In the style of:
Edexcel GCSE

Centre Number

Candidate Number

Mathematics A

Bounds

Higher Tier

Past Paper Style Questions
Arranged by Topic

Paper Reference

1MA0/2H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators may be used.**

Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*****) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

1.

$$w = \sqrt{\dfrac{x}{y}}$$

$x = 5.43$ correct to 2 decimal places.

$y = 4.514$ correct to 3 decimal places.

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

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

$w = $ ....

(Total 5 marks)

2. An arrow is shot vertically upwards at a speed of V metres per second.

The height, H metres, to which it rises is given by

$$H = \frac{V^2}{2g}$$

where $g\,\text{m/s}^2$ is the acceleration due to gravity.

$V = 24.4$ correct to 3 significant figures.

$g = 9.8$ correct to 2 significant figures.

(i) Write down the upper bound of g.

....

(ii) Calculate the lower bound of H.
Give your answer correct to 3 significant figures.

....

(Total 3 marks)

3. A building plot is in the shape of a rectangle.
The width of the field is 26 metres, measured to the nearest metre.(a)

Work out the upper bound of the width of the field.

.... metres

(1)

The length of the field is 135 metres, measured to the nearest 5 metres.

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

.... metres

(3)

(Total 4 marks)

4. Sophie drove for 238 miles, correct to the nearest mile.
She used 26.3 litres of petrol, to the nearest tenth of a litre.

$$\text{Petrol consumption} \ = \ \frac{\text{Number of miles travelled}}{\text{Number of litres of petrol used}}$$
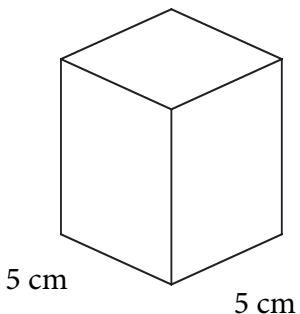
Work out the upper bound for the petrol consumption for Sophie's journey. Give your answer correct to 2 decimal places.

.... miles per litre

(Total 3 marks)

5. (a) A solid cube has sides of length 5 cm.

Diagram **NOT** accurately drawn

5 cm

5 cm

5 cm

Work out the total surface area of the cube. State the units of your answer.

....
(4)

(b) Change 125 cm³ into mm³.

.... mm³
(2)

The weight of the cube is 77 grams, correct to the nearest gram.

(c) (i) What is the minimum the weight could be?

.... grams

(ii) What is the maximum the weight could be?

.... grams

(Total 8 marks)

6. The length of a line is 53 centimetres, correct to the nearest centimetre.

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

.... centimetres

(1)

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

.... centimetres

(1)

(Total 2 marks)

7. The voltage V of an electronic circuit is given by the formula

$$V = I\,R$$

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

Given that $V = 208$ correct to 3 significant figures,
                    $R = 12.8$ correct to 3 significant figures,

calculate the lower bound of I.

....   **Q7**

(Total 3 marks)

8. The average fuel consumption (c) of Tara's 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.

   $d = 153$ correct to 3 significant figures.
$f = 43.3$ 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.

$c = $ ....

(Total 5 marks)

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