GCSE OCR Math J560

Bound and error intervals

Question Paper

"We will help you to achieve A Star "

Question 1

(a) Find the value of the reciprocal of 1.6
Give your answer as a decimal.

[1 mark]

Question 2

A number, n, is rounded to 2 decimal places.
The result is 4.76

Using inequalities, write down the error interval for n.
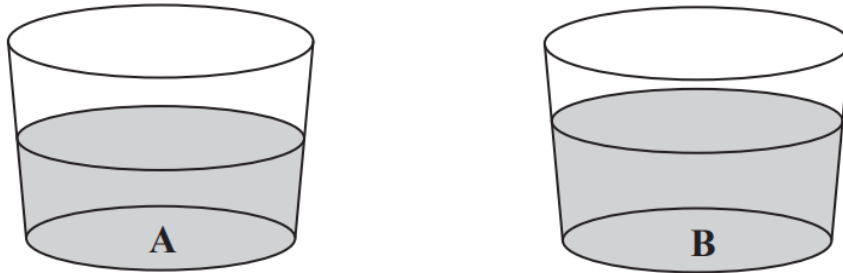
[2 marks]

Question 3

The length, L cm, of a line is measured as 13 cm correct to the nearest centimetre.

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

[2 marks]

Question 4

Glass **A** contains 122 millilitres of water, correct to the nearest millilitre.
Glass **B** contains 168 millilitres of water, correct to the nearest millilitre.

Calculate the upper bound of the difference, in millilitres, between the volume of water in glass **A** and the volume of water in glass **B**.

[2 marks]

Question 5

The length of a fence is 137 metres, correct to the nearest metre.

Write down

   (i)   the lower bound for the length of the fence,

   (ii) the upper bound for the length of the fence.

[2 marks]

Question 6

Jess rounds a number, x, to one decimal place.
The result is 9.8

(b) Write down the error interval for x.

[2 marks]

Question 7

A train travelled along a track in 110 minutes, correct to the nearest 5 minutes.

Jake finds out that the track is 270 km long.
He assumes that the track has been measured correct to the nearest 10 km.

(a) Could the average speed of the train have been greater than 160 km/h?
You must show how you get your answer.

[4 marks]

Question 8

Jake's assumption was wrong.
The track was measured correct to the nearest 5 km.

(b) Explain how this could affect your decision in part (a).

[1 mark]

Question 9

$y = 1.8$ correct to 1 decimal place.

Calculate the lower bound for the value of $4y + 1$

[2 marks]

Question 10

The petrol consumption of a car, in litres per 100 kilometres, is given by the formula

$$\text{Petrol consumption} = \frac{100 \times \text{Number of litres of petrol used}}{\text{Number of kilometres travelled}}$$

Nathan's car travelled 148 kilometres, correct to 3 significant figures.
The car used 11.8 litres of petrol, correct to 3 significant figures.

Nathan says,

"My car used less than 8 litres of petrol per 100 kilometres."

Could Nathan be wrong?
You must show how you get your answer.

[3 marks]

Question 11

$y = 1.8$ correct to 1 decimal place.

Calculate the lower bound for the value of $4y + 1$

[2 marks]

Question 12

(a) Correct to the nearest millimetre, the length of a side of a regular hexagon is 3.6 cm.

Calculate the upper bound for the perimeter of the regular hexagon.

[2 marks]

Question 13

(b) Correct to 1 significant figure, the area of a rectangle is 80 cm²
Correct to 2 significant figures, the length of the rectangle is 12 cm.

Calculate the lower bound for the width of the rectangle.
Show your working clearly.

[3 marks]