

Calculations and Accuracy (H)

Intervention Booklet

Rounding

Things to remember:

- If the next number is less than 5, round down.
- If the next number is 5 or more, round up.

Questions:

1. Write the number 2.738 correct to 2 decimal places.

.....
(Total for Question is 1 mark)

2. Write the number **7378** to the nearest hundred.

.....
(Total for Question is 1 mark)

3. 28569 people watch a football match. Write 28569 to the nearest hundred.

.....
(Total for Question is 1 mark)

4. (a) Write 5643 to the nearest hundred.

.....
(1)

(b) Write 197 768 to the nearest thousand.

.....
(1)
(Total for Question is 2 marks)

5. (a) Write the number 28.75 to the nearest whole number.

.....
(1)

(b) Write the number 7380 to the nearest thousand.

.....
(1)
(Total for Question is 4 marks)

6. Write down 157 correct to the nearest 10

.....
(Total for Question is 1 mark)

Estimating Calculations

Things to remember:

- Round each number to one significant figure first (e.g. nearest whole number, nearest ten, nearest one decimal place) – this earns you one mark.
- Don't forget to use BIDMAS.

Questions:

1. Work out an estimate for $\frac{3.1 \times 9.87}{0.509}$

.....
(Total for Question is 3 marks)

2. Margaret has some goats.
The goats produce an average total of 21.7 litres of milk per day for 280 days.
Margaret sells the milk in $\frac{1}{2}$ litre bottles.
Work out an estimate for the total number of bottles that Margaret will be able to fill with the milk.
You must show clearly how you got your estimate.

.....
(Total for Question is 3 marks)

3. Work out an estimate for the value of $\frac{89.3 \times 0.51}{4.8}$

.....
(Total for Question is 2 marks)

4. Work out an estimate for $\sqrt{4.98 + 2.16 \times 7.35}$

.....
(Total for question = 3 marks)

Bounds

Things to remember:

- Calculating bounds is the opposite of rounding – they are the limits at which you would round up instead of down, and vice versa.

Questions:

1. A piece of wood has a length of 65 centimetres to the nearest centimetre.

(a) What is the least possible length of the piece of wood?

.....
(1)

(b) What is the greatest possible length of the piece of wood?

.....
(1)

(Total for Question is 2 marks)

2. Chelsea's height is 168 cm to the nearest cm.

(a) What is Chelsea's minimum possible height?

..... cm
(1)

(b) What is Chelsea's maximum possible height?

..... cm
(1)

(Total for Question is 2 marks)

3. Dionne has 60 golf balls.

Each of these golf balls weighs 42 grams to the nearest gram.

Work out the greatest possible total weight of all 60 golf balls.

Give your answer in kilograms.

..... kg
(Total for Question is 3 marks)

4. The length, L cm, of a line is measured as 130 cm correct to the nearest 10 centimetres.

Complete the following statement to show the range of possible values of L

..... $\leq L <$
(Total for question is 2 marks)

Bounds Calculations

Questions:

1.
$$I = \frac{V}{R}$$

$V = 250$ correct to the nearest 5

$R = 3900$ correct to the nearest 100

Work out the lower bound for the value of I .

Give your answer correct to 3 decimal places.

You must show your working.

.....
(Total for question = 3 marks)

2. Here is a solid bar made of metal.
The bar is in the shape of a cuboid.
The height of the bar is h cm.
The base of the bar is a square of side d cm.
The mass of the bar is M kg.

$d = 8.3$ correct to 1 decimal place.

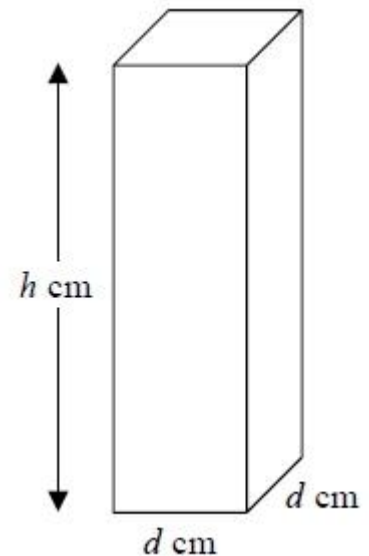
$M = 13.91$ correct to 2 decimal places.

$h = 84$ correct to the nearest whole number.

Find the value of the density of the metal to an appropriate degree of accuracy.

Give your answer in g/cm^3 .

You must explain why your answer is to an appropriate degree of accuracy.



(Total for question = 5 marks)

3. Steve travelled from Ashton to Barnfield.
 He travelled 235 miles, correct to the nearest 5 miles.
 The journey took him 200 minutes, correct to the nearest 5 minutes.
 Calculate the lower bound for the average speed of the journey.
 Give your answer in **miles per hour**, correct to 3 significant figures.
 You must show all your working.

..... mph
(Total for question = 4 marks)

4. The value of p is 4.3
 The value of q is 0.4
 Both p and q are given correct to the nearest 0.1
 (a) Write down the lower bound for p .

.....
(1)

$$r = p + \frac{1}{q}$$

- (b) Work out the upper bound for r .
 You must show all your working.

.....
(3)
(Total for question = 4 marks)