Limits of Accuracy

8   A carton contains 250ml of juice, correct to the nearest millilitre.

Complete the statement about the amount of juice, j ml, in the carton.

Answer .... $\leq j <$ .... [2]

7   The length, p cm, of a car is 440 cm, correct to the nearest 10 cm.

Complete the statement about p.

Answer .... $\leqslant p <$ .... [2]

6   The length, l metres, of a football pitch is 96 m, correct to the nearest metre.

Complete the statement about the length of this football pitch.

Answer .... $\leqslant l <$ .... [2]

8   The length of a car is 4.2 m, correct to 1 decimal place.

Write down the upper bound and the lower bound of the length of this car.

Upper bound = ... m

Lower bound = ... m [2]

9   A fence is made from 32 identical pieces of wood, each of length 2 metres correct to the nearest centimetre.

Calculate the lower bound for the total length of the wood used to make this fence.

Write down your full calculator display.

Answer .... m   [3]

10   The length of each side of an equilateral triangle is 74 mm, correct to the nearest millimetre.

Calculate the smallest possible perimeter of the triangle.

Answer .... mm   [2]

8 The length of a side of a regular hexagon is 6.8cm, correct to one decimal place.

Find the smallest possible perimeter of the hexagon.

Answer .... cm   [2]

9 When a car wheel turns once, the car travels 120cm, correct to the nearest centimetre.

Calculate the lower and upper bounds for the distance travelled by the car when the wheel turns 20 times.

Answer lower bound .... cm

upper bound .... cm   [2]

12 The side of a square is 6.3 cm, correct to the nearest millimetre.
The lower bound of the perimeter of the square is u cm and the upper bound of the perimeter is v cm.
Calculate the value of

(a) u,

Answer(a) u = ... [1]

(b) $v - u$.

Answer(b) v − u = ... [1]

9 Ashraf takes 1500 steps to walk d **metres** from his home to the station.
Each step is 90 centimetres correct to the nearest 10 cm.

Find the lower bound and the upper bound for d

Answer .... $\leqslant d <$ .... [3]

4 Helen measures a rectangular sheet of paper as 197 mm by 210 mm, each correct to the nearest millimetre.
Calculate the upper bound for the perimeter of the sheet of paper.

Answer .... mm [2]

12) November 2011 V2

4 The cost of making a chair is $28 correct to the nearest dollar.

Calculate the lower and upper bounds for the cost of making 450 chairs.

Answer lower bound $ ....

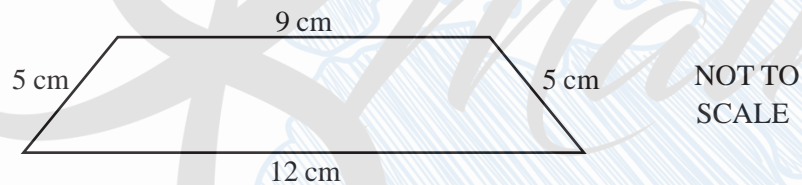upper bound $ .... [2]

7   The sides of a rectangle are 6.3 cm and 4.8 cm, each correct to 1 decimal place.

Calculate the upper bound for the area of the rectangle.

Answer .... cm² [2]

5

The diagram shows a quadrilateral.
The lengths of the sides are given to the nearest centimetre.

Calculate the upper bound of the perimeter of the quadrilateral.

Answer .... cm [2]

10   A large water bottle holds 25 litres of water correct to the nearest litre.
A drinking glass holds 0.3 litres correct to the nearest 0.1 litre.

Calculate the lower bound for the number of glasses of water which can be filled from the bottle.

Answer ....   [3]

16) November 2012 V2

7   The number of spectators at the 2010 World Cup match between Argentina and Mexico was
82 000 correct to the nearest thousand.
If each spectator paid 2600 Rand (R) to attend the game, what is the lower bound for the total amount paid?
Write your answer in standard form.

Answer R ....   [3]

9   An equilateral triangle has sides of length 16.1 cm, correct to the nearest millimetre.

Find the lower and upper bounds of the perimeter of the triangle.

Answer Lower bound = ... cm

Upper bound = ... cm [2]

8   Joe measures the side of a square correct to 1 decimal place.
He calculates the **upper** bound for the area of the square as 37.8225 cm^2

Work out Joe's measurement for the side of the square.

Answer .... cm [2]

12 A circle has a radius of 8.5 cm correct to the nearest 0.1 cm.
The lower bound for the area of the circle is $p\pi$ cm^2
The upper bound for the area of the circle is $q\pi$ cm^2.

Find the value of p and the value of q.

Answer p = ...

$q =$ .... [3]

6 The mass of 1 cm^3 of copper is 8.5 grams, correct to 1 decimal place.

Complete the statement about the total mass, T grams, of 12 cm^3 of copper.

Answer .... $\leqslant T <$ .... [2]

15 A rectangle has length 127.3 cm and width 86.5 cm, both correct to 1 decimal place.

Calculate the upper bound and the lower bound for the perimeter of the rectangle.

Answer Upper bound = ... cm

Lower bound = ... cm [3]

6 Rice is sold in 75 gram packs and 120 gram packs.
The masses of both packs are given correct to the nearest gram.

Calculate the lower bound for the difference in mass between the two packs.

Answer .... g [2]

10 One year ago Ahmed's height was 114 cm.
Today his height is 120 cm.
Both measurements are correct to the nearest centimetre.

Work out the upper bound for the increase in Ahmed's height.

Answer .... cm [2]

4 An equilateral triangle has sides of length 6.2 cm, correct to the nearest millimetre.

Complete the statement about the perimeter, P cm, of the triangle.

Answer .... $\leq P <$ .... [2]

18 A rectangle has length 5.8 cm and width 2.4 cm, both correct to 1 decimal place.

Calculate the lower bound and the upper bound of the perimeter of this rectangle.

Answer Lower bound .... cm

Upper bound .... cm [3]

20 The volume of a cuboid is $878\,\text{cm}^3$, correct to the nearest cubic centimetre.
The length of the base of the cuboid is $7\,\text{cm}$, correct to the nearest centimetre.
The width of the base of the cuboid is $6\,\text{cm}$, correct to the nearest centimetre.

Calculate the lower bound for the height of the cuboid.

Answer .... cm [3]

12 A metal pole is $500\,\text{cm}$ long, correct to the nearest centimetre.
The pole is cut into rods each of length $5.8\,\text{cm}$, correct to the nearest millimetre.

Calculate the largest number of rods that the pole can be cut into.

.... [3]

13 The base of a triangle is 9cm correct to the nearest cm.
The area of this triangle is $40\,cm^2$ correct to the nearest $5\,cm^2$

Calculate the upper bound for the perpendicular height of this triangle.

.... cm [3]

17 **(a)** $V = IR$

In an experiment I and R are both measured correct to 1 decimal place.

When $I = 4.0$ and $R = 2.7$, find the **lower** bound for V

.... [2]

(b) $S = \dfrac{D}{T}$

In an experiment D and T are both measured correct to 2 significant figures.

When $D = 7.6$ and $T = 0.23$, find the **upper** bound for S.

[2]

6   The sides of a square are $8\,cm$, correct to the nearest centimetre.

Calculate the upper bound for the area of the square.

.... cm^2 [2]

12   Anna walks $31\,km$ at a speed of $5\,km/h$.
       Both values are correct to the nearest whole number.

Work out the upper bound of the time taken for Anna's walk.

.... hours [2]

18   The sides of an isosceles triangle are measured correct to the nearest millimetre.
       One side has a length of $8.2\,cm$ and another has a length of $9.4\,cm$.

Find the largest possible value of the perimeter of this triangle.

.... cm [3]