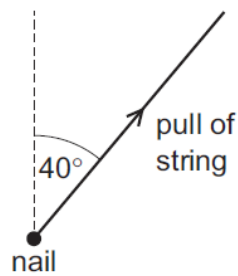


1. Nov/2020/Paper_11/No.1

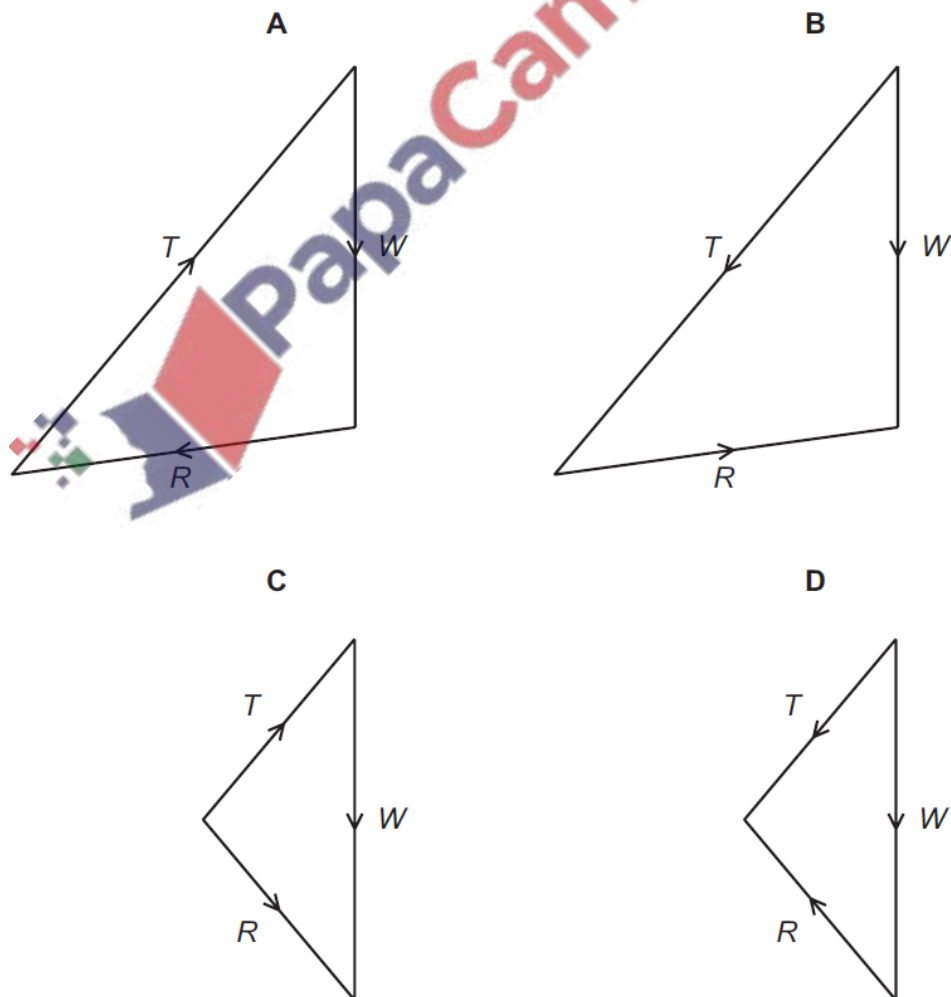
A heavy nail is fixed firmly to a wall. It is pulled by a string at 40° to the vertical. The nail does not move.



Three forces act on the nail:

- its weight W ,
- the tension T in the string,
- the force R exerted by the wall.

Which diagram, drawn to scale, represents the three forces?



2. Nov/2020/Paper_11/No.3

A car of mass 800 kg has a forward acceleration of 2.5 m/s^2 . A frictional force of 1200 N opposes the motion of the car.

What is the driving force due to the engine of the car?

- A 800 N B 1200 N C 2000 N D 3200 N

3. Nov/2020/Paper_11/No.4

A parachutist falling at a steady speed opens her parachute.

Which row is correct for the direction of the resultant force and for the direction of the acceleration of the parachutist just after her parachute opens?

| | resultant force direction | acceleration direction |
|---|---------------------------|------------------------|
| A | downwards | downwards |
| B | downwards | upwards |
| C | upwards | downwards |
| D | upwards | upwards |

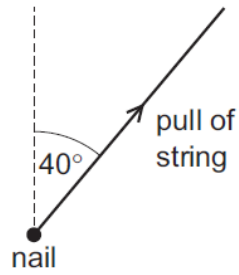
4. Nov/2020/Paper_11/No.11

Which list contains only quantities that can be changed by a force?

- A mass, shape, velocity
B mass, shape, volume
C mass, velocity, volume
D shape, velocity, volume

5. Nov/2020/Paper_12/No.1

A heavy nail is fixed firmly to a wall. It is pulled by a string at 40° to the vertical. The nail does not move.



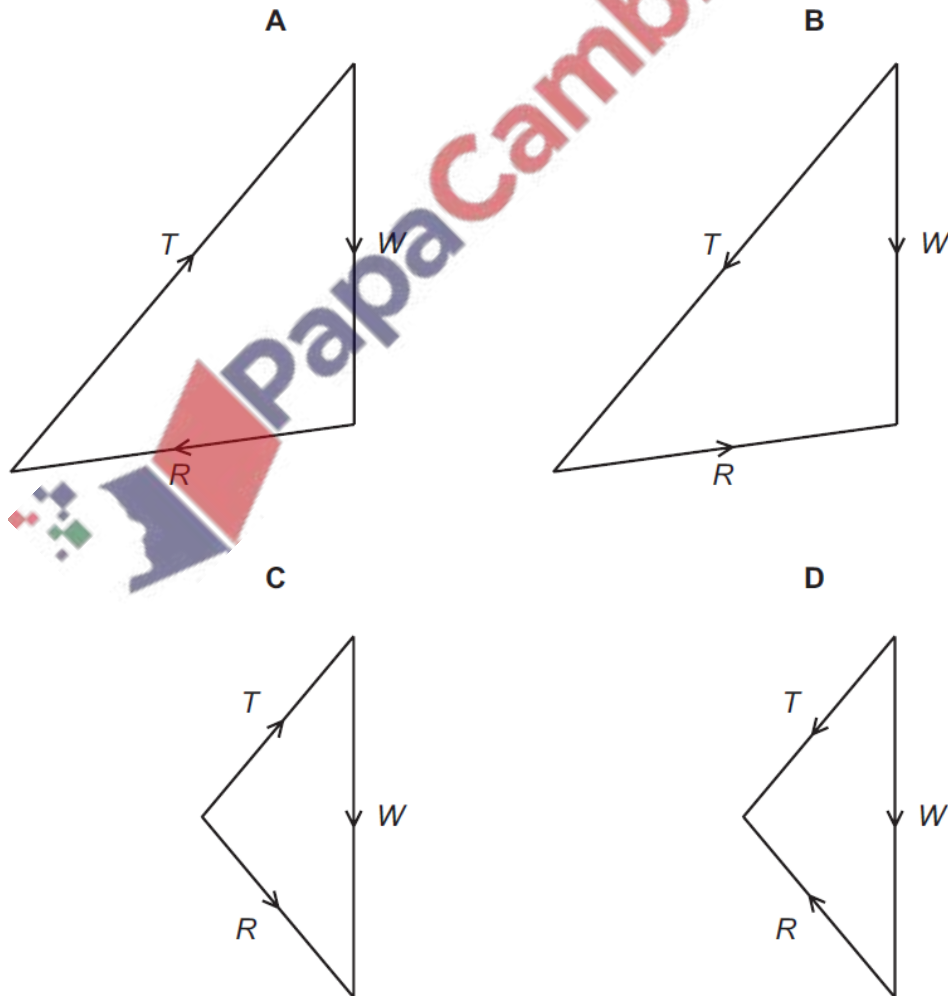
Three forces act on the nail:

its weight W ,

the tension T in the string,

the force R exerted by the wall.

Which diagram, drawn to scale, represents the three forces?



6. Nov/2020/Paper_12/No.4

A car is travelling forwards at high speed. The brakes are applied and the car skids along the road surface.

In which direction and where does the friction force act?

- A backwards on the tyres
- B forwards on the tyres
- C upwards on the tyres
- D downwards on the road

7. Nov/2020/Paper_12/No.5

A car of mass 800 kg has a forward acceleration of 2.5 m/s^2 . A frictional force of 1200 N opposes the motion of the car.

What is the driving force due to the engine of the car?

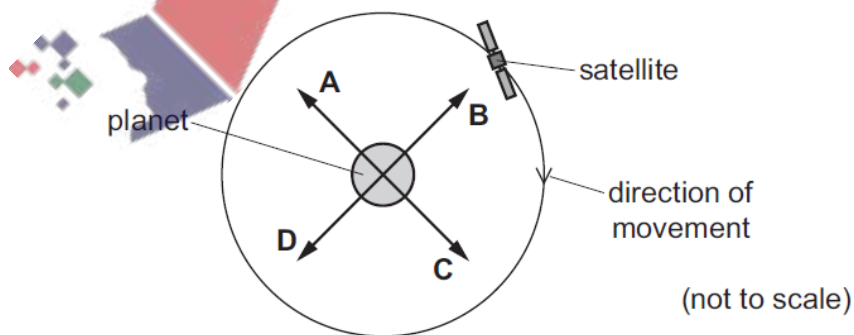
- A 800 N B 1200 N C 2000 N D 3200 N

8. Nov/2020/Paper_12/No.6

A satellite orbits a planet in a circular path as shown. It has constant speed.

There is a force on the planet due to the satellite.

In which direction is the force on the planet?



9. Nov/2020/Paper_12/No.10

Which list contains only quantities that can be changed by a force?

- A mass, shape, velocity
- B mass, shape, volume
- C mass, velocity, volume
- D shape, velocity, volume

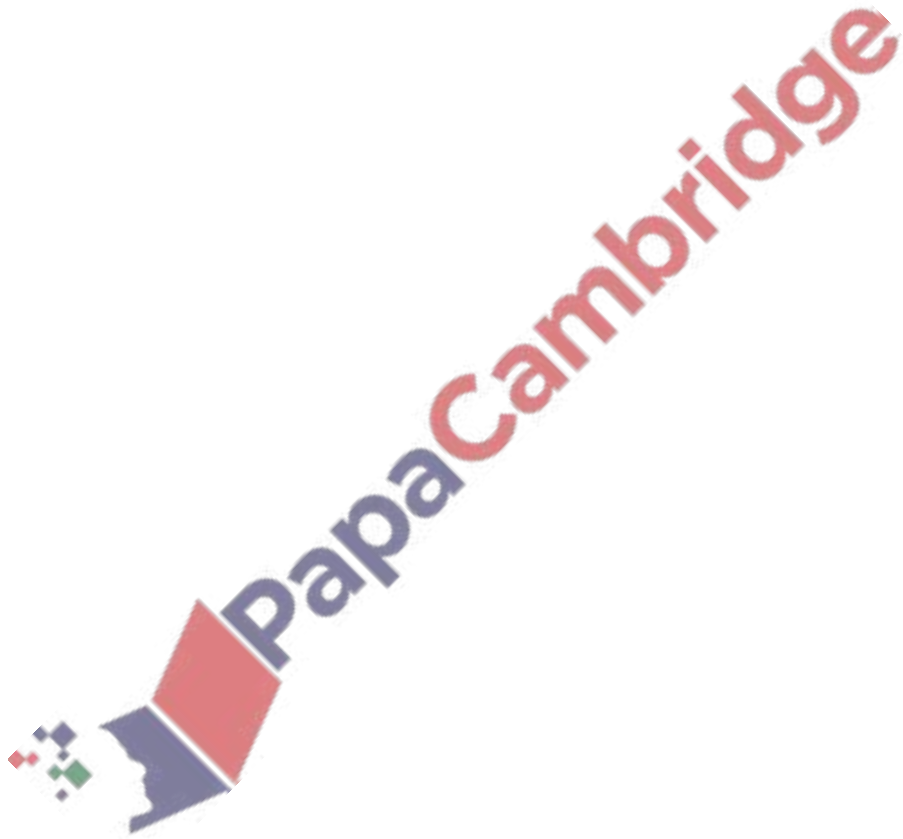


Fig. 2.1 shows a satellite moving at a constant speed in a circular orbit around the Earth.

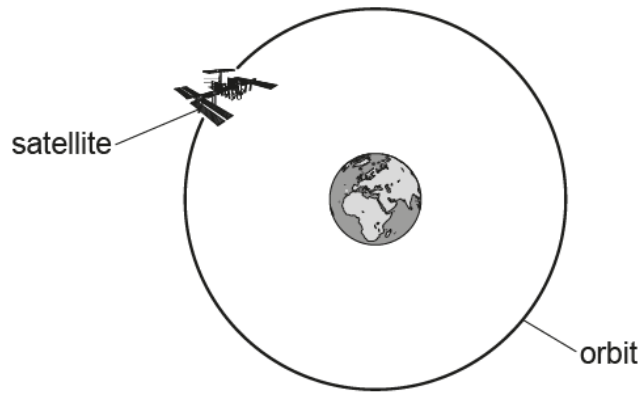


Fig. 2.1 (not to scale)

Speed is a scalar quantity but velocity is a vector quantity.

(a) State how a scalar quantity differs from a vector quantity.

.....
 [1]

(b) Underline every vector quantity in the list.

distance displacement force length mass time [1]

(c) There is a resultant force acting on the satellite in Fig. 2.1.

(i) Explain how the motion of the satellite shows that a resultant force is acting on it.

.....

 [2]

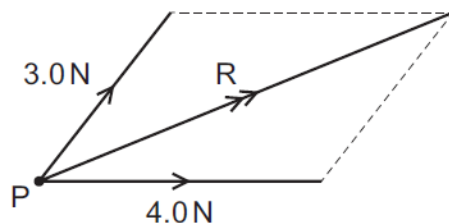
(ii) State the cause of this force.

.....
 [1]

[Total: 5]

11. June/2020/Paper_11/No.1

The diagram shows the resultant R of a 3.0 N force and a 4.0 N force that act at a point P .



The angle between the 3.0 N force and the 4.0 N force can be any value from 0° to 90° .

Which value of R is **not** possible?

- A 4.0 N B 5.0 N C 6.0 N D 7.0 N

12. June/2020/Paper_11/No.4

A car of weight 11 000 N moves with constant velocity along a horizontal road. A driving force of 5000 N acts on the car.

What is the force opposing the motion of the car?

- A 5000 N B 6000 N C 11000 N D 16000 N

13. June/2020/Paper_11/No.5

A man with an open parachute falls to Earth at constant speed. The following forces act:

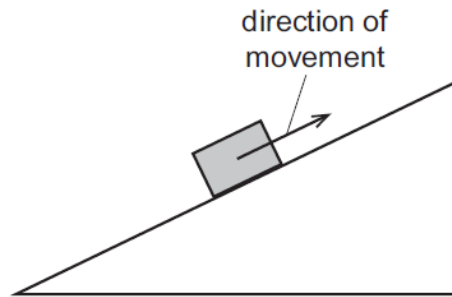
- P the upward force of the parachute on the man
- Q the upward force of the man on the Earth
- R the downward force of the Earth on the parachute
- S the downward force of the man on the parachute

Which two forces are a Newton's third law pair?

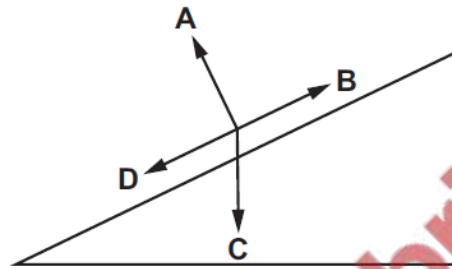
- A P and Q B P and R C P and S D Q and R

14. June/2020/Paper_11/No.6

A box is pulled up a rough slope, as shown.



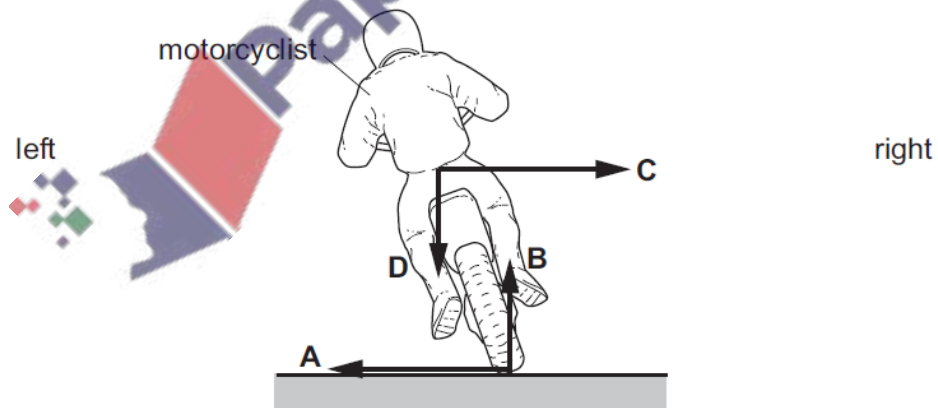
In which direction does friction act on the box?



15. June/2020/Paper_11/No.7

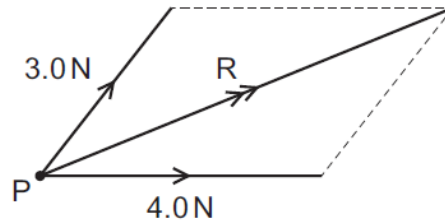
The diagram shows a motorcyclist leaning over in order to turn the corner to the left.

Which force causes him to turn?



16. June/2020/Paper_12/No.2

The diagram shows the resultant R of a 3.0 N force and a 4.0 N force that act at a point P .



The angle between the 3.0 N force and the 4.0 N force can be any value from 0° to 90° .

Which value of R is **not** possible?

- A 4.0 N B 5.0 N C 6.0 N D 7.0 N

17. June/2020/Paper_12/No.6

A car of weight 11 000 N moves with constant velocity along a horizontal road. A driving force of 5000 N acts on the car.

What is the force opposing the motion of the car?

- A 5000 N B 6000 N C 11 000 N D 16 000 N

18. June/2020/Paper_12/No.7

A man with an open parachute falls to Earth at constant speed. The following forces act:

- P the upward force of the parachute on the man
- Q the upward force of the man on the Earth
- R the downward force of the Earth on the parachute
- S the downward force of the man on the parachute

Which two forces are a Newton's third law pair?

- A P and Q B P and R C P and S D Q and R