

GCSE Maths: Error intervals and limits of accuracy (Foundation): answers

GCSE Maths - Decimals, Rounding and Estimation - Foundation - Lesson 4.8

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch04-decimals-rounding-estimation/foundation/error-intervals-and-limits-of-accuracy/

Exercise 4I Error intervals and limits of accuracy Non-calculator

1 Write down the lower bound and the upper bound of each measurement.

- (a) 7.3 cm (correct to 1 decimal place)

Answer: lower bound 7.25 cm, upper bound 7.35 cm

- (b) 45 kg (correct to the nearest ten)

Answer: lower bound 40 kg, upper bound 50 kg

- (c) 0.82 (correct to 2 decimal places)

Answer: lower bound 0.815, upper bound 0.825

- (d) 2400 people (correct to the nearest hundred)

Answer: lower bound 2350 people, upper bound 2450 people

- (e) 3.5 m (correct to 2 significant figures)

Answer: lower bound 3.45 m, upper bound 3.55 m

- (f) 6 s (correct to the nearest whole number)

Answer: lower bound 5.5 s, upper bound 6.5 s

2 Each number is correct to the accuracy shown. Write down the error interval for each.

- (a) 3.4 to 1 decimal place

Answer: $3.35 \leq x < 3.45$

- (b) 52 to the nearest whole number

Answer: $51.5 \leq x < 52.5$

- (c) 0.85 to 2 decimal places

Answer: $0.845 \leq x < 0.855$

- (d) 6700 to the nearest hundred

Answer: $6650 \leq x < 6750$

- (e) 4.5 to 2 significant figures

Answer: $4.45 \leq x < 4.55$

- (f) 0.062 to 2 significant figures

Answer: $0.0615 \leq x < 0.0625$

3 Each number has been truncated to the accuracy shown. Write down the error interval for each.

- (a) 5.3 truncated to 1 decimal place

Answer: $5.3 \leq x < 5.4$

- (b) 12 truncated to the nearest whole number

Answer: $12 \leq x < 13$

- (c) 0.47 truncated to 2 decimal places

Answer: $0.47 \leq x < 0.48$

- (d) 2400 truncated to the nearest hundred

Answer: $2400 \leq x < 2500$

4 The number line shows an error interval for a number x . Write down the error interval using inequality signs.



Answer: $2.35 \leq x < 2.45$

5 A number is 3.4 correct to 1 decimal place. So its error interval is $3.35 \leq x < 3.45$. Could the number be

- (a) 3.4

Answer: Yes

- (b) 3.45

Answer: No

- (c) 3.35

Answer: Yes

- (d) 3.3499

Answer: No

- (e) 3.5

Answer: No

6 A bag of sugar is labelled 1.5 kg, correct to 1 decimal place. Could the mass of the sugar be

- (a) 1.46 kg

Answer: Yes

- (b) 1.55 kg

Answer: No

(c) 1.449 kg

Answer: No

7 A rope is 250 cm long, correct to the nearest 10 cm. A student says a 254 cm rope is possible. Is she right?

Answer: Yes

8 At a match the attendance was reported as 24 000, correct to 2 significant figures. Write down the error interval for the attendance.

Answer: $23\,500 \leq N < 24\,500$

9 The mass of an elephant is 4.5 tonnes, correct to 1 decimal place. What is the largest possible error in this value?

Answer: 0.05 tonnes

10 Hana says: "x is 3.4 correct to 1 decimal place, so x could be 3.45." Is she right? Explain.

Answer: No

11 Joe writes the error interval for 6, correct to the nearest whole number, as $5 \leq x \leq 7$. Write down two mistakes he has made, and write the correct error interval.

Answer: $5.5 \leq x < 6.5$

12 The error interval for a number is $4.45 \leq x < 4.55$. The number was rounded. Write down the number and the accuracy to which it was rounded.

Answer: 4.5, correct to 1 decimal place