N51N52 Bounds & Error Intervals

OCR

12 **(a)** The width of a piece of wood, w cm, is 7.4 cm, correct to 1 decimal place.

Complete this statement about the value of w.

.....$\leqslant w <$.....**[2]**

(b) The attendance at a football match is reported as 5900.

Explain, with an example, why this may not be the exact attendance.

.....

.....**[2]**

12 **(a)** The width of a piece of wood, w cm, is 7.4 cm, correct to 1 decimal place.

Complete this statement about the value of w.

7.4 → 7.45

7.4 → 7.35

7.35 ≤ w < 7.45 **[2]**

(b) The attendance at a football match is reported as 5900.

Explain, with an example, why this may not be the exact attendance.

Maybe this has been rounded to 2Sf

[2]

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13 **(a)** The mass, m tonnes, of a girder is 12.7, correct to 1 decimal place.

Complete the error interval for the mass, m.

(a) ..... $\leqslant m <$ ..... **[2]**

(b) The length of a piece of wood is given as 8 metres, correct to the nearest metre.
The length of a metal rod is given as 8.5 metres, correct to 1 decimal place.

Show that the piece of wood could be longer than the metal rod. **[2]**

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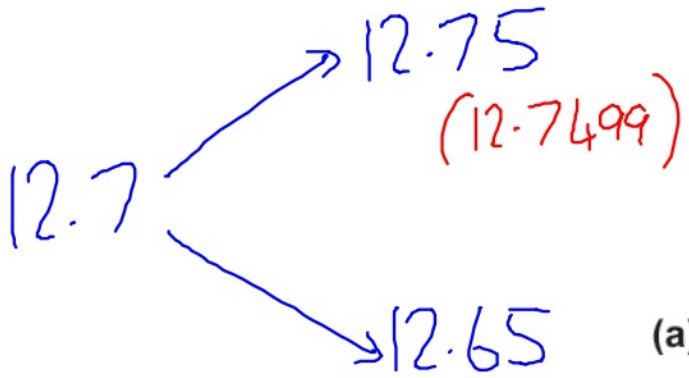
13 **(a)** The mass, m tonnes, of a girder is 12.7, correct to 1 decimal place.

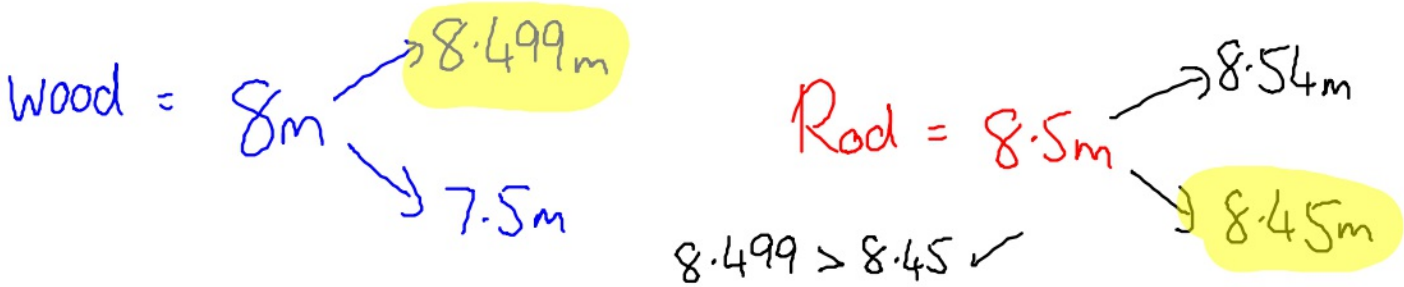
Complete the error interval for the mass, m.



(a) 12.65 $\leqslant m <$ 12.75 **[2]**

(b) The length of a piece of wood is given as 8 metres, correct to the nearest metre.
The length of a metal rod is given as 8.5 metres, correct to 1 decimal place.

Show that the piece of wood could be longer than the metal rod. **[2]**



4 **(a)** Fill in each missing number.

(i) 24 – ..... = 36 **[1]**

(ii) $\sqrt{}$ ..... = 16 **[1]**

(b) The length of a line is 10.4 cm, correct to 1 decimal place.

Write down the shortest possible length of the line.

(b) ..... cm **[1]**

4 **(a)** Fill in each missing number.

(i) 24 – ..−12.. = 36 **[1]**

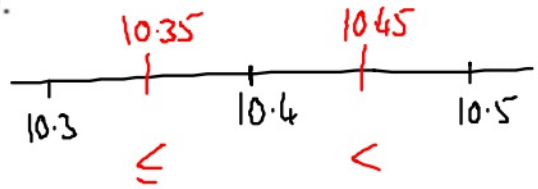
24 + 12 = 36

(ii) $\sqrt{\text{..256..}}$ = 16 **[1]**

$\sqrt{?} = 16 \quad \cdots \quad 16^2$

(b) The length of a line is 10.4 cm, correct to 1 decimal place.

Write down the shortest possible length of the line.



longest → 10.45

10.4

smallest → 10·35

(b) ..10·35.. cm **[1]**

9 The length, a, of a pencil is 15.3 cm, correct to 1 decimal place.

N52 Complete the error interval for the length of the pencil.

..... $\leqslant a <$ .....**[2]**

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9 The length, a, of a pencil is 15.3 cm, correct to 1 decimal place.

N52 Complete the error interval for the length of the pencil.

15.2 15.25 15.3 15.35 15.4

15.25 $\leqslant a <$ 15.35 **[2]**

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2 The length, L, of a steel rod is 8.3 m, correct to 1 decimal place.

Complete the error interval for length L.

..... $\leqslant L <$ .....**[2]**

Video created by W Neill

2 The length, L, of a steel rod is 8.3 m, correct to 1 decimal place.

NS2 Complete the error interval for length L.

8.2 ↓ ans 8.3 ans 8.4

8.25 ⩽ L < 8.35 **[2]**

12 A log is 18 m long, correct to the nearest metre.
It is to be cut into fence posts which must be 80 cm long, correct to the nearest 10 centimetres.

N51

What is the largest number of fence posts that can possibly be cut from this log?

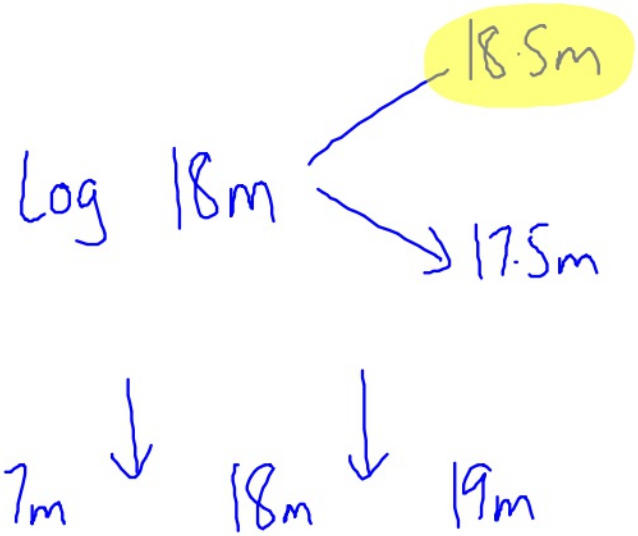
N57

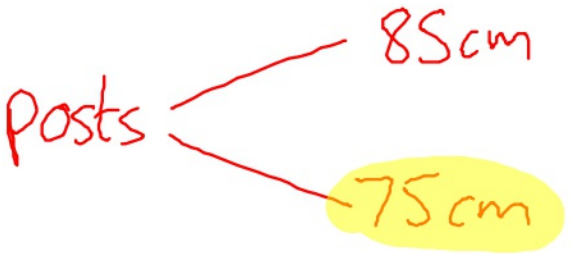
..... **[4]**

12 A log is 18 m long, correct to the nearest metre.
It is to be cut into fence posts which must be 80 cm long, correct to the nearest 10 centimetres.

N51
N57

What is the largest number of fence posts that can possibly be cut from this log?





$$\frac{18.5\text{m}}{75\text{cm}} = \frac{1850\text{cm}}{75\text{cm}}$$

or $\frac{18.5\text{m}}{0.75\text{m}}$

$= 24.6$

24 ✓

..... [4]

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4 Use the symbols $<$, $\leqslant$, $=$, $>$, or $\geqslant$ to complete this statement.

If $x = 4.7$, **truncated** to 1 decimal place, then 4.7 ..... x ..... 4.8 **[2]**

N52

Video created by W Neill

4 Use the symbols $<$, $\leqslant$, $=$, $>$, or $\geqslant$ to complete this statement.

If $x = 4.7$, **truncated** to 1 decimal place, then 4.7 ..... $\leqslant$ ..... x ..... $<$ ..... 4.8 **[2]**

N52

4.723

4.70

4.700001

⋮

4.79999

~~4.6~~

Edexcel

26 The length of a garden is 23 m, correct to the nearest metre.

Write down the least possible length of the garden.

N51

..... m

(Total for Question 26 is 1 mark)

Video created by W Neill

26 The length of a garden is 23 m, correct to the nearest metre.

Write down the least possible length of the garden.

N51

22m 22.5m 23m

22.5 m

(Total for Question 26 is 1 mark)

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

Using inequalities, write down the error interval for n.

.....

(Total for Question 23 is 2 marks)

Video created by W Neill

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

Using inequalities, write down the error interval for n.

4.76 → 4.765
4.76 → 4.755

$4.755 \leq n < 4.765$ ✓

(Total for Question is 2 marks)

Video created by W Neill

23 Harley's house has a value of £160 000 correct to 2 significant figures.

(a) (i) Write down the least possible value of the house.

£.....

(1)

(ii) Write down the greatest possible value of the house.

£.....

(1)

The value of Rita's house increased by 5%.
Her house then had a value of £210 000

(b) Work out the value of Rita's house before the increase.

£.....

(2)

(Total for Question 23 is 4 marks)

Video created by W Neill

23 Harley's house has a value of £160 000 correct to 2 significant figures.

(a) (i) Write down the least possible value of the house.

160000 – 164999 – 15

£ 155000 ✓

(1)

(ii) Write down the greatest possible value of the house.

£ 164999.99 ✓

(1)

The value of Rita's house increased by 5%.
Her house then had a value of £210 000

Reverse %.

(b) Work out the value of Rita's house before the increase.

÷105 (210000 = 105%) ÷105
x100 (2000 = 1%) x100
200000 = 100%

£ 200,000

(2)

(Total for Question 23 is 4 marks)

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

.....

(1)

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

(b) Write down the error interval for x.

.....

(2)

(Total for Question 23 is 3 marks)

Created by W Neill

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

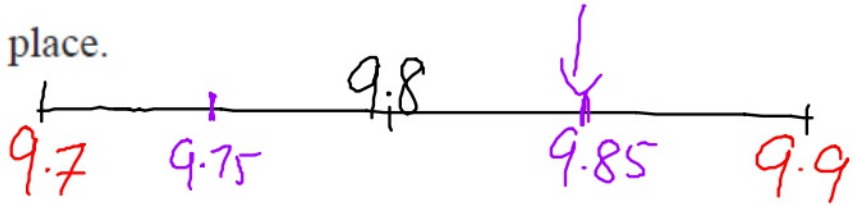
$1.6 = 1\frac{6}{10} = \frac{16}{10}$ $\quad \frac{10}{16}$

0.625

(1)

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

(b) Write down the error interval for x.



$9.75 \leqslant x < 9.85$

(2)

(Total for Question 23 is 3 marks)

8 Kiera used her calculator to work out the value of a number x.
She wrote down the first two digits of the answer on her calculator.

She wrote down 7.3

Write down the error interval for x.

.....

(Total for Question 8 is 2 marks)

8 Kiera used her calculator to work out the value of a number x.
She wrote down the first two digits of the answer on her calculator.

She wrote down 7.3

Write down the error interval for x.

7.30
7.31
7.32
⋮
7.39
7.4

$7.3 \leqslant x < 7.4$

(Total for Question 8 is 2 marks)

Video created by W Neill

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

Using inequalities, write down the error interval for n.

.....

(Total for Question 23 is 2 marks)

Video created by W Neill

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

Using inequalities, write down the error interval for n.

4.76 → 4.765
4.76 → 4.755

$4.755 \leq n < 4.765$ ✓

(Total for Question is 2 marks)

9 Martin truncates the number N to 1 digit.
The result is 7

N52 Write down the error interval for N.

.....

(Total for Question 9 is 2 marks)

cuts off

9 Martin truncates the number N to 1 digit.
The result is 7

N52 Write down the error interval for N.

$N = 7$

7.000000
7.001
7.2
7.4
7.99999

$7 \leqslant N < 8$

(Total for Question 9 is 2 marks)

AQA

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23 (a) The length of a pipe is 6 metres to the nearest metre.

NS2 Complete the error interval for the length of the pipe.

[2 marks]

Answer _____ m $\leqslant$ length $<$ _____ m

Video created by W Neill

(a) The length of a pipe is 6 metres to the nearest metre.

NS2 Complete the error interval for the length of the pipe.

[2 marks]

5m 6m 7m

Answer 5.5 m ⩽ length < 6.5 (6.49999) m

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23 (b) The length of a different pipe is 4 metres to the nearest metre.

NS1

Olly says,

"The total length of the two pipes is 11 metres to the nearest metre."

Give an example to show that he could be correct.

[2 marks]

(b) The length of a different pipe is 4 metres to the nearest metre.

NS1

Olly says,

"The total length of the two pipes is 11 metres to the nearest metre."

Give an example to show that he could be correct.

[2 marks]

4m

$3.5m \leq m < 4.5m$

$5.5m \rightarrow 6.5m$

$< 6.5m$

$6.6m + 4.4m = 10.8m$

10.8m rounds to 11m ✓

Video created by W Neill

24 Three **whole** numbers are each rounded to the nearest 10

The sum of the rounded numbers is 70

N51

Work out the **maximum** possible sum for the original three numbers.

[2 marks]

Answer _____

Video created by W Neill

24 Three **whole** numbers are each rounded to the nearest 10

The sum of the rounded numbers is 70

N51

Work out the **maximum** possible sum for the original three numbers.

[2 marks]

20 + 30 + 20 = 70

24 + 34 + 24

Answer 82 ✓

Video created by W Neill

28 The length of each side of a regular pentagon is 8.4 cm to 1 decimal place.

28 (a) Complete the error interval for the length of one side.

[2 marks]

N52

_____ cm $\leqslant$ length $<$ _____ cm

28 (b) Complete the error interval for the perimeter.

[1 mark]

N52

_____ cm $\leqslant$ perimeter $<$ _____ cm

Video created by W Neill

The length of each side of a regular pentagon is 8.4 cm to 1 decimal place.

(a) Complete the error interval for the length of one side.

[2 marks]

N52

8.3 | 8.4 | 8.5

8.35 cm ⩽ length < 8.45 cm

(b) Complete the error interval for the perimeter.

[1 mark]

N52

×5

41.75 cm ⩽ perimeter < 42.25 cm

Video created by W Neill

21 The length of a table is 110 cm to the nearest cm

Complete the error interval.

N52

[2 marks]

_____ cm $\leqslant$ length $<$ _____ cm

Video created by W Neill

21 The length of a table is 110 cm to the nearest cm

Complete the error interval. 109 ↑ 110 ↑ 111

N52

[2 marks]

109.5 cm ⩽ length < 110.5 cm ✓

Video created by W Neill

7 (a) The length of a pipe is 6 metres to the nearest metre.

NS2 Complete the error interval for the length of the pipe.

[2 marks]

Answer _____ m $\leqslant$ length $<$ _____ m

Video created by W Neill

7 **(a)** The length of a pipe is 6 metres to the nearest metre.

NS2 Complete the error interval for the length of the pipe.

[2 marks]

5m ↑ 6m ↑ 7m

Answer 5.5 m ⩽ length < 6.5 (6.49999) m

Video created by W Neill

7 (b) The length of a different pipe is 4 metres to the nearest metre.

NS1

Olly says,

"The total length of the two pipes is 11 metres to the nearest metre."

Give an example to show that he could be correct.

[2 marks]

7 **(b)** The length of a different pipe is 4 metres to the nearest metre.

NSI

Olly says,

"The total length of the two pipes is 11 metres to the nearest metre."

Give an example to show that he could be correct.

[2 marks]

4m

$3.5m \leq m < 4.5m$

$5.5m \rightarrow 6.5m$

$< 6.5m$

$6.6m + 4.4m = 10.8m$

10.8m rounds to 11m ✓

Video created by W Neill

20 This sign shows when a lift is safe to use.

NS1
NS7

Total mass of people must be 450 kg or less

Ben and some other people are in the lift.

Their total mass is 525 kg to the nearest 5 kg

Ben gets out.

He has a mass of 78 kg to the nearest kg

Is the lift now safe to use?

You **must** show your working.

[4 marks]

Answer _____

Video created by W Neill

20 This sign shows when a lift is safe to use.

NS1
NS7

Total mass of people must be 450 kg or less

Ben and some other people are in the lift.

Their total mass is 525 kg to the nearest 5 kg

Ben gets out.

He has a mass of 78 kg to the nearest kg

Is the lift now safe to use?

You **must** show your working.

Total Mass

527.5kg

525kg

522.5kg

Ben 78kg

78.5kg

77.5kg

Heaviest mass left in lift ...

527.5kg - 77.5kg = 450kg

Answer Yes, lift is ok. ✓

Video created by W Neill

8

N51

Three **whole** numbers are each rounded to the nearest 10

The sum of the rounded numbers is 70

Work out the **maximum** possible sum for the original three numbers.

[2 marks]

Answer _____

Video created by W Neill

8 Three **whole** numbers are each rounded to the nearest 10

The sum of the rounded numbers is 70

N51

Work out the **maximum** possible sum for the original three numbers.

[2 marks]

20 + 30 + 20 = 70

24 + 34 + 24

Answer 82 ✓

Video created by W Neill

9 The length of each side of a regular pentagon is 8.4 cm to 1 decimal place.

(a) Complete the error interval for the length of one side.

[2 marks]

N52

_____ cm ⩽ length < _____ cm

(b) Complete the error interval for the perimeter.

[1 mark]

N52

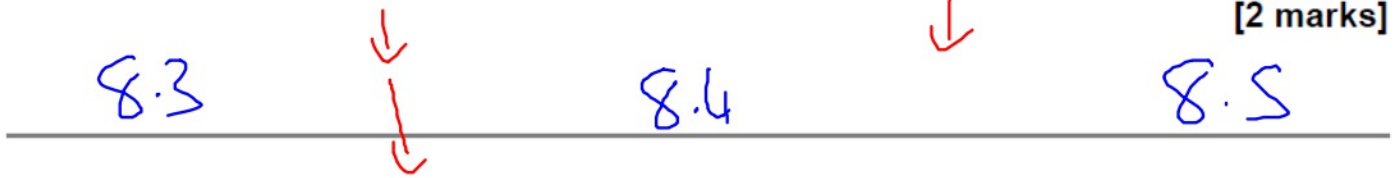
_____ cm ⩽ perimeter < _____ cm

Video created by W Neill

9 The length of each side of a regular pentagon is 8.4 cm to 1 decimal place.

(a) Complete the error interval for the length of one side. **[2 marks]**

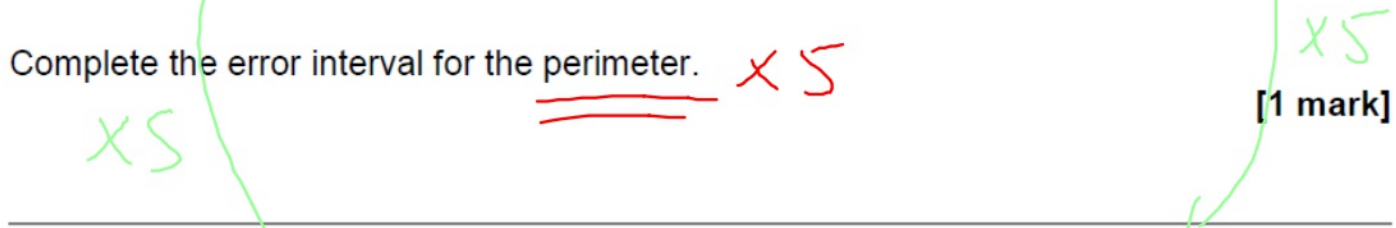
N52



8.35 cm ⩽ length < 8.45 cm

(b) Complete the error interval for the perimeter. **[1 mark]**

N52



41.75 cm ⩽ perimeter < 42.25 cm

Video created by W Neill

5 The length of a table is 110 cm to the nearest cm

Complete the error interval.

N52

[2 marks]

_____ cm $\leqslant$ length $<$ _____ cm

Video created by W Neill

5 The length of a table is 110 cm to the nearest cm

Complete the error interval. 109 ↑ 110 ↑ 111

N52

[2 marks]

109.5 cm ⩽ length < 110.5 cm ✓