

## Teacher Activity B: Significant figures and rounding

A 'rule of thumb' is to round a calculated result to the number of significant figures of the value that has the fewest significant figures.

In the calculations below, the number shown in bold represents the 'direct output' from a calculator.

a) For each of these, would you leave the value as it is or would you round it? If so, to what?

b) Does the rule of thumb always work? Are there exceptions?

1) What is the mass of  $3.6 \text{ cm}^3$  of aluminium (density  $2.7 \text{ g/cm}^3$ )?

$$\text{Mass} = \mathbf{9.72 \text{ g}}$$

2) What is the mass of  $4.2 \text{ cm}^3$  of aluminium (density  $2.7 \text{ g/cm}^3$ )?

$$\text{Mass} = \mathbf{11.34 \text{ g}}$$

3) A marble is timed rolling a fixed distance down a ramp using a stopwatch. The measured times for three runs are 4.37 s, 4.74 s and 4.49 s. What is the mean time?

$$\text{Mean time} = \mathbf{4.533333333 \text{ s}}$$

4) The height of a sheet of A4 paper is 297 mm. What is the height of 2 sheets of A4 paper placed end-to-end?

$$\text{Height} = \mathbf{594 \text{ mm}}$$

5) A random sample of 10 grapes is selected from a bunch. The mass of each grape is measured individually: 6 g, 5 g, 6 g, 7 g, 5 g, 5 g, 6 g, 6 g, 5 g, 6 g. What is the mean mass?

$$\text{Mean mass} = \mathbf{5.7 \text{ g}}$$

Further information: *The Language of Mathematics in Science: A Guide to Teachers of 11-16 Science*, Section 2.3 Rounding and significant figures (pp 16-18)

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