

Pages 84–85 Asking questions and making predictions

- 1** Key here is a sensible measurable question. The following are examples but are not the only correct answers.
- a** Does the amount of oxygen affect the length of time for which a candle will burn?
 - b** In what conditions are the most woodlice found?
 - c** Does the size of an object affect the speed at which it falls if dropped?
 - d** Is more force needed to move an object on different surfaces?
 - e** Do different foodstuffs contain different amounts of energy?
- 2** Again sensible answers which need to follow on from the questions above. It is OK if they are wrong as shown in the falling objects one here as the judgement is on the sense of the prediction and reason – it is of course better if they are right!
- a** I think that a candle will burn for longer in a bigger volume of air (1)
Because air contains oxygen which is needed for combustion (1)
 - b** I think that most woodlice will be found in the darkest coolest place possible (1)
Because in the wild woodlice are usually found under stones and in other damp dark places (1)
 - c** I think that bigger objects will fall faster (1)
Because gravity will have more effect on a bigger object (1)
 - d** I think that more force will be needed to move an object on a rough surface (1)
Because rough surfaces have more friction (1)
 - e** I think that different foodstuffs have different amounts of energy (1)
Because I know that eating some foods makes you fat more than eating others (1)

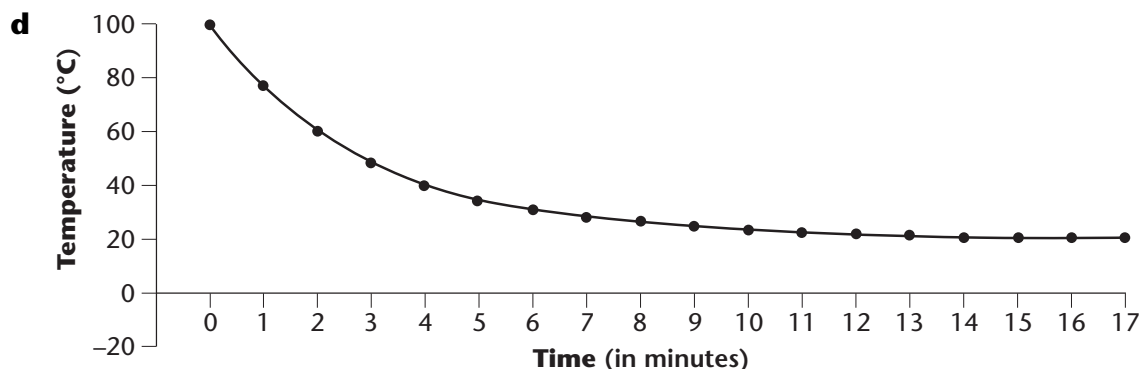
(1) = 1 mark

Pages 86–87 Interpreting results and reading graphs

1 a 3 minutes

b 8 minutes

c Around 11 or 12 minutes



Smooth curve falling quickly at first (1) then rate slowing (1) until levelling off at room temperature (1)

e Matching each of the points above, i.e. water will cool more quickly at first (1) then slow down (1) before levelling off at room temperature (1)

2 a Cheese

Crisps

Bread

Crispbread

(1 mark for each in correct order)

b The food with the highest energy will cause the greatest rise in temperature of the water

c Because the independent variable is discontinuous

Pages 88–89 Evidence and conclusions

- 1 An experiment done yourself/Results from an experiment someone else has done/Data collected by a reliable source and reported in a journal or book/etc.
(1 mark each for anything sensible, total 3 marks)
- 2 a i No
ii The beans seem to grow fastest in mid temperature conditions (1) but just as slowly in very warm conditions as in the cold (1)
- b i Yes
ii The beans kept at 20 °C grow much better (1) than at any other temperature (1)
- c i No
ii There is no information given about the amount of water the beans received (1)
To make it a fair test they should all have been given the same amount of water (1)
- d i No
ii Because a line of best fit would give a smooth curve as near as possible to the majority of points NOT because a line of best fit is always a straight line!
- 3 Better equipment allows us to make better measurements and gain better evidence (1)

Pages 90–91 Evaluating experiments

- 1 Grow more than one bean shoot at each temperature (1) Ensure that apart from temperature the conditions for the bean shoots were exactly the same (1) or any sensible suggestion
- 2 a FAIR TEST
b NOT FAIR TEST
c NOT FAIR TEST
- 3 a Same type of drink/Same amount of drink/Test rest pulse rate and measure difference/
Measure pulse rate at same time interval after drinking (Any 3, 1 mark each)
b Sensible suggestion about difficulties of using humans as experimental subjects
- 4 How much maize did he get from the field with the new type of maize in compared with that field in previous years?
How much maize did he get from the sprayed field compared with previous years?
Was it generally a good or bad year in terms of weather and other conditions?
What was the relative cost of the new maize and the spraying? (Any 3, 1 mark each)
- 5 The people who are not given the medicine are a control group to see if what happens is really because of the new medicine