



Education Consultancy Edexcel GCSE Mathematics UPPER AND LOWER BOUNDS

Materials Required:

- Pen - HB Pencil - Ruler (in centimetres and millimetres) - Protractor - Compass

Information:

- The marks allocated for each question are displayed within brackets – utilise this information to gauge the appropriate amount of time to dedicate to each question

- Questions marked with an asterisk (*) will assess your written communication; be careful of spelling, punctuation and grammar with these questions

Instructions:

- Use a black ink pen to answer all questions

- Fill your name in the section below
- Answer the questions in the spaces provided
- Show your working out for all answers **Advice:**
 - Carefully read the question before attempting to answer it
- Be vary of time and try to answer every question

 If you have enough time in the end, go back and check your answers. A good way to check your answers is to retry the question with the hope of getting the same answer as before without looking at your working out from before

CALCULATOR ALLOWED

NAME:

- 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.

kg
(b) Write down the largest possible weight of the bag of potatoes.
XOY
kg
(Total 2 marks)
The length of a line is 63 centimetres, correct to the nearest centimetre.
(a) Write down the least possible length of the line.
(1)

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

2.

..... 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.

..... 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.

Calculate the upper bound for the area of the rectangle.

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

b

..... cm

..... cm

(2)

(1)

(Total 3 marks)

26 cm ↓ 35 cm →

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.

.....cm²

(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.

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.

..... metres (3)

..... metres

(1)

(Total 4 marks)

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.

•••••	mm ²
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(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.

c =

(Total 5 marks)

9 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 = 218 correct to 3 significant figures, R = 12.6 correct to 3 significant figures,

calculate the lower bound of *I*.

(Total 3 marks)

*10.

$$m = \frac{\sqrt{s}}{t}$$

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.

(Total 5 marks)