N1 Calculations and Accuracy

Knowledge Organiser

Keywords

Rounding: makes a number simpler but keeps the value close to what it was. It is less accurate but easier to use

Estimate: round to one significant figure first

Error interval:

$Lower\ bound \leq x < Upper\ bound$

Significant figures: The number of digits which are meaningful

Examples

Adding and Subtracting Negatives

+ = fire cube

-= ice cube

-3 + - 5 = start at -3, adding in 5 ice cubes = 2

2 - - 7 = start at 2, take out 7 ice cubes = -9

3 - + 6 = start at 3, take out 6 fire cubes = -3

Key Facts

Estimation

- **Round to 1 significant figure to estimate**

$$21.4 \times 3.1 \approx 20 \times 3 \approx 60$$

Multiplying/ Dividing Negative numbers:

- $- \times / \div - = +$ e.g. -5 x -3 = 15
- $- \times / \div + = -$ e.g. -5 x 3 = -15
- $+ \times / \div - = -$ e.g. 5 x -3 = -15
- $+ \times / \div + = +$ e.g. 5 x 3 = 15

Examples

Significant Figures

- 3749 to 1 significant figure is 400
- 3749 to 2 significant figures is 370
- 3.749 to 1 significant figure is 4
- 3.749 to 2 significant figures is 3.7
- 0.3749 to 2 significant figures is 0.37

Error Intervals

- A width, w, has been rounded to 6.4cm, correct to 1dp. Find the error interval.
  1. Find the upper and lower bound
     UB: 6.45
     LB: 6.35

  Error Interval: $6.35 \leq w < 6.45$

Dividing Decimals

- Workout 24 ÷0.02
- Multiply both by the same amount, to keep in the same proportions
- 24 ÷0.02 -> 240 ÷0.2 -> 2400 ÷2 = 1200

Multiplying Decimals

- Work out 0.4 x 0.2
- Multiply the integers e.g. 2 x 4 = 8
- The question has 2 decimal places
- Therefore, the answer must too
- Therefore, 0.4 x 0.3 = 0.08
- Work out 0.6 x 0.2 = 0.12

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