Multiple choice questions - Forces and Newton's laws

Year: Year 12 · 10

Question 1 The weight of a 10 kg mass is

- ◯ **A.** 10 N
- ◯ **B.** 98 N
- ◯ **C.** 9.8 N
- ◯ **D.** 100 kg

Question 2 Newton's second law is

- ◯ **A.** $F = mv$
- ◯ **B.** $F = ma$
- ◯ **C.** $F = m/a$
- ◯ **D.** $F = a/m$

Question 3 A particle in equilibrium has resultant force

- ◯ **A.** mg
- ◯ **B.** zero
- ◯ **C.** ma
- ◯ **D.** infinite

Question 4 The component of a force F at angle θ to the horizontal, in the horizontal direction, is

- ◯ **A.** $F\sin\theta$
- ◯ **B.** $F\cos\theta$
- ◯ **C.** $F\tan\theta$
- ◯ **D.** $F/\cos\theta$

Question 5 On a smooth slope at angle α the acceleration down the slope is

- ◯ **A.** g
- ◯ **B.** $g\cos\alpha$
- ◯ **C.** $g\sin\alpha$
- ◯ **D.** $g\tan\alpha$

Question 6 The tension in a light string over a smooth pulley is

- ◯ **A.** different at each end
- ◯ **B.** the same at each end

- ◯ **C.** zero
- ◯ **D.** equal to the weight of the pulley

Question 7 A force of 15 N acts on a mass of 5 kg. The acceleration is

- ◯ **A.** 3
- ◯ **B.** 75
- ◯ **C.** 0.33
- ◯ **D.** 10

Question 8 The normal reaction on a block on a smooth horizontal surface equals

- ◯ **A.** its mass
- ◯ **B.** its weight (if no other vertical forces)
- ◯ **C.** zero
- ◯ **D.** its acceleration

Question 9 Forces of 3 N and 4 N at right angles have resultant

- ◯ **A.** 7 N
- ◯ **B.** 1 N
- ◯ **C.** 5 N
- ◯ **D.** 12 N

Question 10 Newton's third law concerns

- ◯ **A.** equal and opposite forces on two bodies
- ◯ **B.** acceleration only
- ◯ **C.** friction only
- ◯ **D.** weight only

Answer grid - Forces and Newton's laws

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Question	Answer	Explanation
1	**B**	mg.
2	**B**	Resultant force = mass x acceleration.
3	**B**	Forces balance.
4	**B**	Adjacent.
5	**C**	Component of weight down the slope.
6	**B**	Light string, smooth pulley.
7	**A**	$15/5$.
8	**B**	Vertical equilibrium.
9	**C**	Pythagoras.
10	**A**	Action and reaction.