

# 2.2 Forces

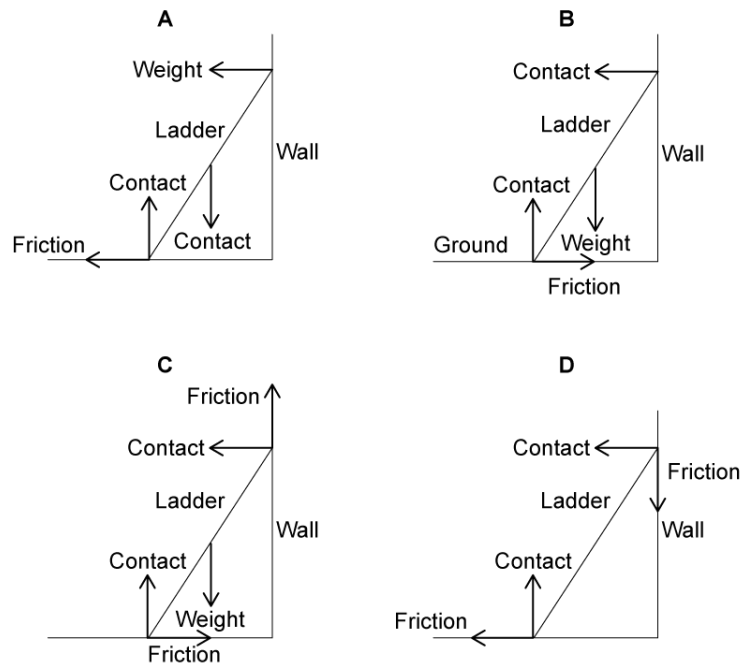
## Question Paper

Course	DPIB Physics
Section	2. Mechanics
Topic	2.2 Forces
Difficulty	Easy

**Time allowed:** 20  
**Score:** /10  
**Percentage:** /100

### Question 1

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



[1 mark]

### Question 2

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

What is the resultant force on the parachutist?

- A. 0 N
- B. 75 N
- C. 750 N
- D. 1000 N

[1 mark]

### Question 3

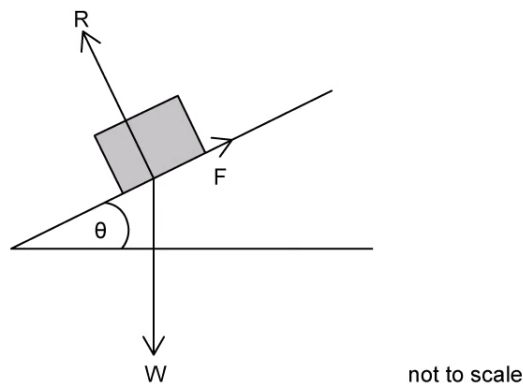
Which statement best summarises Newton's Third Law of Motion?

- 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 4

The image shows a block resting on an inclined plane.



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 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,  $\mu$ ?

- 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]