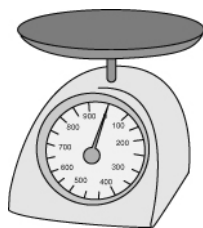


These instruments can all be used to measure mass. The accuracy is shown as the possible error in the reading, and the \pm symbol means 'plus or minus'. For example, if the kitchen scales show a mass of 50 g, the true mass could be between 40 g and 60 g.

A Kitchen scales



Range: 5 g to 5 kg
Accuracy: ± 10 g
Cost: £15

B School lab balance



Range: 0.1 g to 200 g
Accuracy: ± 0.1 g
Cost: £30

C Analytical balance



Range: 0.2 mg to 65 g
Accuracy: ± 0.1 mg (0.001 g)
Cost: £600

These instruments can all be used to measure length.

D Tape measure



Range: 10 cm to 50 m
Accuracy: ± 2 mm over 10 m
Cost: £25

E Laser distance estimator



Range : 0.5 m to 20 m
Accuracy: $\pm 0.5\%$
(5 mm over 1 m, 5 cm over 10 m)
Cost: £30

F Laser distance measurer



Range: up to 200 m
Accuracy: ± 1 mm
Cost: £450

- Explain which instrument you would use to do the following tasks. Give as many reasons as you can for each choice.
 - measure out the substances to use in a school chemistry investigation
 - measure out the ingredients for a cake
 - measure out the mass of drug to make up an injection.
- Explain how you could test the precision of instruments **A** to **C**.
 - Explain which one(s) you would expect to be the most precise.
- Mr Brown is measuring a room in his house to work out how much paint he needs. Suggest some reasons why he might use **E** rather than **D** for his measurements.
- Instruments **C** and **F** are very expensive. Suggest some people who might use these instruments and why they are prepared to pay for them.

I can...

- use information about accuracy to choose apparatus.