

Error Intervals

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NAME _____

DATE _____

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- 1 A garden cane is 79 cm long, correct to the nearest centimetre.

 EITHER PAPER 2 MARKS

Its length is x cm.

Write down the error interval for x .

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- 2 1700 people went to a football match, correct to the nearest 100.

 EITHER PAPER 2 MARKS

(a) State the least possible number of people.

(b) State the greatest possible number of people.

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- 3 A jug has a capacity of 5.8 litres, correct to 1 decimal place.

 EITHER PAPER 2 MARKS

The capacity is x litres.

Write down the error interval for x .

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- 4 A garden hose is measured as 54 cm. Its true length is x cm.

 EITHER PAPER 4 MARKS

(a) The measurement has been rounded to the nearest centimetre.

Write down the error interval for x .

(b) The measurement has instead been truncated to 54 cm.

Write down the error interval for x .

5 The length of a plank is 4 metres, correct to the nearest metre.

EITHER PAPER 4 MARKS

(a) Its length is l metres.

Complete the error interval for the length of the plank.

$$\underline{\hspace{2cm}} \leq l < \underline{\hspace{2cm}}$$

(b) The length of a different plank is 11 metres, correct to the nearest metre.

Joel says, "The total length of the two planks is 14 metres to the nearest metre."

Give an example to show that Joel could be correct.

6 The length of a garden trellis is 290 cm, to the nearest 10 cm.

EITHER PAPER 4 MARKS

(a) Its length is x cm.

Complete the error interval for x .

(b) A different garden trellis measures 1.1 metres to the nearest 10 cm.

Amara says that the total length of two of these garden trellises must be less than 2.31 m.

Show that Amara is correct.

7 The length of a rope is y m.

EITHER PAPER 2 MARKS

When y is truncated to a whole number, the answer is 90.

Omar writes the error interval due to truncation as

$$89.5 \leq y < 90.5$$

(a) Give a reason why Omar is wrong.

(b) State the correct error interval for y .

- 8 A number n is 3100 correct to 2 significant figures.

 EITHER PAPER 2 MARKS

Write down the error interval for n .

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- 9 Callum used his calculator to work out the value of a number y .

 EITHER PAPER 2 MARKS

The answer on his calculator display began 3.1

Complete the error interval for y .

$$\dots\dots \leq y < \dots\dots$$

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- 10 A steel cable is 64 cm long, correct to the nearest centimetre.

 EITHER PAPER 2 MARKS

Its length is x cm.

Write down the error interval for x .

1	$78.5 \leq x < 79.5$	2	(a) 1650 (b) 1749
3	$5.75 \leq x < 5.85$	4	(a) $53.5 \leq x < 54.5$ (b) $54 \leq x < 55$
5	(a) $3.5 \leq l < 4.5$ (b) For example, lengths 3.7 m and 10.6 m: $3.7 + 10.6 = 14.3$ m, which is 14 m to the nearest metre. (Any lengths with $3.5 \leq \text{first} < 4.5$ and $10.5 \leq \text{second} < 11.5$, whose total is from 14 up to but not including 14.5, are correct.)	6	(a) $285 \leq x < 295$ (b) Upper bound 1.15 m, and $2 \times 1.15 = 2.3$ m, which is less than 2.31 m, so Amara is correct
7	(a) Omar has used the interval for rounding. Either reason earns the mark. Lower end: 89.5 is below 90, but truncation only cuts digits off, so y cannot be less than 90. Upper end: values from 90.5 up to 91 also truncate to 90 but are outside the rounding interval, so the upper end should be 91, not 90.5. (b) $90 \leq y < 91$	8	$3050 \leq n < 3150$
9	$3.1 \leq y < 3.2$	10	$63.5 \leq x < 64.5$