2 The length of a table is measured as 1.4 metres correct to one decimal place.

(a) Write down the upper bound of the length of the table.

..... metres

(1)

(b) Write down the lower bound of the length of the table.

..... metres

(1)

(Total for Question 2 is 2 marks)

4 Each side of a regular octagon has a length of 18 mm, correct to the nearest 0.5 mm

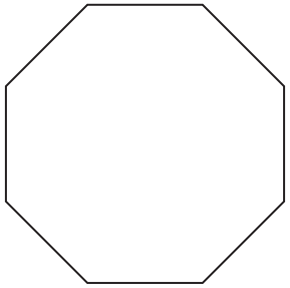

Diagram **NOT** accurately drawn

(a) Write down the lower bound of the length of each side of the octagon.

..... mm

(1)

(b) Write down the upper bound of the length of each side of the octagon.

..... mm

(1)

(Total for Question 4 is 2 marks)

5 The weight of a cake is 2.75 kg, correct to 2 decimal places.

(a) Write down the lower bound of the weight of the cake.

..... kg

(1)

(b) Write down the upper bound of the weight of the cake.

..... kg

(1)

Penny has worked out $\dfrac{81.3 \times 59.2}{1.9^2}$ on her calculator.

Her answer is 13 332.299 17

Penny's answer is not sensible.

(c) By rounding each number to one significant figure, work out a suitable estimate to show that her answer is not sensible.
Show your working clearly.

(2)

(Total for Question 5 is 4 marks)

5 The length of a book is 33.8 cm, correct to one decimal place.

(a) Write down the lower bound of the length of the book.

..... cm

(1)

(b) Write down the upper bound of the length of the book.

..... cm

(1)

(Total for Question 5 is 2 marks)

11 $C = b - a$

$a =$ 6 correct to the nearest integer
$b =$ 15 correct to the nearest 5

Work out the upper bound for the value of C
Show your working clearly.

.....

(Total for Question 11 is 3 marks)

11 The weight of a cat is 4.3 kg correct to 2 significant figures.

(a) Write down the upper bound of the weight of the cat.

..... kg

(1)

(b) Write down the lower bound of the weight of the cat.

..... kg

(1)

$G = e - f$

e = 17 correct to the nearest integer
f = 9.4 correct to one decimal place

(c) Work out the upper bound for the value of G.

.....

(2)

(Total for Question 11 is 4 marks)

12

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

A box, in the shape of a cuboid, is going to be put on a table.

The whole of one face of the box will be in contact with the table.
The force exerted by the box on the table is always 105 newtons.

The box is 5 m by 4 m by 3 m.

The greatest pressure exerted by the box on the table is P newtons/m^2
The least pressure exerted by the box on the table is Q newtons/m^2

Work out the value of $P - Q$

.....

(Total for Question 12 is 3 marks)

14 $T = \dfrac{p}{r}$

$p = 0.51$ correct to 2 significant figures.
$r = 6.3$ correct to 2 significant figures.

Work out the upper bound for the value of T
Show your working clearly.

.....

(Total for Question 14 is 2 marks)

15 $e = 8.31$ correct to 2 decimal places
$f = 0.65$ correct to 2 decimal places

Work out the lower bound for the value of $e - f$
Show your working clearly.

.....

(Total for Question 15 is 2 marks)

15

$$a = \frac{v - u}{t}$$

$v = 9.6$ correct to 1 decimal place
$u = 3.8$ correct to 1 decimal place
$t = 1.84$ correct to 2 decimal places

Calculate the upper bound for the value of a.
Give your answer as a decimal correct to 2 decimal places.
Show your working clearly.

.....

(Total for Question 15 is 3 marks)

16 $P = \dfrac{2a - c}{d}$

$a = 58.4$ correct to 3 significant figures.
$c = 20$ correct to 2 significant figures.
$d = 3.6$ correct to 2 significant figures.

Work out the upper bound for the value of P.
Show your working clearly.
Give your answer correct to 2 decimal places.

.....

(Total for Question 16 is 3 marks)

17 A metal block has a mass of 5 kg, correct to the nearest 50 grams.
The block has a volume of $(1.84 \times 10^{-3})\,m^3$, correct to 3 significant figures.

Work out the upper bound for the density of the block.
Give your answer in kg/m^3 correct to 1 decimal place.
Show your working clearly.

..... kg/m^3

(Total for Question 17 is 4 marks)

17 $P = a(c + y)$

$a =$ 8.3 correct to 2 significant figures
$c =$ 2 correct to 1 significant figure
$y =$ 15 correct to the nearest 5

Work out the upper bound for the value of P
Show your working clearly.

.....

(Total for Question 17 is 3 marks)

17 $P = ef$

e = 4.8 correct to 2 significant figures.
f = 0.26 correct to 2 significant figures.

(a) Work out the lower bound for the value of P.
Show your working clearly.
Give your answer correct to 3 significant figures.

.....

(2)

$$Q = \frac{t}{w}$$

t = 2.73 correct to 3 significant figures.
w = 0.04 correct to 1 significant figure.

(b) Work out the upper bound for the value of Q.
Show your working clearly.
Give your answer correct to 2 significant figures.

.....

(2)

(Total for Question 17 is 4 marks)

18 Diego builds a fence using fence panels.

The total length of the fence is 50 metres, correct to the nearest 5 metres.
The length of each fence panel is 1.3 metres, correct to the nearest 10 cm.

The cost of each fence panel is £8.65

Diego may only buy complete fence panels.
Diego only pays for the number of panels he needs to build the fence.

Work out the greatest difference in the possible amounts that Diego could pay to build the fence.
Show your working clearly.

£.....

(Total for Question 18 is 4 marks)

18 Kaidan and Sonja went on two different car journeys.

For Kaidan's journey
distance = 80 km correct to the nearest 5 km
time = 2.7 hours correct to 1 decimal place

For Sonja's journey
distance = 33 km correct to 2 significant figures
time = 1 hour correct to the nearest 0.1 hour

Kaidan says,
"My average speed could have been greater than Sonja's average speed."

By considering bounds, show that Kaidan is correct.
Show your working clearly.

(Total for Question 18 is 4 marks)

18 $X = \dfrac{2a - b}{f}$

$a = 7.5$ correct to 1 decimal place.
$b = 3.42$ correct to 2 decimal places.
$f = 2$ correct to the nearest whole number.

Work out the upper bound of the value of X
Show your working clearly.

.....

(Total for Question 18 is 3 marks)

18 $P = \dfrac{a}{m - x}$

$x = 8$ correct to 1 significant figure
$a = 4.6$ correct to 2 significant figures
$m = 20$ correct to the nearest 10

Calculate the lower bound of P.
Show your working clearly.

.....

(Total for Question 18 is 4 marks)

18 $A = w - \dfrac{x^2}{y}$

$w = 3.45$ correct to 2 decimal places.
$x = 1.9$ correct to 1 decimal place.
$y = 5$ correct to the nearest whole number.

Work out the lower bound of the value of A
Show your working clearly.

.....

(Total for Question 18 is 3 marks)

19 The acceleration, a, of an object is given by

$$a = \frac{v - u}{t}$$

where

$v = 45.23$ correct to 2 decimal places
$u = 5.12$ correct to 2 decimal places
$t = 8.5$ correct to 2 significant figures

By considering bounds, work out the value of a to a suitable degree of accuracy.
Show your working clearly and give a reason for your answer.

$a =$ .....

(Total for Question 19 is 5 marks)

19 $a = \dfrac{p - q}{t}$

$p = 8.4$ correct to 2 significant figures.
$q = 6.3$ correct to 2 significant figures.
$t = 0.27$ correct to 2 significant figures.

Work out the upper bound for the value of a.
Show your working clearly.
Give your answer correct to 1 decimal place.

.....

(Total for Question 19 is 3 marks)

19 $k = \dfrac{t}{a - h}$

t = 14 correct to 2 significant figures
a = 7.8 correct to 2 significant figures
h = 3.4 correct to 2 significant figures

Work out the lower bound for the value of k.
Show your working clearly.

.....

(Total for Question 19 is 3 marks)

19 The diagram shows rectangle *ABCD* with rectangle *EFGH* cut out to form the shaded region.

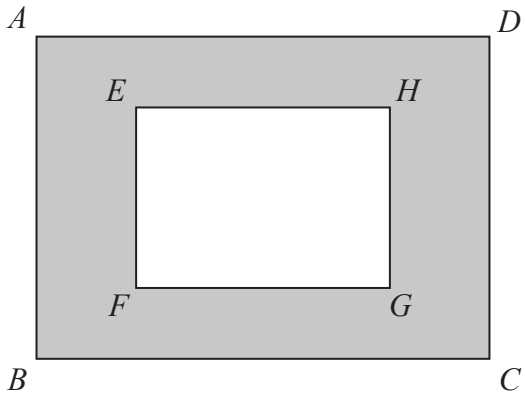

Diagram **NOT** accurately drawn

AD = 8.3 cm correct to one decimal place
DC = 7.2 cm correct to one decimal place
EH = 6.2 cm correct to one decimal place
HG = 5.3 cm correct to one decimal place

Work out the upper bound of the area of the shaded region.
Show your working clearly.

..... cm^2

(Total for Question 19 is 3 marks)

19 Aviv goes on a cycle journey.

For the cycle journey

average speed = 19 km/h correct to the nearest whole number

time = 1.5 hours correct to one decimal place

Work out the upper bound for the distance Aviv travels.
Give your answer correct to 3 significant figures.

..... km

(Total for Question 19 is 3 marks)

19 $G = \dfrac{c}{2f - 3h}$

$c = 8$ correct to the nearest whole number
$f = 6.62$ correct to 2 decimal places
$h = 1.2$ correct to 1 decimal place

Work out the lower bound for the value of G
Give your answer correct to 3 decimal places.
Show your working clearly.

.....

(Total for Question 19 is 3 marks)

20 $P = \dfrac{t - w}{y}$

t = 9.7 correct to 1 decimal place

w = 5.9 correct to 1 decimal place

y = 3 correct to 1 significant figure

Calculate the upper bound for the value of P.
Show your working clearly.

.....

(Total for Question 20 is 3 marks)

20

$$x = \frac{6a}{b - a}$$

a = 3.46 correct to 3 significant figures.
b = 6.3 correct to 1 decimal place.

Work out the upper bound for the value of x.
Give your answer as a decimal correct to 3 significant figures.
Show your working clearly.

.....

(Total for Question 20 is 3 marks)

21 $T = \dfrac{x^2 + y^2}{w}$

$x = 28.4$ correct to 1 decimal place.

$y = 17$ correct to 2 significant figures.

$w = 90$ correct to the nearest 5

Calculate the upper bound for the value of T

Give your answer correct to 3 significant figures.
Show your working clearly.

.....

(Total for Question 21 is 3 marks)

22 The diagram shows triangle ABC

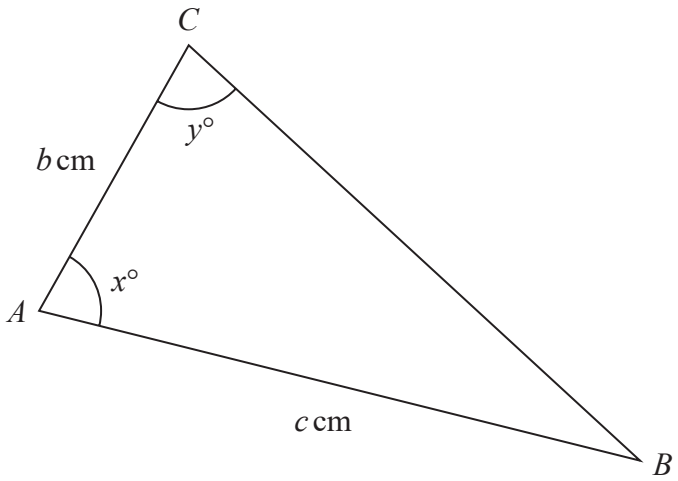

Diagram **NOT** accurately drawn

$c = 11.5$ correct to one decimal place
$x = 80$ correct to the nearest whole number
$y = 75$ correct to the nearest whole number

Calculate the upper bound for the value of b
Show your working clearly.
Give your answer correct to 3 significant figures.

.....

(Total for Question 22 is 4 marks)

25 A solid sphere has a radius of 2.8 centimetres, correct to 1 decimal place.
The sphere has a mass of $M\pi$ grams, where $M = 260$ correct to 2 significant figures.

Work out the upper bound for the density of the sphere.
Give your answer in g / cm^3 correct to 2 decimal places.
Show your working clearly.

..... g / cm^3

(Total for Question 25 is 4 marks)