

Mark schemes

Q1.

- (a) (i) • 60 cm³ 1 (L3)
- (ii) • 10 cm³
accept '60 – 50' 1 (L3)
- (b) (i) • lead weight
accept 'lead' or 'weight'
'800 g' is insufficient 1 (L3)
- (ii) • wood puzzle
accept 'wood' or 'puzzle'
'500 cm³' is insufficient 1 (L3)
- (c) (i) any **one** from
- it has a low density
accept 'it is light'
 - it does not rust
*do **not** accept 'it does not rust as easily as other metals'*
accept 'it does not bend'
accept 'it is strong' 1 (L4)
- (ii) • friction 1 (L4)

[6]

Q2.

- (a) (i) temperature of water
*accept 'temperature'; do **not** accept 'heat'* 1 (L3)

(ii)

57	34
40	74
20	144

*award one mark for **all three rows** of information recorded accurately in the table award one mark for the temperature presented in ascending **or***

descending order

2 (L4)

(b) any **two** from

- clock **or** timer **or** stopwatch
- thermometer **or** temperature sensor
- measuring cylinder
accept 'beaker'
- balance

accept 'scales'

'measuring jug' is insufficient

2 (L3)

(c) to make the test fair

accept 'as a control'

1 (L4)

(d) any **one** from

- it did not use her results
- she did not describe the relationship between temperature and dissolving

accept 'it did not describe what she has found out'

accept 'she has not given the pattern in her results'

'she did not explain in detail' is insufficient answers referring to her evaluation of her investigation or method are insufficient

accept 'she did not say if changing the temperature affected the time'

accept 'she did not say what the result showed'

'she did not say what the results were' is insufficient

1 (L4)

(e) any **one** from

- the hotter the water the quicker it dissolves
- the higher the temperature the less time is taken for the cold cure to dissolve

accept 'the hottest dissolved quickest'
accept the converse

accept 'when the water is cold it takes longer to dissolve'

accept 'when the water is hot it dissolves quickly'

accept 'temperature does affect the time to dissolve'

the conclusion should refer to the independent and

dependent variable

1 (L4)

[8]

Q3.

(a) any **one** from

- stopclock
'clock' is insufficient
- stopwatch
'watch' is insufficient
accept 'timer'

1 (L3)

(b)

factor	change it	keep it the same	measure it
temperature of the oil	✓		
type of oil		✓	
volume of oil		✓	
time taken for all the oil to flow through the funnel			✓

if all four answers are correct, award two marks
if three answers are correct, award one mark
if more than one box is ticked in any row,
count the answer as incorrect for that row

2 (L4)

(c) (i) any **one** from

- it **or** time gets less
accept 'the time gets faster' or 'it gets faster'
do not accept 'the time gets slower' unless
linked to a decrease in temperature
- it **or** time decreases
accept 'the oil flows faster'
accept 'it goes through faster'

1 (L4)

(ii) 180 seconds ✓

if more than one box is ticked, award no mark

1 (L3)

(i)

1 (L3)

(ii)

1 (L3)

(iii)

1 (L3)

(iv)

1 (L3)

if more than one box is ticked in a row, award no mark for that row

(b) (i)



if more than one box is ticked, award no mark

1 (L3)

(ii) any **one** from

- newton meter
accept 'spring balance'
- forcemeter
'balance' is insufficient
'newtons' or 'N' is insufficient
'meter' is insufficient
'weighing scales' is insufficient

1 (L4)

[6]

Q6.

(a) any **two** from

- he used the same amount of pollen
- he measured the concentration of the solutions
or he used a range of strengths of solution

- he observed the pollen grains after one hour
- he worked out the percentage which germinated
 - accept 'he used the same number of pollen grains' or 'he controlled the number of pollen grains'*
 - accept 'he has given percentages'*
 - accept 'he used a range of sugar solutions'*
 - accept 'he used exact amounts'*
 - accept 'he looked at them after one hour' or 'he kept the time the same'*
 - accept 'more detail' or 'more precise'*
 - 'more accurate' is insufficient*
 - 'it is a fair test' is insufficient*
 - accept answers formulated in terms of what Amy's plan does not do*

2 (L5)

- (b) • the concentration of sugar solution
- accept 'strength of solution'*
 - accept 'different sugar solutions'*
 - accept 'the sugar solution'*
 - accept 'the amount or percentage of sugar'*
 - do not accept 'the amount of sugar solution'*

1 (L5)

- (c) • a point at (20,10) plotted to \pm half a small square

1 (L5)

- (d) • no ✓
because the germination rate decreases after the concentration is 10%

or

- yes ✓
because the germination rate increases up to 10% sugar solution
 - accept 'because the results go down'*
 - accept 'because the graph shows a peak or does not continue to rise'*
 - accept 'it only rises up to 10% or at first'*
 - do not accept for either 'yes' or 'no' reading off one point in the chart*
 - if both boxes are ticked, award no mark*
 - if both boxes are ticked, award no mark*
 - do **not** accept 'the greater the concentration the fewer grains germinated'*
 - (if both boxes are ticked **and** the reason given explains*
 - why both could be correct, a mark may be awarded)*

1 (L5)

