Name:

Exam Style Questions

Error Intervals

Corbettmaths

Equipment needed: Calculator, pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

www.corbettmaths.com/contents

Video 377

Answers and Video Solutions

1. The mass of a letter is 58 grams to the nearest gram.
Complete the error interval for the mass of the letter.

57.5 g ≤ mass < 58.5 g

(2)

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2. The length of a mobile phone is 142 mm to the nearest millimetre.
Complete the error interval for the length of the mobile phone.

141.5 mm ≤ length < 142.5 mm

(2)

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3. The distance between two towns is 300 miles to the nearest 100 miles.
Complete the error interval for distance.

250 miles ≤ distance < 350 miles

(2)

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4. Frank rounds a number, y, to the nearest ten.
His result is 80
Write down the error interval for y

$75 \leq y < 85$

(2)

5. Freya rounds a number, y, to one decimal place.
Her result is 6.4
Write down the error interval for y

$6.35 \leq y < 6.45$

(2)

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6. A number, p, is rounded to 2 decimal places to give 10.68

Using inequalities, write down the error interval for p.

$10.675 \leq p < 10.685$

(2)

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7. Elliott weighs 71.8kg.
This mass, m, is to the nearest 100g.
Write the error interval for m.

$71.8\text{kg} = 71800\text{g}$

$71750\text{g} \leq m < 71850\text{g}$

$71.75\text{kg} \leq m < 71.85\text{kg}$

(2)

8. The length of each side of a rhombus is 5cm to the nearest centimetre.

(a) Write the error interval for the length of each side of the rhombus.

$4.5\text{cm} \leq x < 5.5\text{cm}$

(1)

(b) Write the error interval for the perimeter of the rhombus.

$18\text{cm} \leq P < 22\text{cm}$

(2)

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9. The length of each side of a regular heptagon is 2.8cm to 1 decimal place.
Write the error interval for the perimeter, P

$2.75\text{cm} \leq \text{side length} < 2.85\text{cm}$

$19.25\text{cm} \leq P < 19.95\text{cm}$

(3)

10. The length of a rectangle is 20cm.
The width of the rectangle is 6cm.
Both measurements are correct to the nearest centimetre.

Write the error interval for the area of the rectangle, A.

$5.5 \times 19.5 = 107.25\text{cm}^2$

$6.5 \times 20.5 = 133.25\text{cm}^2$

$107.25\text{cm}^2 \leq A < 133.25\text{cm}^2$

(3)

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11. A band writes two songs.

The first song is 3 minutes long to the nearest minute.
The second song is 5 minutes long to the nearest minute.

Show that the total time for both songs could be 8 minutes 58 seconds.

1st song $2.5 \text{ min} \leq L < 3.5 \text{ min}$

2nd song $4.5 \text{ min} \leq L < 5.5 \text{ min}$

Total length $7 \text{ mins} \leq T < 9 \text{ mins}$

The total length can be up to (but not including) 9 minutes long

(3)

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12. x is rounded to 3 significant figures.
The answer is 12.7

Write the error interval for x.

$12.65 \leq x < 12.75$

(3)

13. A number, y, is 9200 when rounded to 3 significant figures.
Write down the error interval.

$9195 \leq y < 9205$

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(3)

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14. The length of a line, L, was given as 2.6cm, truncated to 1 decimal place.
Complete the error interval for L

2.6 ..... cm ≤ L < ..... 2.7 ..... cm

(2)

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15. A number, y, is 0.04 when truncated to 2 decimal places.
Complete the error interval for y

0.04 ..... ≤ y < ..... 0.05 .....

(2)

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16. A number, n, is truncated to 1 decimal place.
The result is 39.1
Using inequalities, write down the error interval for n.

$39.1 \leq n < 39.2$

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(2)

17. Sahil solves an equation to find the value of x.
His answer for x is 8.25

His teacher has realised that Sahil has written down the first three digits of x from his calculator display.

(a) Write down the error interval for x.

$8.25 \leq x < 8.26$

(2)

(b) Explain why Sahil should not have truncated his answer.

As his answer may have been very close to 8.26, such as 8.2599, rounding his answer would be a better idea.

(1)

18. When asked her age, Summer says that she rounds her age to the nearest year.
When asked her age, Ciara says that she truncates her age to the nearest year.

Who uses the most common approach?

Ciara

(1)

19.

The perimeter of a regular pentagon is 18cm to the nearest centimetre.

Using inequalities, write down the error interval for the side length, x.

18.5 ÷ 5 = 3.7

17.5 ÷ 5 = 3.5

$3.5 \leq x < 3.7$

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(3)

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20. A woman runs 400 metres to the nearest 10 metres. It takes her 80 seconds to the nearest 10 seconds.

395m/405m

75s/85s

Work out the error interval for her speed, s.

405 ÷ 75 = 5.4

395 ÷ 85 = 4.647...

4.647...m/s < s < 5.4m/s

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(3)

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21. A number, y, is 100 when rounded to 1 significant figure.

Circle the correct error interval for y.

$50 \leq y < 150$	$95 \leq y < 105$	$95 \leq y < 150$
$50 \leq y < 105$	$75 \leq y < 125$	$90 \leq y < 110$

(1)

45/55

22. The area of a circle is 50cm² to one significant figure.

Find the error interval for the circumference of the circle.

$55 \div \pi = 17.507...$

$\sqrt{17.507...} = 4.1841...$ (radius)

$4.1841... \times 2 = 8.368...$ (diameter)

$8.368... \times \pi = 26.2897...$

$45 \div \pi = 14.3239...$

$\sqrt{14.3239...} = 3.78469...$ (radius)

$3.78469... \times 2 = 7.569...$ (diameter)

$7.569... \times \pi = 23.7799...$

$23.7799...\text{cm} \leq C < 26.2897...\text{cm}$

(4)