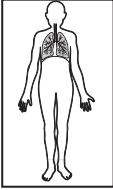

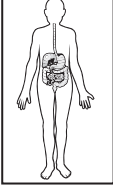


Tier 3–6	Q No 1	Answer	Accept	Additional guidance
a 2/1a	2	any two from * heart * lungs * windpipe or trachea * oesophagus or gullet	accept 'blood vessels' or 'arteries' or 'veins'	<i>do not accept</i> 'bronchiole'
b 2/2i	1	any one from * so the lungs can expand or get bigger * so we can breathe * so we can take in air or oxygen	accept 'so the pressure drops'	references to growth are insufficient

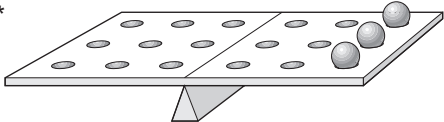
Tier 3–6	Q No 1			
Part	Mark	Answer	Accept	Additional guidance
<p>c 2/2b 2/2g 2/2i</p>	<p>1 1 1</p>	<p>* </p> <p>* </p> <p>* </p>	<p>digestion of food</p> <p>reproduction</p> <p>control of the body</p> <p>taking in oxygen from the air</p> <p>movement of the body</p>	<p>if more than one line is drawn from any organ system, award no credit for that organ system</p>
Total	6			

Tier 3–6	Q No 2																							
Part	Mark	Answer	Accept	Additional guidance																				
a 1/2g	1	* 25	accept '2.5 cm'																					
b 1/2k	1	* 21–25	accept 2.1 cm–2.5 cm																					
c i 1/2i	1	* numbers from 1 to 5 written on the y-axis	accept numbers from 1 to 4 written on the y-axis																					
c ii 1/2i	1	* bar drawn in the chart to 3		give credit for a correctly drawn bar to 3 squares when the axis is not labelled or is labelled incorrectly give credit for a bar drawn consistent with the labelling on the axis																				
d 1/2o	2	* <table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th></th> <th>true</th> <th>false</th> <th>cannot tell</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td style="text-align: center;">✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">✓</td> </tr> </tbody> </table>		true	false	cannot tell				✓	✓						✓					✓		if all four rows are correct, award two marks if three rows are correct, award one mark if more than one box is ticked in any row, award no credit for that row
	true	false	cannot tell																					
			✓																					
✓																								
		✓																						
			✓																					
Total	6																							

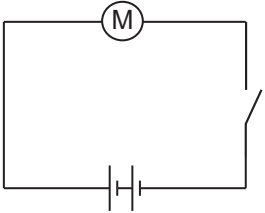



Tier 3–6	Q No 3			
Part	Mark	Answer	Accept	Additional guidance
a 1/2k	1	* fat	accept 'cream'	
b i 2/2d b ii 2/2c	1 1	* calcium any one from * in the blood * in blood vessels	accept 'plasma' accept a named blood vessel accept 'arteries' or 'veins' or 'capillaries' or 'circulatory system' accept 'blood cells' or 'red cells' accept 'the heart pumps blood'	'pumped by the heart' is insufficient
c i 2/4b c ii 2/2n	1 1	* mammals ✓ * The milk contains antibodies. ✓		if more than one box is ticked, award no mark if more than one box is ticked, award no mark
Total	5			

Tier 3–6	Q No 4			
Part	Mark	Answer	Accept	Additional guidance
a <i>3/1h</i>	1	any one from * ink dissolves in water * ink would smudge or run or move up the filter paper * pencil does not dissolve in water	accept 'ink dissolves' accept 'ink expands' accept 'pencil does not smudge'	
b i <i>3/1h</i> b ii <i>3/1h</i>	1 1	* yellow * brown		
c <i>3/1h</i>	1	* red		
d <i>3/1h</i>	1	* chromatography ✓		if more than one box is ticked, award no mark
Total	5			

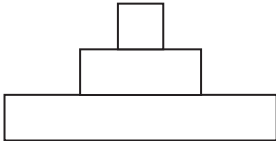
Tier 3–6	Q No 5			
Part	Mark	Answer	Accept	Additional guidance
a 1/2a	1 1	* Zoe ✓ any one from * <i>best</i> needs to be defined * <i>best</i> is not observable or measurable * <i>best</i> is subjective	accept ' <i>best</i> needs to be described' accept 'you do not know what <i>best</i> means' accept 'it is not doable' accept ' <i>best</i> is an opinion or judgement' accept ' <i>best</i> is not clear'	if more than one box is ticked, award no mark
b i 1/2d	1	any one from * use the same area of material each time * use the same volume of water	accept 'same amount of material' accept 'same size of rucksack' accept 'same amount of water' accept 'same liquid' accept 'same timing' accept 'allow the water to drip through the material for the same length of time' accept 'keep the temperature the same'	<i>do not accept</i> 'do it more than once'
b ii 1/2e	1	any one from * measuring cylinder * stopclock or stopwatch	accept 'measuring beaker' accept 'clock' or 'timer' or 'watch'	<i>do not accept</i> 'cylinder' or 'measuring tube' or 'measuring jug'
c 1/2k	1 1	* B ✓ * the smallest volume of water passes through the material	accept 'only 5 cm ³ passed through' accept 'less water passed through' accept 'not as much water gets through'	if more than one box is ticked, award no mark answers must include or imply a comparison '5 cm ³ passed through' is insufficient 'not much water gets through' is insufficient
Total	6			

Tier 3–6	Q No 6			
Part	Mark	Answer	Accept	Additional guidance
a 4/2e	1	* it will go down	accept 'it will tip anticlockwise' accept 'it will tip towards A' accept 'end B will go up'	'tip' is insufficient
b 4/2f	1	* 		all three balls are required for the mark ignore any shading and size
c 4/2f	1	* 100		
d i 3/1d d ii 3/1d	1 1	* carbon ✓ any one from * steel contains iron * brass does not contain iron * iron is magnetic or sticks to a magnet * copper and zinc are not magnetic or will not stick to a magnet	accept 'steel contains iron and carbon'	if more than one box is ticked, award no mark the answer must relate to the elements 'steel is magnetic' is insufficient 'copper is not magnetic' is insufficient 'zinc is not magnetic' is insufficient 'brass is not magnetic' is insufficient 'copper and zinc are not magnets' is insufficient
Total	5			

Tier 3–6	Q No 7			
Part	Mark	Answer	Accept	Additional guidance
a 4/5a	1 1	* coal * gas	accept 'coal fire' or 'A' accept 'gas boiler' or 'D' accept 'petrol' or 'petrol generator' or 'C' or 'oil'	answers may be in either order 'fire' is insufficient 'boiler' is insufficient 'generator' is insufficient
b i 4/5a	1	* the Sun	accept 'solar energy' or 'solar' accept 'light' or 'sunlight'	references to heat are insufficient
b ii 4/5a	1	any one from * it is dark * no light * the Sun has set	accept 'it needs light' accept 'no Sun'	references to heat are insufficient
c 4/5a	1	* wind	accept 'moving air' or 'air' accept 'air currents'	
d 4/5a	1	any one from * Sun or solar energy * waves * wind	accept 'solar panel' or 'E' accept 'wave turbine' or 'F' accept 'wind turbine' or 'turbine' or 'B'	'water' is insufficient
Total	6			

Tier 3–6	Q No 8			
Part	Mark	Answer	Accept	Additional guidance
a 4/1a	1	* 	accept a battery drawn as '— —' or '— —'	all three symbols must be connected in series all three symbols must be drawn correctly do not accept a switch drawn as  do not accept a battery drawn as  do not accept a motor drawn as 
b i 4/1c	1	* the battery or cell(s)	accept 'batteries'	answers may be in either order
b ii 4/5g	1 1	* heat * sound	accept 'thermal'	
c i 4/1b	1	* it turned more slowly	accept 'not as much energy' accept 'it was less powerful' accept 'it does not work as well' accept 'it would stop' or 'it would not go round'	'it heats up' is insufficient
c ii 4/1b	1	* it was brighter	accept 'blew it' or 'it went out' accept 'it became hotter' or 'it heated up'	
Total	6			

Tier 3–6 5–7	Q No 9 1			
Part	Mark	Answer	Accept	Additional guidance
a 2/2h	1	* 9		
b i 2/2h	1	any one from * it protects the baby * it helps to maintain a constant temperature * it allows the baby to move	accept 'it keeps it safe' accept 'it keeps the baby warm' accept 'it absorbs shocks' accept 'it protects against infection or disease'	
b ii 2/2h	1	* muscles contract	accept 'contractions'	'the uterus or it contracts' is insufficient
c 2/2h	1	any one from * (through the) placenta * (through the) umbilical cord * (from the) mother's blood		ignore references to food 'through the blood' is insufficient 'it gets everything from the mother' is insufficient <i>do not accept</i> 'the mother breathes for the child'
d 2/2i	1	* alveolus		'air sac' is insufficient
Total	5			

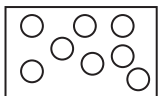

Tier 3–6 5–7	Q No 10 2			
Part	Mark	Answer	Accept	Additional guidance
a 2/5e	1	*  fox partridge plant		answers must be in the correct order all three answers are required for the mark
b 2/5f	1	* fewer foxes or they decrease any one from * fewer partridges (for foxes to eat) * the poison gets into the food chain * they move elsewhere to find food	accept 'there would be less' accept 'they would drop or go down' accept 'less food' accept 'partridges would be poisoned' accept 'some die of starvation'	both the answer and the correct explanation are required for the mark credit both correct answers written in the same space 'foxes die' is insufficient <i>do not accept</i> 'the chemicals poison the foxes' <i>do not accept</i> 'they all die of starvation' <i>do not accept</i> 'they have nothing to eat'
c 2/5d	1	any one from * greater chance of survival * more would survive	accept 'the more eggs they lay the more partridges there will be' accept 'some eggs will be damaged or eaten' accept 'some eggs will not hatch' accept 'young partridges or chicks may be eaten or trampled on or die' accept 'so they will not become extinct or die out'	'partridges will die' is insufficient

Tier 3–6 5–7	Q No 10 2			
Part	Mark	Answer	Accept	Additional guidance
d 2/5a	2	any two from * there would be a greater variety of plants * more plants or weeds * more insects * more nesting places * more cover * the partridges are not poisoned	accept 'there would be plants to eat' accept 'there would be insects to eat' accept 'protection from predators' accept 'more food' or 'they would have food' or 'partridges will come to feed' if none of the first three marking points are given	do not accept 'they had not been sprayed with chemicals'
Total	5			

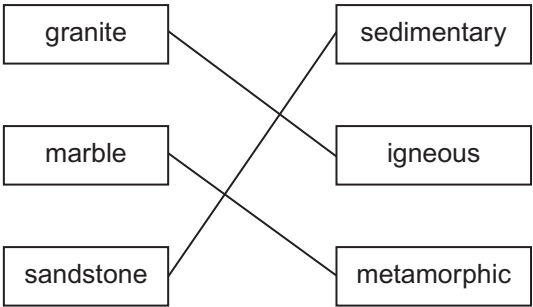
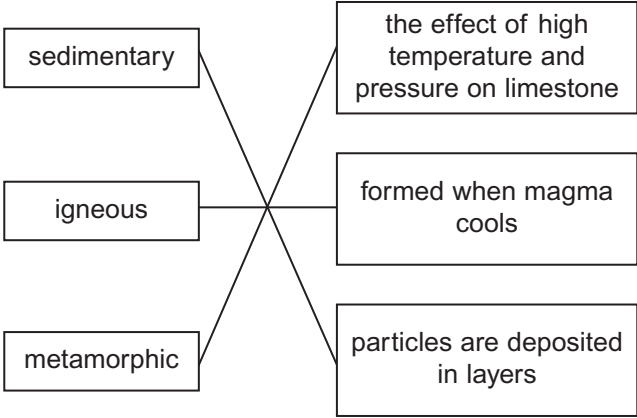
Tier 3–6 5–7	Q No 11 3	Part	Mark	Answer	Accept	Additional guidance
		a 1/2a	2	any two from * he used the same amount of pollen * he measured the concentration of the solutions or he used a range of strengths of solution * he observed the pollen grains after one hour * he worked out the percentage which 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
		b 1/2d	1	* the concentration of sugar solution	accept 'strength of solution' accept 'different sugar solutions' accept 'the sugar solution' accept 'the amount or percentage of sugar'	<i>do not accept</i> 'the amount of sugar solution'
		c 1/2i	1	* a point at (20,10) plotted to \pm half a small square		

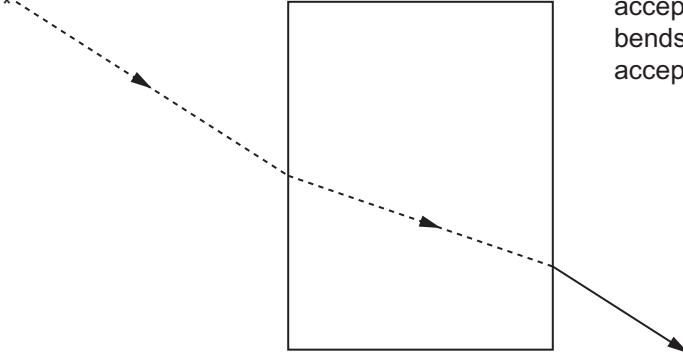
Tier 3–6 5–7	Q No 11 3			
Part	Mark	Answer	Accept	Additional guidance
d 1/2o	1	<p>* no ✓ because the germination rate decreases after the concentration is 10%</p> <p>or</p> <p>* yes ✓ because the germination rate increases up to 10% sugar solution (but then starts to fall)</p>	<p>accept 'because the results go down'</p> <p>accept 'because the graph shows a peak or does not continue to rise'</p> <p>accept 'it only rises up to 10% or at first'</p>	<p><i>do not accept</i> for either 'yes' or 'no' reading off one point in the chart if both boxes are ticked, award no mark</p> <p>if both boxes are ticked, award no mark <i>do not accept</i> 'the greater the concentration the fewer grains germinated'</p> <p>(if both boxes are ticked and the reason given explains why both could be correct, a mark may be awarded)</p>
Total	5			

Tier 3–6 5–7	Q No 12 4			
Part	Mark	Answer	Accept	Additional guidance
a i 3/3a	1 1	* oxygen * water		answers may be in either order 'air' is insufficient 'moisture' or 'dampness' or 'wet' are insufficient
a ii 3/3a	1	any one from * it prevents contact between the steel or the car and oxygen or water * it is waterproof or water runs off	accept 'it prevents air getting to the car' accept 'wax fills scratches or chips where paint is damaged'	'it forms a protective layer' is insufficient
a iii 3/3a	1	any one from * paint * chrome	accept 'they are coated in zinc' or 'they are galvanised' accept 'polish'	'rust treatment' is insufficient 'cover it' is insufficient
b 3/3g	1	* acid rain	accept 'sulphur dioxide' accept 'oxides of nitrogen' accept 'car exhaust fumes' accept 'burning fossil fuels' accept 'sea air' or 'salty air' or 'salt'	'carbon dioxide' is insufficient

Tier 3–6 5–7	Q No 12 4			
Part	Mark	Answer	Accept	Additional guidance
c i 3/1b	1	* <i>gas</i> : particles randomly arranged and most not touching 	accept black shaded circles if drawn correctly accept fewer or more than 8 circles if the arrangement is clear	ignore arrows attached to circles
c ii 3/1b	1	* <i>solid</i> : particles regularly arranged and all touching 	accept white circles if drawn correctly accept 2 rows of particles with at least 2 particles in the second row accept fewer or more than 8 circles if a regular arrangement is clear	ignore location of circles in box <i>do not accept</i> a single row of circles
Total	7			

Tier 3–6 5–7	Q No 13 5			
Part	Mark	Answer	Accept	Additional guidance
a 1/2m 3/2e	1	any one from * it absorbed water * its mass or weight increased	accept 'it soaks up water' accept 'the mass or weight of the granite or marble did not increase or change'	'granite or marble did not change' is insufficient
b i 3/2d	1	any one from * it would crack * it would crumble or break up	accept 'the grains would move apart'	
b ii 3/2d	1	* weathering	accept 'freeze-thaw' accept 'erosion'	
c 3/3g	1	any one from * granite would not react with acid rain * marble reacts with acid rain	accept 'granite or it is not affected by acid rain or acid' accept 'granite would not erode or crumble or corrode' accept 'marble is affected by acid rain or rain' accept 'marble would erode' accept 'rain or pollution might have acid in it'	'granite does not react with air pollution' is insufficient <i>do not accept</i> 'it would erode'

Tier 3–6 5–7	Q No 13 5			
Part	Mark	Answer	Accept	Additional guidance
d i 3/2f	2	<p>* </p>		<p>if all three lines are correct, award two marks if one or two lines are correct, award one mark if more than one line is drawn from a name of a rock, do not credit that line</p>
d ii 3/2f	2	<p>* </p>		<p>if all three lines are correct, award two marks if one or two lines are correct, award one mark if more than one line is drawn from a group of rocks, do not credit that line</p>
Total	8			

Tier 3–6 5–7	Q No 14 6			
Part	Mark	Answer	Accept	Additional guidance
a 4/3c	1	* 65 it is different from the angle of incidence or all the others are the same	accept 'number 4' or 'the fourth' accept 'it is not 60°' or 'it should be 60°' accept 'the angle of reflection and the angle of incidence should be the same' accept 'it is 5° out' accept 'they are not the same'	both the answer and the correct explanation are required for the mark award a mark for '60' if the explanation is correct 'they go up in tens' is insufficient 'it does not fit the pattern' is insufficient
b i 4/3d	1	* a number from 30 to 32		
b ii 4/3d	1	* greater than	accept 'greater' or 'bigger'	
c 4/3d	1		accept a continuous straight line that bends away from the normal accept a line without an arrow	the ray need not be parallel to the incident ray
Total	4			

Tier 3–6 5–7	Q No 15 7			
Part	Mark	Answer	Accept	Additional guidance
a 4/4b	1 1	* X: the Sun * Y: Mercury		
b 4/4c	2	any two from * it has a longer orbit * it is further from the Sun * the Sun's gravity is less * it is slower	accept 'it has a bigger orbit' accept 'it has a greater distance to cover' accept 'it is further out' accept 'Mars is closer to the Sun' accept 'there is a smaller gravitational pull on it'	'it is further away' or 'it is further' are insufficient
c i 4/4c	1	any one from * the orbit times were the same * it came at regular intervals * they saw it every 76 years	accept 'he took 1531 from 1607 and 1607 from 1683'	
c ii 1/2k 4/4c	1	* 2062		
Total	6			

Tier 3–6 5–7	Q No 16 8			
Part	Mark	Answer	Accept	Additional guidance
a 4/1f	1	* both picked up the same number or four paper-clips	accept 'they both picked up the same number' accept 'same amount of paper-clips' accept 'there were 5 out of 9 paper-clips left for both' accept 'the same mass of paper-clips'	'they hold the same clips' is insufficient
b 4/1f	1	any one from * it does not stay magnetised * it can be turned off * objects do not stay attracted to it * iron loses its magnetism * steel stays magnetised	accept 'you cannot turn steel off'	

Tier 3–6 5–7	Q No 16 8			
Part	Mark	Answer	Accept	Additional guidance
c i 1/2j 4/1f	1	any one from * the greater the distance the lower the reading * the further away the smaller the reading	accept the converse accept 'at big distances the field is weaker' or the converse accept 'at 50 mm the reading is lower' accept the converse	<i>do not accept</i> 'the bigger the distance the smaller the amps or current'
c ii 1/2j 4/1f	1	* the greater the current the stronger the electromagnet		
c iii 4/1f	1	any one from * change the number of turns * change the thickness of the wire * change the diameter of the core	accept 'use more coils' accept 'use fewer or less coils' accept 'put the coils closer together' or the converse accept 'change the metal of the coils' accept 'use a different sized core' accept 'use nickel or cobalt core' accept 'use a different core'	'use bigger coils' is insufficient 'use more wire' is insufficient <i>do not accept</i> 'add more batteries'
Total	5			