

1 $m = \frac{\sqrt{s}}{t}$ $s = 3.47$ correct to 3 significant figures
 $t = 8.132$ correct to 4 significant figures

By considering bounds, work out the value of m to a suitable degree of accuracy.
Give a reason for your answer.

(5)

- 2 (a) Find the value of the reciprocal of 1.6
Give your answer as a decimal.

.....
(1)

Jess rounds a number, x , to one decimal place.
The result is 9.8

- (b) Write down the error interval for x .

.....
(2)

- 3 The petrol consumption of a car, in litres per 100 kilometres, is given by the formula

$$\text{Petrol consumption} = \frac{100 \times \text{Number of litres of petrol used}}{\text{Number of kilometres travelled}}$$

Nathan's car travelled 148 kilometres, correct to 3 significant figures.
The car used 11.8 litres of petrol, correct to 3 significant figures.

Nathan says,

“My car used less than 8 litres of petrol per 100 kilometres.”

Could Nathan be wrong?
You must show how you get your answer.

(3)

- 4 Jackson is trying to find the density, in g/cm^3 , of a block of wood.
The block of wood is in the shape of a cuboid.

He measures

the length as 13.2 cm, correct to the nearest mm
the width as 16.0 cm, correct to the nearest mm
the height as 21.7 cm, correct to the nearest mm

He measures the mass as 1970 g, correct to the nearest 5 g.

By considering bounds, work out the density of the wood.
Give your answer to a suitable degree of accuracy.

You must show all your working and give a reason for your final answer.

(5)

- 5 Sally used her calculator to work out the value of a number y .

The answer on her calculator display began

8.3

Complete the error interval for y .

$$\dots\dots\dots \leq y < \dots\dots\dots$$

(2)

6 $D = \frac{u^2}{2a}$

$u = 26.2$ correct to 3 significant figures

$a = 4.3$ correct to 2 significant figures

- (a) Calculate the upper bound for the value of D .
Give your answer correct to 6 significant figures.
You must show all your working.

$$\dots\dots\dots$$

(3)

The lower bound for the value of D is 78.6003 correct to 6 significant figures.

- (b) By considering bounds, write down the value of D to a suitable degree of accuracy.
You must give a reason for your answer.

$$\dots\dots\dots$$

$$\dots\dots\dots$$

(2)

- 7 The length of a pencil is 128 mm correct to the nearest millimetre.

Complete the error interval for the length of the pencil.

$$\dots\dots\dots \text{ mm} \leq \text{length} < \dots\dots\dots \text{ mm}$$

(2)

8 $d = \frac{1}{8}c^3$

$c = 10.9$ correct to 3 significant figures.

By considering bounds, work out the value of d to a suitable degree of accuracy.
Give a reason for your answer.

(4)

- 9 The time period, T seconds, of a simple pendulum of length l cm is given by the formula

$$T = 2\pi \sqrt{\frac{l}{g}}$$

Katie uses a simple pendulum in an experiment to find an estimate for the value of g .

Here are her results.

$l = 52.0$ correct to 3 significant figures.

$T = 1.45$ correct to 3 significant figures.

Work out the upper bound and the lower bound for the value of g .

Use $\pi = 3.142$

You must show all your working.

upper bound =

lower bound =

(4)

10 Freya writes down the value of x , correct to 1 decimal place.

She writes $x = 6.4$

Complete the error interval for x .

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(2)