**1.** The weight of a bag of potatoes is 25 kg, correct to the nearest kg.

(a) Write down the smallest possible weight of the bag of potatoes.

24.5 kg

**(1)**

(b) Write down the largest possible weight of the bag of potatoes.

25.5 kg

**(1)**

**(Total 2 marks)**

**2.** The length of a line is 63 centimetres, correct to the nearest centimetre.

(a) Write down the **least** possible length of the line.

62.5 centimetres

**(1)**

(b) Write down the **greatest** possible length of the line.

63.5 centimetres

**(1)**

**(Total 2 marks)**

**3.** A field is in the shape of a rectangle.

The length of the field is 340 m, to the nearest metre.
The width of the field is 117 m, to the nearest metre.

Calculate the upper bound for the perimeter of the field.

$2(340.5) + 2(117.5)$

916 m

**(Total 2 marks)**

**4.** The length of a rectangle is 30 cm, correct to 2 significant figures.
The width of a rectangle is 18 cm, correct to 2 significant figures.

(a) Write down the upper bound of the width.

**(1)**

18.5 cm

(b) Calculate the upper bound for the area of the rectangle.

**(2)**

$18.5 \times 30.5$

564.25 cm

**(Total 3 marks)**

**5.**

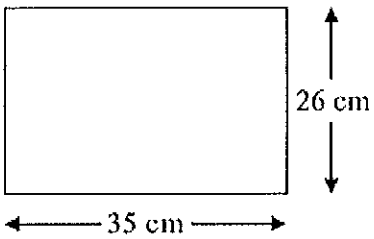



Diagram **NOT** accurately drawn

The length of the rectangle is 35 cm correct to the nearest cm.
The width of the rectangle is 26 cm correct to the nearest cm.

Calculate the upper bound for the area of the rectangle.
Write down all the figures on your calculator display.

35.5 × 26.5

940.75 .....cm$^2$

**(Total 3 marks)**

**6.** A field is in the shape of a rectangle.
The width of the field is 28 metres, measured to the nearest metre.

(a) Work out the upper bound of the width of the field.

28.5 metres
**(1)**

The length of the field is 145 metres, measured to the nearest 5 metres.

(b) Work out the upper bound for the perimeter of the field.

2(28.5) + 2(147.5)

352 metres
**(3)**

**(Total 4 marks)**

**7.** Steve measured the length and the width of a rectangle.
He measured the length to be 645 mm correct to the nearest 5 mm.
He measured the width to be 400 mm correct to the nearest 5 mm.

Calculate the lower bound for the area of this rectangle.
Give your answer correct to 3 significant figures.

642.5 × 397.5
= 255393.75

255000 $mm^2$
**(Total 3 marks)**

**8.** The average fuel consumption ($c$) of a car, in kilometres per litre, is given by the formula

$$c = \frac{d}{f}$$

where $d$ is the distance travelled, in kilometres, and $f$ is the fuel used, in litres.

$d = 163$ correct to 3 significant figures.
$f = 45.3$ correct to 3 significant figures.

By considering bounds, work out the value of $c$ to a suitable degree of accuracy.
You must show **all** of your working **and** give a reason for your final answer.

Upper C = Upper d / Lower f

= 163.5 / 45.25

= 3.613259669

= 3.6 (2sf)

Lower C = Lowest d / upper f

= 162.5 / 45.35

= 3.583241455

= 3.6 (2sf)

Both round to 3.6 (2sf) 1dp

$c =$ 3.6

**(Total 5 marks)**

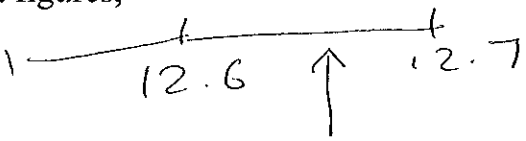
**9.** The voltage $V$ of an electronic circuit is given by the formula

$$V = IR$$

where $I$ is the current in amps
and $R$ is the resistance in ohms.

Given that $V = 218$ correct to 3 significant figures,
$R = 12.6$ correct to 3 significant figures,

calculate the lower bound of $I$.




$V = IR$

$I = \frac{V}{R}$

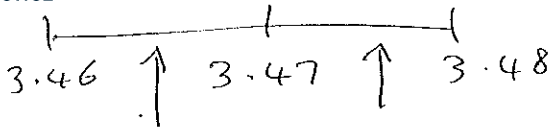
Lower $I = \frac{\text{Lower } V}{\text{Upper } R}$

$= \frac{217.5}{12.65}$

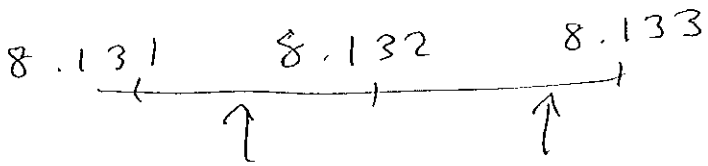
$= 17.193675\ldots$

17.2 (3sf)

**(Total 3 marks)**




***10.** $m = \dfrac{\sqrt{s}}{t}$




$s = 3.47$ correct to 2 decimal places.
$t = 8.132$ correct to 3 decimal places.

By considering bounds, work out the value of $m$ to a suitable degree of accuracy.

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

upper $m = \dfrac{\sqrt{\text{upper } s}}{\text{lower } t}$ lower $m = \dfrac{\sqrt{\text{lower } s}}{\text{upper } t}$.

$= \dfrac{\sqrt{3.475}}{8.1315}$ $= \dfrac{\sqrt{3.465}}{8.1325}$

$= 0.22888903839$

$= 0.229248624 3$

0.229 (3sf)

Both answers round to 0.229 (3sf)

**(Total 5 marks)**