet where the acceleration due to gravity is 3.7 m/s^2 , the weight of the astronaut is

- | | |
|--------------------------------|--------------------------------|
| A) $7.8 \times 10^2 \text{ N}$ | B) $3.0 \times 10^2 \text{ N}$ |
| C) 80 N | D) 22 N |

Answer Key

- | | | |
|--------|--------|-------|
| 1. B | 5. C | 9. C |
| 2. A | 6. D | 10. B |
| 3. B | 7. A | |
| 4. 8.0 | 8. 132 | |

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