



# ÉCOLE GLOBALE

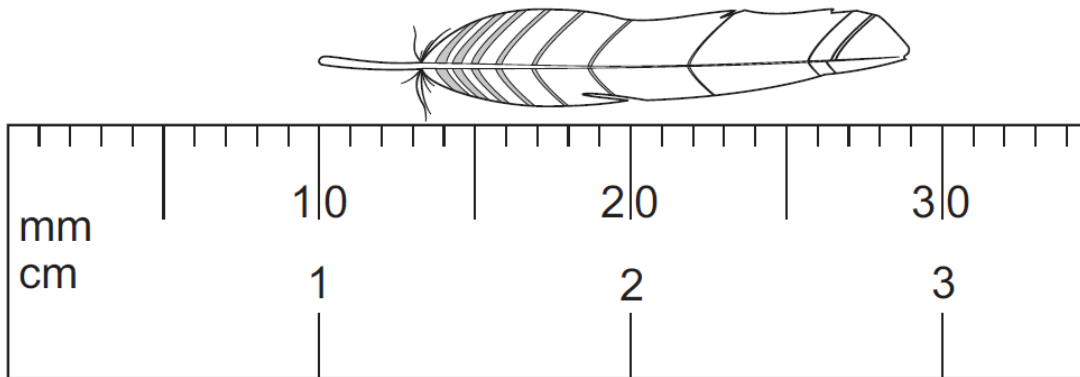
INTERNATIONAL GIRLS' SCHOOL  
Dehradun

## HOLIDAY HOMEWORK - CLASS IX (Physics)

### WORKSHEET 1

1.

The diagram shows an enlarged drawing of the end of a metre rule. It is being used to measure the length of a small feather.

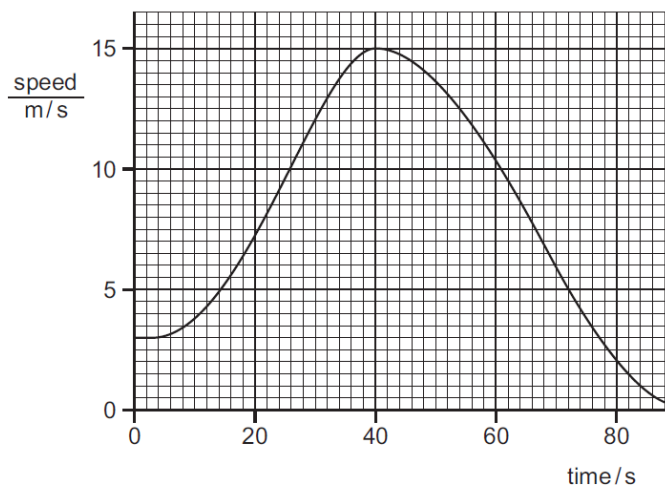


What is the length of the feather?

- A** 19 mm      **B** 29 mm      **C** 19 cm      **D** 29 cm

2.

The speed-time graph shown is for a car moving in a straight line.



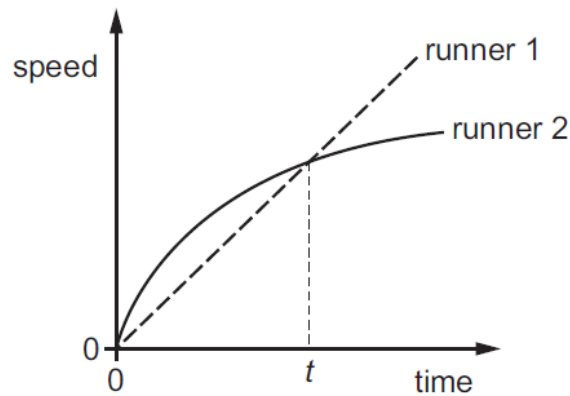
What is the acceleration of the car when the time is 40 s?

- A**  $0 \text{ m/s}^2$       **B**  $\frac{15-3}{40} \text{ m/s}^2$       **C**  $\frac{15}{40} \text{ m/s}^2$       **D**  $(15 - 3) \text{ m/s}^2$

3.

Two runners take part in a race.

The graph shows how the speed of each runner changes with time.



What does the graph show about the runners at time  $t$ ?

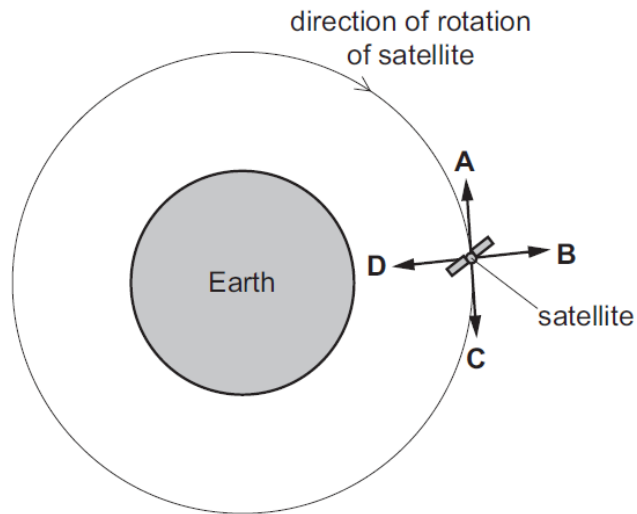
- A** Both runners are moving at the same speed.  
**B** Runner 1 has zero acceleration.  
**C** Runner 1 is overtaking runner 2.  
**D** Runner 2 is slowing down.

4.

A satellite orbits the Earth above the atmosphere at a constant speed.

The diagram shows the satellite at one point in its circular orbit around the Earth.

Which labelled arrow shows the direction of the resultant force on the satellite at the position shown?



5.

A cup contains hot liquid.

Some of the liquid evaporates.

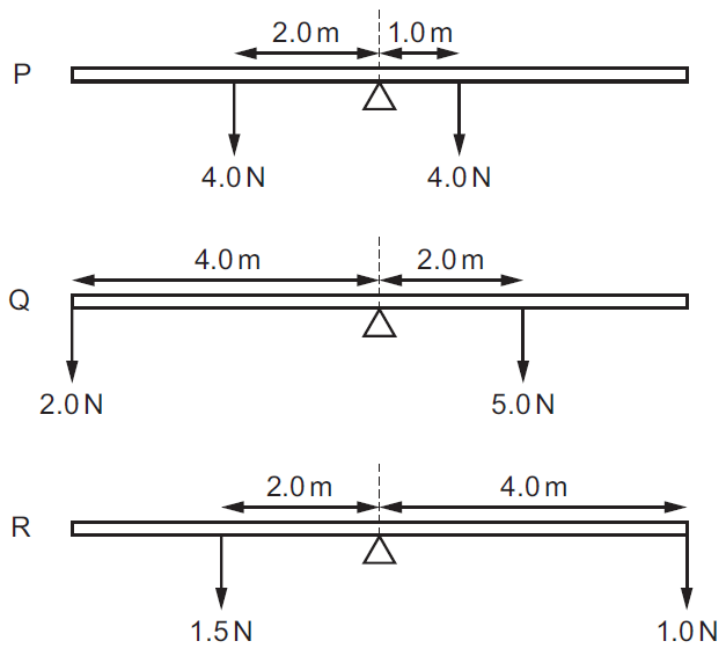
What happens to the mass and what happens to the weight of the liquid in the cup?

	mass	weight
<b>A</b>	decreases	decreases
<b>B</b>	decreases	stays the same
<b>C</b>	stays the same	decreases
<b>D</b>	stays the same	stays the same

6.

The diagrams show three uniform beams P, Q and R, each pivoted at its centre.

The two forces acting on each beam are also shown.



Which beams rotate clockwise?

- A P and Q only
- B P and R only
- C Q and R only
- D P, Q and R

7.

An object of mass 50 kg accelerates from a velocity of 2.0 m/s to a velocity of 10 m/s in the same direction.

What is the impulse provided to cause this acceleration?

- A 250 Ns
- B 400 Ns
- C 850 Ns
- D 2500 Ns

8.

A scalar quantity has

- A** magnitude and direction.
- B** no magnitude and no direction.
- C** magnitude but no direction.
- D** direction but no magnitude.

9.

A lorry of mass 4000 kg is travelling at a speed of 4.0 m/s.

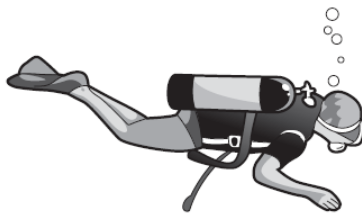
A car has a mass of 1000 kg. The kinetic energy of the car is equal to the kinetic energy of the lorry.

What is the speed of the car?

- A** 2.0 m/s      **B** 4.0 m/s      **C** 8.0 m/s      **D** 16.0 m/s

10.

A diver under water uses breathing apparatus at a depth where the pressure is  $1.25 \times 10^5$  Pa.



A bubble of gas breathed out by the diver has a volume of  $20 \text{ cm}^3$  when it is released. The bubble moves upwards to the surface of the water.

At the surface of the water, the atmospheric pressure is  $1.00 \times 10^5$  Pa.

The temperature of the water is the same at all depths.

What is the volume of this bubble when it reaches the surface?

- A**  $15 \text{ cm}^3$       **B**  $16 \text{ cm}^3$       **C**  $20 \text{ cm}^3$       **D**  $25 \text{ cm}^3$

11.

- (a) On a day with no wind, a fountain in Switzerland propels 30 000 kg of water per minute to a height of 140 m.

Calculate the power used in raising the water.

(b) The efficiency of the pump which operates the fountain is 70%.

Calculate the power supplied to the pump.

On another day, a horizontal wind is blowing. The water does not rise vertically.

Explain why the water still rises to a height of 140 m.

12.

Fig. 4.1 shows a heavy ball B of weight  $W$  suspended from a fixed beam by two ropes P and Q.

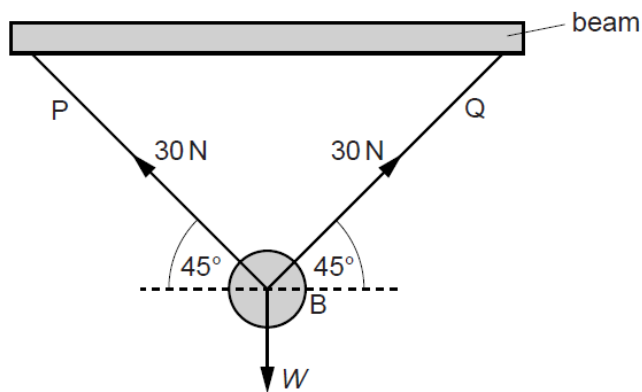


Fig. 4.1

P and Q are both at an angle of  $45^\circ$  to the horizontal. The tensions in P and Q are each 30 N.

(a) In the space below, draw a scale diagram to find the resultant of the tensions in P and Q. Use a scale of 1.0 cm to represent 5.0 N. Label the forces and show their directions with arrows.

(b) State the direction of the resultant.

(c) State the magnitude of  $W$ .

13.

(a) The following are three statements about boiling.

- A liquid boils at a fixed temperature.
- During boiling, vapour can form at any point within the liquid.
- Without a supply of thermal energy, boiling stops.

Complete the following equivalent statements about evaporation.

- A liquid evaporates at .....  
.....
  - During evaporation .....  
.....
  - Without a supply of thermal energy, evaporation .....
- (b)** A pan containing water boiling at  $100^{\circ}\text{C}$  is standing on an electrically heated hot-plate. In 20 minutes, 0.075 kg of water is lost as steam. The specific latent heat of vaporisation of water is  $2.25 \times 10^6 \text{ J/kg}$ .
- (i)** Calculate the energy used in converting 0.075 kg of boiling water to steam.
  - (ii)** The hot-plate operates at 240V, 0.65 A.  
Calculate the energy supplied to the hot-plate in 20 minutes.
  - (iii)** Suggest why the answers to **(b)(i)** and **(b)(ii)** are not the same.

14.

- (a)** A water tank has a rectangular base of dimensions 1.5 m by 1.2 m and contains 1440 kg of water.
- Calculate
- (i)** the weight of the water,