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2.2 Forces

Easy

PHYSICS

IB HL

EXAM PAPERS PRACTICE

2.2 Forces

Question Paper

Course	DP IB Physics
Section	2. Mechanics
Topic	2.2 Forces
Difficulty	Easy

Time allowed: 20

Score: /10

Percentage: /100

Question 1

Which statement best summarises Newton's Third Law of Motion?

A. If object X exerts a force on object Y, then object Y exerts a greater and opposite force on object X

B. If object X exerts a force on object Y, then object Y exerts a lesser and opposite force on object X

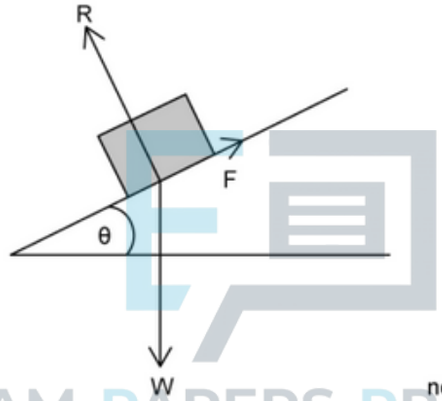
C. If object X exerts a force on object Y, then object Y exerts an equal and opposite force on object X

D. If object X exerts a force on object Y, then object Y exerts no force on object X

[1 mark]

Question 2

The image shows a block resting on an inclined plane.



not to scale

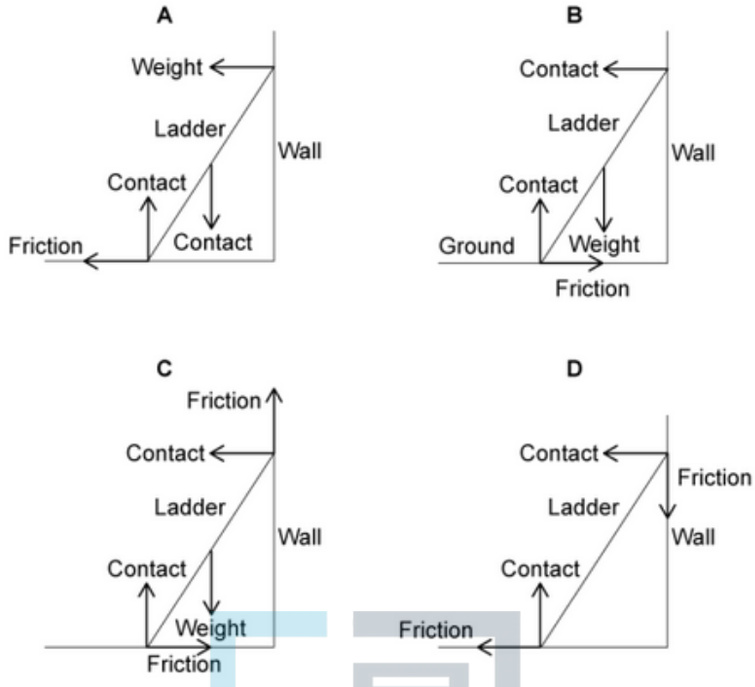
Which row in the table gives the correct interpretation of the forces acting on the block, *R*, *F* and *W*?

	R	*F*	*W*
A.	weight	reaction	static friction
B.	dynamic friction	weight	reaction
C.	reaction	dynamic friction	weight
D.	reaction	static friction	weight

[1 mark]

Question 3

A ladder rests on a rough wall and rough horizontal ground. Which diagram correctly labels all forces acting on the ladder?



[1 mark]

Question 4

A parachutist of mass 75 kg is falling vertically through the air at a constant speed of 0.6 m s^{-1}.

What is the resultant force on the parachutist?

A. 0 N

B. 75 N

C. 750 N

D. 1000 N

[1 mark]

Question 5

Which statement about Newton's Second Law of Motion is true?

A. For bodies of constant mass, the resultant force acting on it is inversely proportional to its acceleration

B. For bodies of a non-constant mass, the resultant force acting on it is proportional to its acceleration

C. For bodies of constant mass, the resultant force acting on it is proportional to its acceleration

D. For bodies of a non-constant mass, the resultant force acting on it is inversely proportional to its acceleration

[1 mark]

Question 6

Which of the following statements about friction is **not** true?

A. Friction always acts in the opposite direction to the direction of motion

B. Static friction occurs when two solid objects are in contact and no movement occurs between the two objects

C. For a stationary object, the force due to the coefficient of dynamic friction is at a maximum

D. For a stationary object, the force due to the coefficient of dynamic friction is zero

[1 mark]

Question 7

Which statement best summarises Newton's first law of motion?

A. Whenever two objects interact the forces they exert on each other are opposite.

B. A resultant force on an object is equal to the rate of change in momentum.

C. A body will remain at rest or move with constant velocity unless acted on by a resultant force

D. A body will move in a constant velocity only if there is a resultant force acting upon it

[1 mark]

Question 8

Which statement about drawing free body diagrams is **not** correct?

A. Arrows must be drawn to scale and represent the size of the force involved

B. All force arrows must touch the object applying the force

C. Force arrows must be drawn as straight lines with a ruler

D. Force arrows don't have to be labelled

[1 mark]

Question 9

Which of the following equations for static friction is correct?

A. $F = ma$

B. $F_f \leq \mu_s R$

C. $F_f = \mu_d R$

D. $F = I\Delta t$

[1 mark]

Question 10

Which statement is correct about the coefficient of friction, μ?

A. It is always between 0 and 1

B. The coefficient of friction can be different for the same material in different situations

C. The coefficient of dynamic and static friction between the same two surfaces will be different

D. The coefficient of dynamic friction is equal to the frictional force multiplied by the reaction force

[1 mark]