

- 1 A student has an object with a mass of 5.0 kg.

Calculate the weight of the object.

weight of object = ..... N [2]

[Total: 2]

- 2 The weight of a skydiver is 750 N.

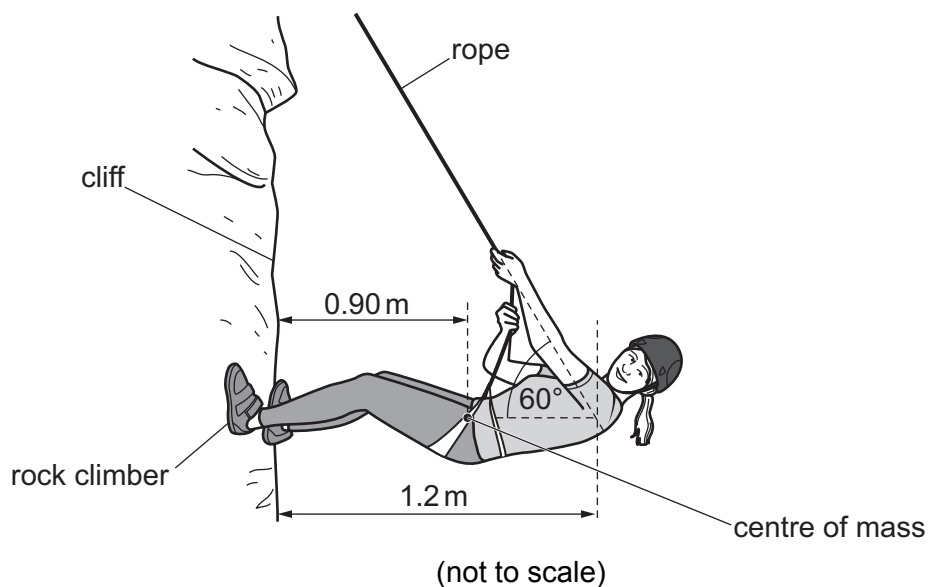
Calculate the mass of the skydiver.

mass = ..... kg [3]

[Total: 3]

- 3 A rock climber, of total mass 62 kg, holds herself in horizontal equilibrium against a vertical cliff. She pulls on a rope that is fixed at the top of the cliff and presses her feet against the cliff.

The diagram shows her position.



Calculate the total weight of the climber.

weight = ..... [1]

[Total: 1]

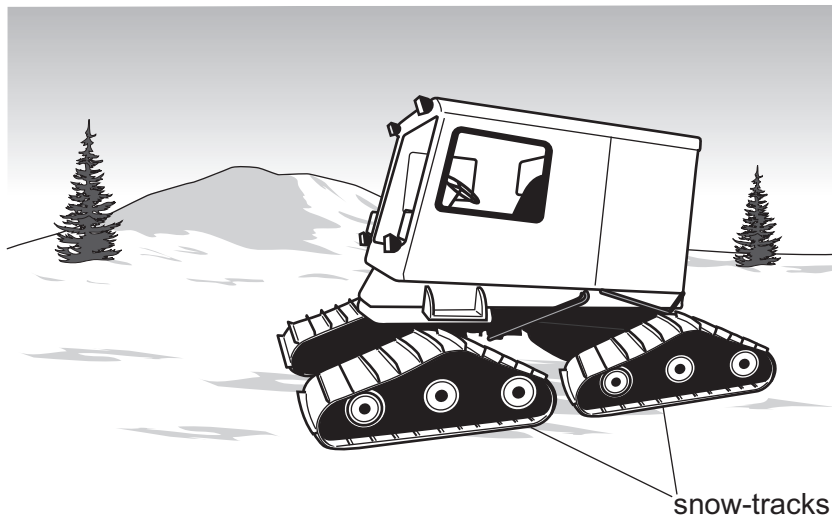
- 4 The mass of a metal block is 0.84 kg.

Calculate the weight of the metal block.

weight = ..... N [2]

[Total: 2]

- 5 The diagram shows a vehicle that is designed to travel on snow.



The vehicle has four snow-tracks.

The weight of the vehicle is 4000 N.

- (a) Calculate the mass of the vehicle.

mass = ..... kg [3]

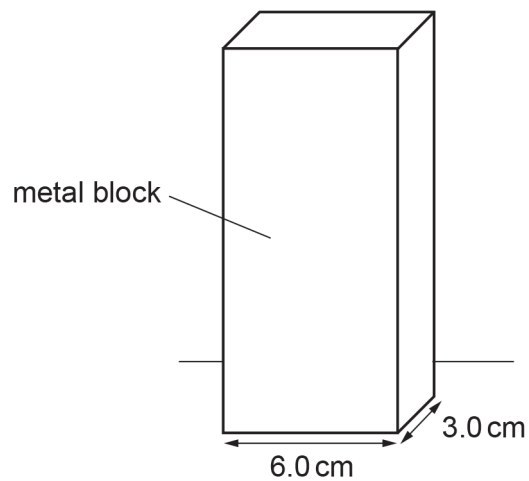
- (b) The area of each snow-track in contact with the ground is  $2.0 \text{ m}^2$ . Each snow-track supports a quarter of the weight of the vehicle.

Calculate the pressure that each snow-track exerts on the ground. Include the unit in your answer.

pressure exerted by each snow-track = ..... unit ..... [4]

[Total: 7]

- 6 The diagram shows a metal block on a flat surface.



The mass of the metal block is 1.6 kg.

Calculate the weight of the metal block.

weight = ..... N [2]

[Total: 2]

- 7 The mass of an empty beaker is 400 g.

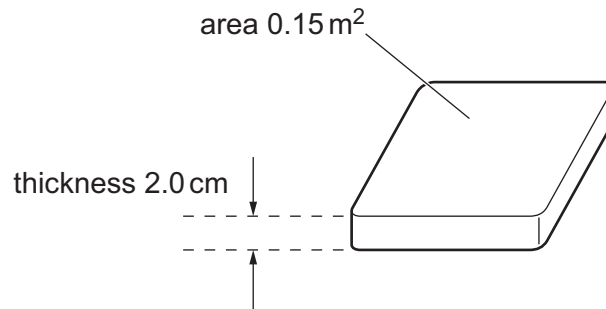
Calculate the weight of the empty beaker.

weight = ..... N [4]

[Total: 4]

- 8 The diagram shows a piece of glass of thickness 2.0 cm and area  $0.15 \text{ m}^2$ .

The density of the glass is  $2.6 \times 10^3 \text{ kg / m}^3$ .



Calculate the weight of the piece of glass.

weight = ..... [3]

[Total: 3]

- 9 A student has a measuring cylinder and a small, irregularly shaped piece of metal. The piece of metal can easily fit into the measuring cylinder.

Describe how the student can use the measuring cylinder and some water to find the volume of the metal.

.....

.....

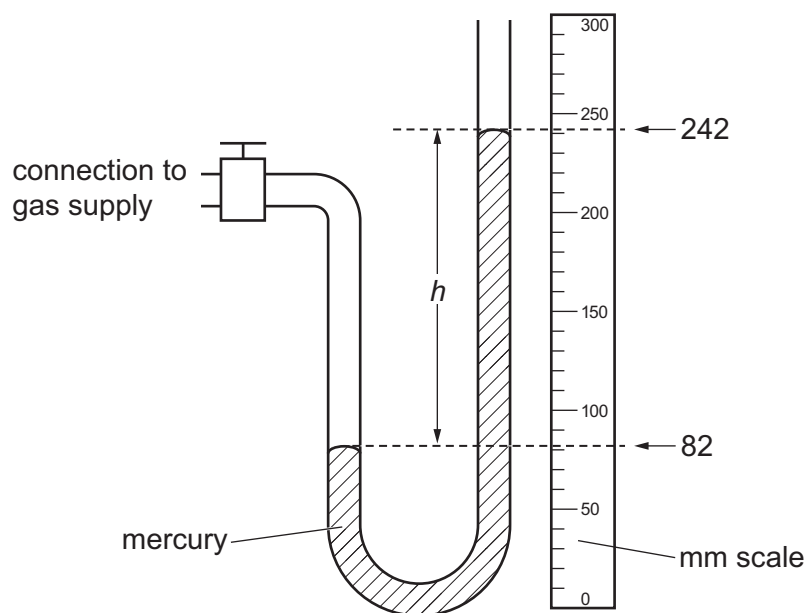
.....

.....

..... [4]

[Total: 4]

- 10 A device for measuring gas pressure is connected to a gas supply as shown in the diagram.



Suggest why this measuring device uses mercury rather than coloured water.

..... [1]

[Total: 1]

- 11 The volume of a block is  $0.0089 \text{ m}^3$ . The mass of the block is 70 kg.

Calculate the density of the block.

density = .....  $\text{kg/m}^3$  [3]

[Total: 3]

- 12 A student has a measuring cylinder, a beaker of liquid and a balance.

Describe how the student can use this equipment to determine the density of the liquid.

.....  
 .....  
 .....  
 .....  
 .....  
 .....  
 ..... [3]

[Total: 3]

- 13** A metal block has a mass of 86 g and a volume of  $8.0 \text{ cm}^3$ .

(a) Calculate the density  $\rho$  of the metal using the equation

$$\rho = \frac{m}{V}.$$

density of metal = ..... g /  $\text{cm}^3$  [2]

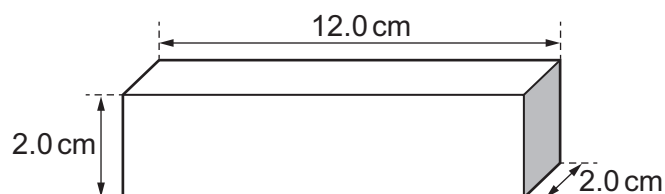
(b) The metal block is placed in some liquid. The metal block floats on the liquid.

Suggest a value for the density of the liquid.

..... g /  $\text{cm}^3$  [1]

[Total: 3]

- 14** The diagram shows a metal block and its dimensions.



Calculate the volume of the metal block.

volume of the block = .....  $\text{cm}^3$  [2]

[Total: 2]

- 15** A stone has a mass of 98.4 g. The volume of this stone is  $41.0 \text{ cm}^3$ .

Calculate the density of the stone.

density = ..... g /  $\text{cm}^3$  [3]

[Total: 3]

- 16** In an experiment, a metal block is heated and the temperature of the metal block increases by 100 °C.

State the effect, if any, of the temperature increase on:

1. the volume of the metal block .....
2. the mass of the metal block .....
3. the density of the metal block ..... [3]

[Total: 3]