



ACHIEVE ACADEMY

GCSE Maths — Foundation Tier

Bounds & Error Intervals · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Bounds & Error Intervals

Total marks available: 55

● Bounds & Error Intervals

✓ $1750 \leq x < 1850$

Q1 · ● Developing · 2 marks

METHOD

Half of 100 is 50

Smallest value = $1800 - 50 = 1750$

x must be less than $1800 + 50 = 1850$

✓ $1550 \leq x < 1650$

Q2 · ● Developing · 2 marks

METHOD

Half of 100 is 50

Smallest value = $1600 - 50 = 1550$

x must be less than $1600 + 50 = 1650$

✓ 52.5 kg

Q3 · ● Developing · 1 mark

METHOD

Half of 1 is 0.5

Smallest value = $53 - 0.5 = 52.5 \text{ kg}$

✓ $1850 \leq x < 1950$

Q4 · ● Developing · 2 marks

METHOD

Half of 100 is 50

Smallest value = $1900 - 50 = 1850$

x must be less than $1900 + 50 = 1950$

✓ $375 \leq x < 385$

Q5 · ● Developing · 2 marks

METHOD

Half of 10 is 5

Smallest value = $380 - 5 = 375$

x must be less than $380 + 5 = 385$

✓ 4,150 people

Q6 · ● Developing · 1 mark

METHOD

Half of 100 is 50

Least value = $4,200 - 50 = 4,150$

✓ 375 kg

Q7 · ● Developing · 1 mark

METHOD

Half of 10 is 5

Smallest value = $380 - 5 = 375$ kg

✓ 315 kg

Q8 · ● Developing · 1 mark

METHOD

Half of 10 is 5

Smallest value = $320 - 5 = 315$ kg

✓ 5,350 people

Q9 · ● Developing · 1 mark

METHOD

Half of 100 is 50

Least value = $5,400 - 50 = 5,350$

✓ $1650 \leq x < 1750$

Q10 · ● Developing · 2 marks

METHOD

Half of 100 is 50

Smallest value = $1700 - 50 = 1650$

x must be less than $1700 + 50 = 1750$

✓ $31.85 \leq x < 31.95$

Q11 · ● Secure · 2 marks

METHOD

Half the rounding unit = $0.1 \div 2 = 0.05$

Lower bound = $31.9 - 0.05 = 31.85$

Upper bound = $31.9 + 0.05 = 31.95$

✓ $37.45 \leq x < 37.55$

Q12 · ● Secure · 2 marks

METHOD

Half the rounding unit = $0.1 \div 2 = 0.05$

Lower bound = $37.5 - 0.05 = 37.45$

Upper bound = $37.5 + 0.05 = 37.55$

✓ $31.65 \leq x < 31.75$

Q13 · ● Secure · 2 marks

METHOD

Half the rounding unit = $0.1 \div 2 = 0.05$

Lower bound = $31.7 - 0.05 = 31.65$

Upper bound = $31.7 + 0.05 = 31.75$

✓ $33.85 \leq x < 33.95$

Q14 · ● Secure · 2 marks

METHOD

Half the rounding unit = $0.1 \div 2 = 0.05$

Lower bound = $33.9 - 0.05 = 33.85$

Upper bound = $33.9 + 0.05 = 33.95$

✓ $261.5 \leq x < 262.5$

Q15 · ● Secure · 2 marks

METHOD

Lower bound = $262 - 0.5 = 261.5$

Upper bound = $262 + 0.5 = 262.5$

$$\checkmark 31.85 \leq x < 31.95$$

Q16 · ● Secure · 2 marks

METHOD

Half the rounding unit = $0.1 \div 2 = 0.05$

Lower bound = $31.9 - 0.05 = 31.85$

Upper bound = $31.9 + 0.05 = 31.95$

$$\checkmark 35.75 \leq x < 35.85$$

Q17 · ● Secure · 2 marks

METHOD

Half the rounding unit = $0.1 \div 2 = 0.05$

Lower bound = $35.8 - 0.05 = 35.75$

Upper bound = $35.8 + 0.05 = 35.85$

$$\checkmark 223.5 \leq x < 224.5$$

Q18 · ● Secure · 2 marks

METHOD

Lower bound = $224 - 0.5 = 223.5$

Upper bound = $224 + 0.5 = 224.5$

$$\checkmark 147.5 \leq x < 148.5$$

Q19 · ● Secure · 2 marks

METHOD

Lower bound = $148 - 0.5 = 147.5$

Upper bound = $148 + 0.5 = 148.5$

$$\checkmark 201.5 \leq x < 202.5$$

Q20 · ● Secure · 2 marks

METHOD

Lower bound = $202 - 0.5 = 201.5$

Upper bound = $202 + 0.5 = 202.5$

✓ $175 \leq x < 185$

Q21 · ● Greater Depth · 2 marks

METHOD

To 2 significant figures, 180 is rounded to the nearest 10

Half of 10 is 5

$$180 - 5 = 175 \text{ and } 180 + 5 = 185$$

✓ $15.3 \leq x < 15.4$

Q22 · ● Greater Depth · 2 marks

METHOD

Truncating just cuts off the extra digits, so the smallest value is 15.3

x must be less than $15.3 + 0.1 = 15.4$

✓ 4.45 cm and 4.54 cm

Q23 · ● Greater Depth · 2 marks

METHOD

Error interval: $4.45 \leq x < 4.55$

4.55: outside the interval

4.45: inside the interval

4.54: inside the interval

4.43: outside the interval

✓ 6.85 litres and 6.94 litres

Q24 · ● Greater Depth · 2 marks

METHOD

Error interval: $6.85 \leq x < 6.95$

6.85: inside the interval

6.94: inside the interval

6.95: outside the interval

6.82: outside the interval

✓ 7.21 litres and 7.15 litres

Q25 · ● Greater Depth · 2 marks

METHOD

Error interval: $7.15 \leq x < 7.25$

7.21: inside the interval

7.15: inside the interval

7.25: outside the interval

7.13: outside the interval

✓ $250 \leq x < 350$

Q26 · ● Greater Depth · 2 marks

METHOD

To 1 significant figure, 300 is rounded to the nearest 100

Half of 100 is 50

$300 - 50 = 250$ and $300 + 50 = 350$

✓ $47 \leq x < 48$

Q27 · ● Greater Depth · 2 marks

METHOD

Truncating just cuts off the extra digits, so the smallest value is 47

x must be less than $47 + 1 = 48$

✓ $1.15 \leq x < 1.25$

Q28 · ● Greater Depth · 2 marks

METHOD

To 2 significant figures, 1.2 is rounded to the nearest 0.1

Half of 0.1 is 0.05

$1.2 - 0.05 = 1.15$ and $1.2 + 0.05 = 1.25$

✓ $7.1 \leq x < 7.2$

Q29 · ● Greater Depth · 2 marks

METHOD

Truncating just cuts off the extra digits, so the smallest value is 7.1

x must be less than $7.1 + 0.1 = 7.2$

$$\checkmark 8.05 \leq x < 8.15$$

Q30 · ● Greater Depth · 2 marks

METHOD

To 2 significant figures, 8.1 is rounded to the nearest 0.1

Half of 0.1 is 0.05

$$8.1 - 0.05 = 8.05 \text{ and } 8.1 + 0.05 = 8.15$$