

Name

Date

GCSE Mathematics 9-1

ERROR INTERVALS & BOUNDS



Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name and date number.
- Answer all questions.
- Answer the questions in the spaces provided – there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may **not** be used.

Information

- The marks for each question are shown in brackets – use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

- 1** The weight of a dog, w , is 15.7 kg, given correct to 1 decimal place.
Write the error interval for w

$$\dots\dots\dots \leq w < \dots\dots\dots$$

(1)

- 2** A number is 0.406, n , given correct to 3 decimal places.
Write the error interval for n

$$\dots\dots\dots \leq n < \dots\dots\dots$$

(1)

- 3** A number, n , is 750, given correct to 2 significant figures.
Write the error interval for n

$$\dots\dots\dots \leq n < \dots\dots\dots$$

(1)

- 4** A car travels 320 miles, m , given correct to the nearest 10 miles.
Write the error interval for m

$$\dots\dots\dots \leq m < \dots\dots\dots$$

(1)

- 5** A decimal, d , is 6.09, given correct to 2 decimal places.
Write the error interval of d

$$\dots\dots\dots \leq d < \dots\dots\dots$$

(1)

Total (5 marks)

- 6 A mass is 0.004 g, given correct to 1 significant figure.
Write the error interval

$$\dots\dots\dots \leq mass < \dots\dots\dots$$

(1)

- 7 A height is 1.82 m, given correct to 2 decimal places.
Write the error interval

$$\dots\dots\dots \leq height < \dots\dots\dots$$

(1)

- 8 A number is 9400, given correct to 2 significant figures.
Write the error interval

$$\dots\dots\dots \leq number < \dots\dots\dots$$

(1)

- 9 A measurement is 2.35 m, given correct to 2 decimal places.
Write the error interval

$$\dots\dots\dots \leq measurement < \dots\dots\dots$$

(1)

- 10 A number is 60, given correct to the nearest 10.
Write the error interval

$$\dots\dots\dots \leq number < \dots\dots\dots$$

(1)

Total (5 marks)

- 11** A length of a rope is 14.2 m, given correct to 1 decimal place.
Write the upper and lower bounds of the length

upper bound:

lower bound:

(2)

- 12** A runner's time is 23.4 seconds, given correct to 1 decimal place.
Write the upper and lower bounds of the time

upper bound:

lower bound:

(2)

- 13** A plank is 1.25 m, given correct to 2 decimal places.
Write the upper and lower bounds of the length.

upper bound:

lower bound:

(2)

- 14** A population is 86,000, given correct to 2 significant figures.
Write the error interval

..... $\leq$ population $<$

(1)

- 15** A number is 0.72, given correct to 2 decimal places.
Write the upper and lower bounds of the number

upper bound:

lower bound:

(2)

Total (9 marks)

- 16** A weight is 0.50 kg, given correct to 2 decimal places.
Write the upper and lower bounds of the length

upper bound:

lower bound:

(2)

- 17** A distance is 750 m, given correct to the nearest 50 m.
Write the upper and lower bounds of the length

upper bound:

lower bound:

(2)

- 18** A number is 3.6, given correct to 2 significant figures.
Write the upper and lower bounds of the length

..... $\leq d <$

(1)

- 19** A volume is 52 cm³, given correct to the nearest cm³.
Write the upper and lower bounds of the length

upper bound:

lower bound:

(2)

- 20** A speed is 100 km/h, given correct to the nearest 10 km/h.
Write the upper and lower bounds of the length

upper bound:

lower bound:

(2)

Total (9 marks)

- 21** A rectangle has width 8 cm (nearest cm) and length 5 cm (nearest cm).
Work out the error interval for its area

$$\dots\dots\dots \leq \textit{area} < \dots\dots\dots$$

(1)

- 22** A square has side 6.4 cm (nearest 0.1 cm).
Work out the error interval for its perimeter

$$\dots\dots\dots \leq \textit{perimeter} < \dots\dots\dots$$

(1)

- 23** A car travels 100 km (nearest km) in 2 hours (nearest 0.1 h).
Work out the error interval for average speed

$$\dots\dots\dots \leq \textit{average speed} < \dots\dots\dots$$

(1)

- 24** A cuboid has dimensions 5.0 cm, 3.0 cm, 2.0 cm (each nearest 0.1 cm).
Find the greatest possible volume

$$\dots\dots\dots$$

(1)

- 25** A cylinder has radius 4.0 cm (nearest cm) and height 10 cm (nearest cm).
Work out the possible volume error interval

$$\dots\dots\dots \leq \textit{volume} < \dots\dots\dots$$

(1)

Total (5 marks)

- 26** A rectangle has perimeter 7.0 cm (nearest 0.1 cm).
Find the error interval for its area

$$\dots\dots\dots \leq \textit{area} < \dots\dots\dots$$

(1)

- 27** A triangle has base 12 cm (nearest cm) and height 15 cm (nearest cm).
Work out the error interval for its area

$$\dots\dots\dots \leq \textit{area} < \dots\dots\dots$$

(1)

- 28** A cone has radius 4.5 cm (nearest 0.1 cm) and height 12 cm (nearest cm).
Find the error interval for the volume

$$\dots\dots\dots \leq \textit{radius} < \dots\dots\dots$$

(1)

- 29** A sphere has radius 5 cm (nearest cm).
Find the error interval for its surface area

$$\dots\dots\dots \leq \textit{surface area} < \dots\dots\dots$$

(1)

- 30** A runner jogs 400 m (nearest 10 m) in 1 min (nearest 5 s).
Find the error interval for their average speed in m/s

$$\dots\dots\dots \leq \textit{speed} < \dots\dots\dots$$

(1)

Total (5 marks)

- 31** A wheel of cheese weighs 3.6 kg (nearest 0.1 kg).
What is the most it could weigh?

.....
(1)

- 32** A bag of flour is 2.0 kg (nearest 0.1 kg).
What is the least it could weigh?

.....
(1)

- 33** A farmer records 300 cows (nearest 10).
What is the maximum number of cows?

.....
(1)

- 34** A builder cuts a plank of 2.65 m (nearest 0.05 m).
Find the bounds.

upper bound:

lower bound:

(2)

- 35** A train journey is 2 h 30 min (nearest 5 min).
Write the error interval

..... $\leq \text{journey} <$
(1)

Total (6 marks)

- 36** A school hall measures 20 m (nearest 0.5 m) by 15 m (nearest 0.5 m).
Find the maximum possible area.

.....
(2)

- 37** A carpet is ordered at 8.5 m. The corridor is 8.4 m (nearest 0.1 m).
Will it definitely fit?

.....
(1)

- 38** A shop sells fabric at £5.20/m (nearest 10p). A customer buys 12.0 m (nearest 0.1 m).
Find the maximum possible cost

.....
(1)

- 39** Two pumpkins are weighed: one is 3.2 kg, the other 3.3 kg (both nearest 0.1 kg).
Can the first actually be heavier?

.....
(1)

- 40** A race time is 45 minutes (nearest 0.5 minutes). Another runner records 44.5 minutes
(nearest 0.5 minutes).
Show how the slower runner might actually have been faster.

.....
(1)

Total (6 marks)

- 41** A number x is given correct to the nearest integer. The result is 47.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 42** A number x is given correct to 2 decimal places. The result is 3.19.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 43** A number x is given correct to 1 decimal place. The result is 8.4.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 44** A number x is given correct to 2 decimal places. The result is 0.76.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 45** A number x is given correct to 3 significant figures. The result is 0.00452.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

Total (5 marks)

- 46** A number x is given correct to 1 significant figure. The result is 70.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 47** A number x is given correct to the nearest hundred. The result is 3200.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 48** A number x is given correct to 1 decimal place. The result is 5.1.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 49** A number x is given correct to 2 significant figures. The result is 0.0023.
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

- 50** A number x is given correct to 1 decimal place. The result is -4.6 .
Write down the error interval for x

$$\dots\dots\dots \leq x < \dots\dots\dots$$

(1)

Total (5 marks)

Total Marks for Paper ____ / 60