

Tier 3–6	Q No 1			
Part	Mark	Answer	Accept	Additional guidance
a 2/5e	2	any two from * crabeater seal * cod * squid	accept 'crabeater' accept 'fish'	'seal' is insufficient
b i 2/5e	1	* producers ✓		if more than one box is ticked, award no mark
b ii 2/5e	1	* herbivores ✓		if more than one box is ticked, award no mark
c i 2/5d	1	any one from * it would decrease * there would be fewer seals	accept 'some would die'	'they would all die' is insufficient
c ii 2/5d	1	any one from * leopard seals eat other animals or food * leopard seals eat cod or fish or squid or penguins * crabeater seals or they only eat krill	accept 'they eat other animals or other food or other things'	'they have more food' is insufficient 'they eat krill' is insufficient
Total	6			

Tier 3–6	Q No 2		
Part	Mark	Answer	Accept Additional guidance
a i 2/1c	1	* sperm	
a ii 2/2g	1	* testis	accept 'testes'
b i 2/1c	1	* ovum or egg	
b ii 2/2g	1	* ovary	accept 'ovaries'
c 2/1d	1	* fertilisation	
d i 2/2h	1	* foetus	
d ii 2/2h	1	* uterus	
Total	7		

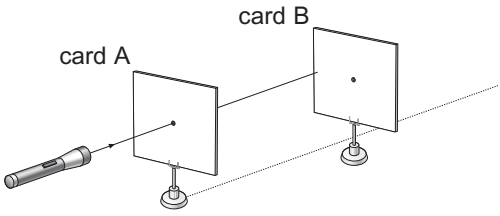
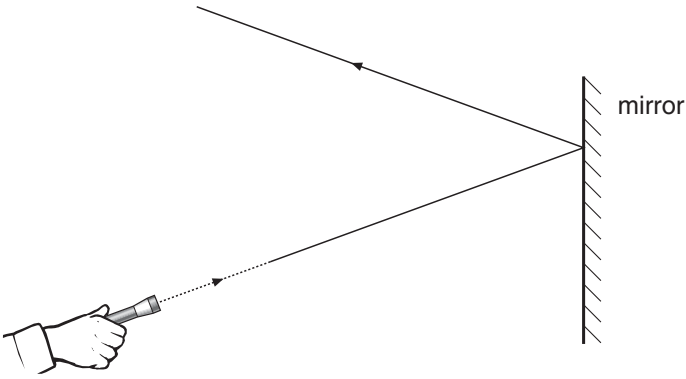
Tier 3–6	Q No 3			
Part	Mark	Answer	Accept	Additional guidance
a i 2/3a	1	any one from * it is long and spindly * the leaves are far apart * the leaves are white or pale	accept 'it is tall' or 'it has grown more' accept 'it is thinner' or 'it is thin' accept 'the leaves are yellow' accept 'it is lighter' accept 'it has no chlorophyll' accept 'its leaves are a different colour'	'they are shrivelled or crinkled' is insufficient
a ii 2/3a	1	any one from * it has wilted * it has drooped * the leaves are floppy	accept 'it is not turgid' accept 'leaves pointing down' accept 'it is floppy' accept 'it has shrivelled'	'it has dried out' is insufficient 'it has died' is insufficient 'it is discoloured' is insufficient
b 2/3d	2	any two from * water * minerals * oxygen	accept 'H ₂ O' accept 'moisture' accept a named mineral award two marks for two named minerals accept 'nutrients' or 'salts'	<i>do not accept</i> 'food'
Total	4			

Tier 3–6	Q No 4																						
Part	Mark	Answer	Additional guidance																				
a 1/2e	1	any one from * stopclock * stopwatch accept 'timer'	'clock' is insufficient 'watch' is insufficient																				
b 1/2d	2	<table border="1"> <thead> <tr> <th>factor</th> <th>change it</th> <th>keep it the same</th> <th>measure it</th> </tr> </thead> <tbody> <tr> <td>temperature of the oil</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>type of oil</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>volume of oil</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>time taken for all the oil to flow through the funnel</td> <td></td> <td></td> <td>✓</td> </tr> </tbody> </table>	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
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			✓																				
c i 1/2j	1	any one from * it or time gets less * it or time decreases	accept 'the time gets faster' or 'it gets faster' accept 'the oil flows faster' accept 'it goes through faster'																				
c ii 1/2k	1	* 180 seconds ✓	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 1/2k	1	* <i>water</i> : increased or went up * <i>wax</i> : decreased or went down	accept 'expanded' accept a reading greater than 7 (cm ³) and less than or equal to 8 (cm ³) accept 'contracted' accept a reading lower than 7 (cm ³) and greater than or equal to 5.5 (cm ³)	both answers are required for the mark
b 3/2c	1 1	* <i>water</i> : liquid * <i>wax</i> : solid		
c i 1/2k	1	any one from * the liquid had turned blue * crystals or copper sulphate or solid could not be seen * there was no solid left	accept 'the colour changed' accept 'the water was blue or coloured or grey' accept 'the crystals disappeared'	'it formed a solution' is insufficient
c ii 3/2b	1	any one from * stir it * heat it * use warm water	accept 'shake it' or 'mix it' accept 'use hotter water' accept 'add more water'	<i>do not accept</i> 'put less in'
d i 3/1h	1	* it evaporated	accept 'it went into the air'	
d ii 3/1h	1	* copper sulphate	accept 'crystals' accept 'sulphate'	
Total	7			

Tier 3–6	Q No 6						
Part	Mark	Answer	Accept Additional guidance				
a 4/1d	1	* <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>N</td></tr> <tr><td>S</td></tr> </table>	N	S	both poles are required for the mark		
N							
S							
b i 4/1d	1	* <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>N</td></tr> <tr><td>S</td></tr> <tr><td>N</td></tr> <tr><td>S</td></tr> </table>	N	S	N	S	all four poles are required for the mark
N							
S							
N							
S							
b ii 3/1d	1	any one from * iron * steel	accept 'cobalt or nickel'				
c 3/1d	1	any one from * wood or it is not magnetised * wood or it is not magnetic * it increases the distance between the magnets * the magnets are too far apart * the magnets are weak	accept 'the wood does not have any poles' accept 'wood is not a magnet' accept 'the magnet does not attract wood' accept 'magnetism cannot pass through wood'				
Total	4						

Tier 3–6	Q No 7			
Part	Mark	Answer	Accept	Additional guidance
a 4/3h	1	any one from * loud sounds can damage hearing * to protect his ears * loud sounds can burst the eardrum	accept 'they could damage his hearing' accept 'loud sounds can damage the ear' accept 'it could make him deaf' accept 'they are very loud'	'they are loud' is insufficient as 'loud' is given in the question
b 4/5g	1	any one from * the further the sound travels the quieter it gets * she was furthest away	accept 'the sound or energy spreads out' accept 'she was further away' or 'she was far away' accept 'some of the sound is absorbed'	
c 4/3i	1	any one from * the speed of light is greater than the speed of sound * light travels faster than sound	accept 'sound travels more slowly' accept 'light travels faster' accept 'light gets there before sound'	
d i 4/5e	1	* light		
d ii 4/5e	1	* sound		
e 4/2b	1	* gravity	accept 'weight'	
Total	6			

Tier 3–6	Q No 8			
Part	Mark	Answer	Accept	Additional guidance
a 4/3a	1	* Light travels in straight lines. ✓		if more than one box is ticked, award no mark
b 4/3a	1	* 	accept a continuous line drawn across card A and reaching card B	award a mark for a straight line from the existing ray passing through the hole in card A and reaching card B the ray must not go beyond card B
c 4/3c	3	* 		award one mark for a continuous straight line that reflects off the mirror award one mark for an angle of reflection approximately equal to the angle of incidence award one mark for a correct arrow on the reflected ray
d 4/1b	1	* Add another battery. ✓		if more than one box is ticked, award no mark
Total	6			

Tier 3–6 5–7	Q No 9 1	Part	Mark	Answer	Accept	Additional guidance
		a 2/5b	2	any two from * less or no food * fewer or no places to nest or shelter * less or no cover	accept 'trees are producers' accept 'they have lost their home' accept 'their habitat is destroyed' accept 'they cannot hide from predators'	'they have lost their territory' is insufficient 'it spoils the environment' is insufficient
		b 2/3a	1 1	any one from * more light * more water * more space * more nutrients * more photosynthesis can take place	accept references to nutrients from trees left to rot accept 'photosynthesis can take place'	
		c 2/3c	1	any one from * to replace minerals or nitrates that have been removed (by plants) * plants absorb the minerals or nitrates * plants need minerals or nitrates to grow * minerals or nitrates or they are plant nutrients	accept 'minerals or nitrates get washed out of the soil' accept 'so that plants can grow' accept 'plants can grow more'	'plants feed on the nutrients' is insufficient

Tier	Q No		
3–6	9		
5–7	1		
Part	Mark	Answer	Additional guidance
d 2/5a 2/5b	2	any two from * to provide food for animals * to provide shelter or nesting sites or habitats for birds or animals * trees absorb carbon dioxide * trees produce oxygen * the roots bind soil or prevent soil washing away	Accept 'to provide homes for animals' Accept 'provides trees to be cut down in the future' Accept 'they need trees for paper' or 'to get paper'
Total	7		'it is good for the environment' is insufficient 'to help animals or birds survive' is insufficient

Tier 3–6 5–7	Q No 10 2			
Part	Mark	Answer	Accept	Additional guidance
a i 1/2k	1	* United States	accept 'US' or 'USA' accept 'America' accept lower case letters for 'US'	
a ii 1/2j	1	* the less starch eaten, the more people get cancer	accept the converse accept 'starch helps to prevent cancer' accept 'you should eat a lot of starch'	<i>do not accept</i> 'people with cancer eat less starch' 'eat starch' is insufficient
b i 2/2a	1 1	* bread ✓ * pasta ✓		if more than two boxes are ticked, deduct one mark for each incorrect tick minimum mark zero
b ii 2/2c	1	* fibre ✓		if more than one box is ticked, award no mark
Total	5			

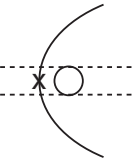
Tier 3–6 5–7	Q No 11 3		
Part	Mark	Answer	Additional guidance
a 2/2e	1	* The biceps contracts and the triceps relaxes. ✓	if more than one box is ticked, award no mark
b 2/2e	1	* to allow movement or bending	accept 'otherwise they would snap' 'to allow our arms to stretch' is insufficient
c i 2/2e	1	any one from * for smooth movement * to avoid or reduce friction * to prevent bones rubbing together or wearing down * to lubricate the joint	accept 'to protect the bones' accept 'to absorb shocks' 'so you can move or bend' is insufficient 'for protection' is insufficient
c ii 2/2e	1	any one from * the bones would rub together or wear down * pain * stiffness * movement would be difficult	accept 'more friction' accept 'arthritis' accept 'you cannot move or bend' 'friction' is insufficient <i>do not accept</i> 'the arm will not work'
Total	4		

Tier 3–6 5–7	Q No 12 4		
Part	Mark	Answer	Accept Additional guidance
a 3/1d	1	* steel	do not accept 'stainless steel' do not accept 'carbon'
b 3/1d	1	* brass * solder	answers may be in either order both answers are required for the mark
c 1/2j	1	* 80	accept '100 – 20'
d i 3/3a	1	* it does not contain iron	accept 'it does not contain steel' accept 'only iron rusts' or 'only steel rusts' accept 'it is made of tin, copper and zinc'
d ii 3/3a	1	* oxygen	accept 'O ₂ '
Total	5		

Tier 3–6 5–7	Q No 13 5			
Part	Mark	Answer	Accept	Additional guidance
a i 3/1h	1	* pale blue yellow red		answers may be in any order all three answers are required for the mark <i>do not accept</i> 'blue' for 'pale blue'
a ii 3/1h	1	* 2 because there are two spots on the paper	accept 'there are two colours from the green ink' accept 'because they are straight up from the green ink' accept 'it has dark blue and yellow' accept 'it shows two'	both the answer and the correct explanation are required for the mark
a iii 3/1h	1	* pencil any one from * because ink from the felt-tip pen is soluble or will dissolve in water * because pencil will not spread out or dissolve or run or smudge	accept 'the ink will also produce colours' accept 'the ink expands'	both the answer and the correct explanation are required for the mark 'the pencil has no ink in it' is insufficient
b 3/2b	1	any one from * the ink would not dissolve in water * the ink would dissolve in ethanol * ethanol is a solvent for the ink	accept 'the ink was water resistant or permanent or waterproof' accept 'ethanol is a suitable solvent' accept 'ethanol can absorb the ink' accept 'ethanol washes out the ink' accept 'some substances will dissolve in one solvent but not another'	
Total	4			

Tier 3–6 5–7	Q No 14 6			
Part	Mark	Answer	Accept	Additional guidance
a 1/2d	1	any one from * they left the cloth in water for 30 minutes * they soaked the cloth for the same time	accept 'cloth in both bowls was egg-stained'	
b 1/2p	2	any two from * same cloth(s) in each bowl * same size fabric * same level of staining on cloth * same amount of each powder * same volume of water added * same temperature of water added * same pH of solutions * repeat the test * stir or agitate the cloth * measure the water * vary the amount of powder * time how long it takes for the stain to go * vary the amount of egg stain	accept 'same amount of egg' or 'same size stain' accept 'use egg-stained cloth in water' accept 'measure the powder' accept 'longer time' accept 'do it at different temperatures' accept 'use different washing powders'	ways of improving the investigation may be: (i) a control (ii) improved reliability (iii) improved procedure (iv) extend the independent variable <i>do not accept</i> 'use different stains'
c 1/2a	1	any one from * whether the cloths are stained or not * level of staining or time taken to remove stain	accept 'how much egg is left on cloths' accept 'which cloth was the cleaner or cleanest'	'the cloth' or 'the stain' are insufficient
Total	4			

Part	Mark	Answer	Accept	Additional guidance
4/3a 4/4a 4/4c	1	* A ship going out to sea goes out of sight.	The Earth spins on its axis.	if more than one line is drawn from an observation, award no mark for that observation
	1	* We have day and night.	The Earth is a sphere.	
	1	* We have summer and winter.	The Earth orbits the Sun and the Earth's axis is tilted.	
	1	* One year on Earth is 365 days.	Gravity attracts objects towards the Earth.	
Total	4		The Earth orbits the Sun.	

Tier 3–6 5–7	Q No 16 8			
Part	Mark	Answer	Accept	Additional guidance
a 4/2b	1	* Mars	accept '6 kg'	do not accept '24 N'
b 4/2b	1	any one from * 4 kg weighs more on Earth * the weight of the object is greater on Earth	accept the converse accept the converse accept 'Earth is 40 N and Venus is 36 N' accept 'Earth is 40 and Venus is 36' accept 'more newtons on Earth' or 'less newtons on Venus' accept 'there is a greater force on Earth'	'different weights' is insufficient do not accept 'it has more mass on the Earth'
c 4/2b	1 1	* less (than) or smaller (than) or lower (than) * the same (as) or equal (to)		answers must be in the correct order
d i 4/4b	1	* the greater the distance the greater the time for one orbit	accept 'it increases'	
d ii 1/2j 4/4b	1	* an answer from 1.6 to 6 inclusive		
e 4/4c	1	* 		award a mark for X marked on the orbit within the tolerances shown
Total	7			

Tier 3–6 5–7	Q No 17 9		
Part	Mark	Answer	Additional guidance
a 4/2d	1	* B	
b i 4/2c	1	* A and C	answers may be in either order both letters are required for the mark
b ii 4/2c	1	* D and B	answers may be in either order both letters are required for the mark
c i 4/2c	1	* Force D is greater than force B. ✓	if more than one box is ticked, award no mark
c ii 4/2c	1	* Force A is greater than force C. ✓	if more than one box is ticked, award no mark
Total	5		