

# Science

Stage 8

This table gives general guidelines on marking answers involving units of length. For questions involving other quantities, correct units are given in the answers. The table shows acceptable and unacceptable versions of the answer 1.85 m.

	<b>Correct answer</b>	<b>Also accept</b>	<b>Do not accept</b>
Units are not given on answer line and the question does not specify a unit	1.85 m	Correct conversions provided the unit is stated, e.g. 1 m 85 cm 185 cm 1850 mm 0.00185 km	1.85 185 m
If the unit is given on the answer line, e.g. .... m	.....1.85..... m	Correct conversions, provided the unit is stated unambiguously, e.g. ....185 cm..... m	.....185..... m .....1850..... m etc.
If the question states the unit that the answer should be given in, e.g. "Give your answer in metres"	1.85 m	1.85 1 m 85 cm	185; 1850  Any conversions to other units.

## Stage 8 Paper 1 Mark Scheme

Question	1		
Part	Mark	Answer	Further Information
	3		5 correct = 3 marks 3/4 correct = 2 marks 1/2 correct = 1 mark
<b>Total</b>	<b>3</b>		

Question	2		
Part	Mark	Answer	Further Information
(a)	1	wave A	more than one letter = 0 marks
(b) (i)	1	wave D	more than one letter = 0 marks
(ii)	1	high amplitude	Accept any clear indication of correct response, e.g. circle, tick.  more than one answer = 0 marks
<b>Total</b>	<b>3</b>		

Question	3		
Part	Mark	Answer	Further Information
(a) (i)	1	carbohydrates / fibre / minerals / vitamins / water	Accept any named example, e.g. starch / vitamin D / calcium.
(ii)	1	growth	Accept repair / enzymes.
(iii)	1	stomach	Accept intestine / alimentary canal.
(b) (i)	2	(idea that peanuts are) high in fat / fat is over 100% of GDA per 100 g too much fat causes health problems / (idea that peanuts) cause weight gain just eating peanuts is not giving him a balanced diet / peanuts are lacking in other nutrients	any two Accept (idea that) nearly 30% of energy requirement in 100 g. Too many kJ cause health problems. Accept possible allergies to peanuts.
(ii)	1	liver / meat (including named meat e.g. beef) / shell fish (including named shell fish) / sardines / thyme / curry powder / garam masala / oat or wheat bran / breakfast cereals	Accept any food high in iron. Accept any suitable food rich in iron.
(iii)	1	anaemia	Accept anaemic / tiredness / looking pale / fewer red blood cells.
<b>Total</b>	<b>7</b>		

Question	4																		
Part	Mark	Answer	Further Information																
(a)	1	dispersion	Accept any clear indication of correct response, e.g. circle, tick.  more than one answer = 0 marks																
(b)	2	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">colour</th> <th style="text-align: left;">order</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">orange</td> <td style="text-align: center;">(2)</td> </tr> <tr> <td style="text-align: center;">green</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">red</td> <td style="text-align: center;">(1)</td> </tr> <tr> <td style="text-align: center;">yellow</td> <td style="text-align: center;">(3)</td> </tr> <tr> <td style="text-align: center;">blue</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">violet</td> <td style="text-align: center;">7</td> </tr> <tr> <td style="text-align: center;">indigo</td> <td style="text-align: center;">6</td> </tr> </tbody> </table>	colour	order	orange	(2)	green	4	red	(1)	yellow	(3)	blue	5	violet	7	indigo	6	order 4 and 5 correct = 1 mark order 6 and 7 correct = 1 mark
colour	order																		
orange	(2)																		
green	4																		
red	(1)																		
yellow	(3)																		
blue	5																		
violet	7																		
indigo	6																		
(c)	1	rain / oil	Accept rainbow.																
<b>Total</b>	<b>4</b>																		

Question	5		
Part	Mark	Answer	Further Information
(a) (i)	2	5  m/s	1 mark for answer and 1 mark for unit  Accept metres per second.
(ii)	1	Speed may not have been constant over all the distance.	Accept examples of why speed may be different, e.g. dog started from rest.
(b) (i)	1	A	Accept any clear indication.
(ii)	1	D	Accept any clear indication.
(iii)	1	B	Accept any clear indication.
<b>Total</b>	<b>6</b>		

Question	6										
Part	Mark	Answer	Further Information								
(a) (i)	1	(pH) 7									
(ii)	1	<p style="text-align: center;"><b>variable</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">volume of starch added</td> <td style="width: 30%; text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>pH of the solution</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>temperature of the solution</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>volume of amylase added</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	volume of starch added	<input checked="" type="checkbox"/>	pH of the solution	<input type="checkbox"/>	temperature of the solution	<input checked="" type="checkbox"/>	volume of amylase added	<input checked="" type="checkbox"/>	all correct = 1 mark any other combination = 0 marks
volume of starch added	<input checked="" type="checkbox"/>										
pH of the solution	<input type="checkbox"/>										
temperature of the solution	<input checked="" type="checkbox"/>										
volume of amylase added	<input checked="" type="checkbox"/>										
(iii)	1	wear goggles / protective clothing / read warnings on chemical bottles									
(b) (i)	2	(idea that) it works best at pH 7 does not work at pH 3 or pH 11 works slowly at pH 5 or pH 9	any two  Accept that it works best when it is neutral. Accept it does not work or works slowly when it is acidic or alkaline.								
(ii)	2	more pH values repeat the investigation time how long it takes to turn yellow (idea that) check that it is always the same shade of yellow	any two  Accept use of named pH values, e.g. pH 6. Accept 'use a colour chart to compare colours'.								
<b>Total</b>	<b>7</b>										

Question	7		
Part	Mark	Answer	Further Information
(a)	1	chlorine	Accept chlorine Do not accept chloride.
(b)	1	magnesium	
(c)	1	iron sulfide	Accept iron sulphide.
<b>Total</b>	<b>3</b>		

Question	8		
Part	Mark	Answer	Further Information
(a) (i)	1	decrease in size / smaller	Accept any measurement indicating a smaller size, e.g. not as tall.
(ii)	2	move screen move torch move hands nearer / further from screen / torch	any two Accept alternative words e.g. nearer / towards.
(b)	1	Measurement – height / width / area / cm Apparatus – with a ruler / tape measure	both correct = 1 mark
<b>Total</b>	<b>4</b>		

Question	9		
Part	Mark	Answer	Further Information
(a) (i)	1	A / water and air	
(ii)	2	iron + oxygen + water	3 correct in any order = 2 marks 1/2 correct in any order = 1 mark
(b)	2	coat with plastic cover in oil paint galvanise / coat with zinc use silica gel / keep in a dry place (idea of) tin plate sacrificial protection / bolt on a lump of magnesium	any two Accept any reasonable methods that would prevent water or air reaching the nail.
<b>Total</b>	<b>5</b>		

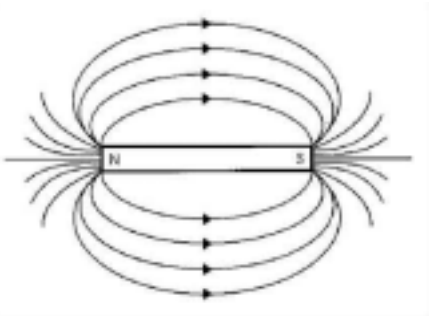
Question	10		
Part	Mark	Answer	Further Information
(a)	1	metal it is a conductor / 'heating' part of the information	
(b)	2	<p>Metals are good reducing agents or non-metals are good oxidising agents.</p> <p>Metals are good conductors of electricity or non-metals are poor conductors of electricity.</p> <p>Metals are malleable or non-metals are brittle.</p> <p>Metals are ductile or non-metals are not ductile.</p> <p>Metals are shiny or non-metals are dull.</p> <p>Metals are sonorous or non-metals are not sonorous.</p> <p>Metals have high melting points or non-metals have low melting points.</p> <p>Metals have high boiling points or non-metals have low boiling points.</p> <p>Metals are strong or non-metals are weak.</p> <p>Metals are hard or non-metals are soft.</p> <p>Metals form basic oxides or non-metals form acidic oxides.</p>	<p>any two</p> <p>Assume answers refer to metals unless otherwise stated.</p>
<b>Total</b>	<b>3</b>		



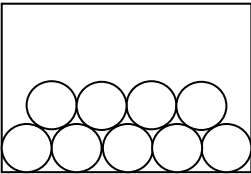
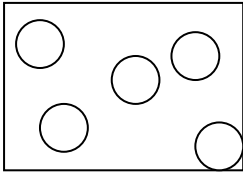
Question	11		
Part	Mark	Answer	Further Information
(a)	1	weight / mass / kilograms head circumference size of feet / hands / ears	any one  Accept any reasonable measurements taken in your own country.
(b)	1	(idea of) to check the baby is growing correctly / (idea of) to allow them to notice if something is wrong	
(c)	1	Graph sketched on chart starting at 55 cm and then drawn <b>below</b> the original one.	Accept any shape graph (but not falling below 55 cm line).
<b>Total</b>	<b>3</b>		

Question	12																					
Part	Mark	Answer	Further Information																			
	2	<table border="1"> <thead> <tr> <th>chemical (formulae)</th> <th>element</th> <th>compound</th> </tr> </thead> <tbody> <tr> <td>water (H<sub>2</sub>O)</td> <td></td> <td>(✓)</td> </tr> <tr> <td>carbon dioxide (CO<sub>2</sub>)</td> <td></td> <td>✓</td> </tr> <tr> <td>hydrogen (H<sub>2</sub>)</td> <td>✓</td> <td></td> </tr> <tr> <td>helium (He)</td> <td>✓</td> <td></td> </tr> <tr> <td>magnesium (Mg)</td> <td>✓</td> <td></td> </tr> </tbody> </table>	chemical (formulae)	element	compound	water (H <sub>2</sub> O)		(✓)	carbon dioxide (CO <sub>2</sub> )		✓	hydrogen (H <sub>2</sub> )	✓		helium (He)	✓		magnesium (Mg)	✓		4 correct = 2 marks 2/3 correct = 1 mark 1 correct = 0 marks	
chemical (formulae)	element	compound																				
water (H <sub>2</sub> O)		(✓)																				
carbon dioxide (CO <sub>2</sub> )		✓																				
hydrogen (H <sub>2</sub> )	✓																					
helium (He)	✓																					
magnesium (Mg)	✓																					
<b>Total</b>	<b>2</b>																					

## Stage 8 Paper 2 Mark Scheme

Question	1		
Part	Mark	Answer	Further Information
(a) (i)	2	<p>correct diagram e.g.</p> 	<p>Answer needs at least two lines above and 2 lines below.</p> <p>lines from one pole to the other = 1 mark</p> <p>correct direction of arrows from N to S = 1 mark</p>
(ii)	1	(plotting) compass	
(b)	1	Diagram redrawn as in (a) (i) but with field lines further apart or just one field line.	Accept any diagram with fewer lines than in (a)(i). Ignore any arrows.
(c)	2	<p>Two North poles attract each other. <input type="checkbox"/></p> <p>Two South poles attract each other. <input type="checkbox"/></p> <p>Permanent magnets are always in the shape of a bar. <input type="checkbox"/></p> <p>Magnetic fields cannot be seen. <input checked="" type="checkbox"/></p> <p>A North pole and South pole attract each other. <input checked="" type="checkbox"/></p>	<p>2 correct = 2 marks</p> <p>1 correct = 1 mark</p> <p>If 3 boxes ticked, 2 correct = 1 mark</p> <p>If 3 boxes ticked, 1 correct = 0 marks</p> <p>If 4/5 boxes ticked, 2 correct = 0 marks</p>
<b>Total</b>	<b>6</b>		

Question	2		
Part	Mark	Answer	Further Information
(a)	1	(idea of a ) pump / to move blood around the body	
(b)	3	Artery Capillaries Veins	in this order
(c) (i)	1	fat deposits / eating too much fatty food	
(ii)	1	blood clots / narrows the arteries / heart disease / atherosclerosis	
<b>Total</b>	<b>6</b>		

Question	3		
Part	Mark	Answer	Further Information
(a)	3	<p><b>solid:</b> volume – (idea of) fixed can it be compressed? – no</p> <p><b>liquid:</b> can it flow? – yes</p> <p><b>gas:</b> shape – (idea of) same as container can it flow? – yes can it be compressed? – yes</p>	<p>6 correct = 3 marks 4/5 correct = 3 marks 2/3 correct = 1 mark 1 correct = 0 marks</p>
(b) (i)	2	<p>Solid picture has tightly packed particles in a regular pattern e.g.</p>  <p>Gas picture has plenty of space around particles, at least two particles shown but no more than five particles e.g.</p> 	<p>each correct diagram = 1 mark</p> <p>Accept free-hand circles of roughly the same size.</p>
(ii)	1	(idea that) there are (very few) spaces between the particles	
(c)	1	(idea of ) particles hitting (the sides of) the container	
<b>Total</b>	<b>7</b>		

Question	4						
Part	Mark	Answer	Further Information				
(a)	2	<table border="1"> <tr> <td>carbon dioxide</td> <td>✓</td> </tr> <tr> <td>water</td> <td>✓</td> </tr> </table>	carbon dioxide	✓	water	✓	<p>2 correct = 2 marks 1 correct = 1 mark 3 ticked, 2 correct = 1 mark any other combination of ticks = 0 marks</p>
carbon dioxide	✓						
water	✓						
<b>Total</b>	<b>2</b>						

Question	5		
Part	Mark	Answer	Further Information
(a) (i)	1	green	
(ii)	2	Green light is reflected. Red and blue light are absorbed.	Do not accept green light bounces.
(b) (i)	1	<pre> graph LR     A[red and green] --- B[yellow]     C[red and blue] --- D[magenta]     E[blue and green] --- F[cyan] </pre>	all lines correct = 1 mark
(ii)	1	white (light)	
<b>Total</b>	<b>5</b>		

Question	6														
Part	Mark	Answer	Further Information												
(a)	2	<table border="0"> <thead> <tr> <th>statement</th> <th>order</th> </tr> </thead> <tbody> <tr> <td>Ovulation occurs.</td> <td style="border: 1px solid black; text-align: center;">2</td> </tr> <tr> <td>The levels of the female sex hormones drop quickly.</td> <td style="border: 1px solid black; text-align: center;">4</td> </tr> <tr> <td>Inner lining of uterus starts to be lost as menstrual blood.</td> <td style="border: 1px solid black; text-align: center;">5</td> </tr> <tr> <td>The egg cell (ovum) travels from the ovary to the uterus.</td> <td style="border: 1px solid black; text-align: center;">3</td> </tr> <tr> <td>A new egg cell (ovum) starts to develop in the ovary.</td> <td style="border: 1px solid black; text-align: center;">(1)</td> </tr> </tbody> </table>	statement	order	Ovulation occurs.	2	The levels of the female sex hormones drop quickly.	4	Inner lining of uterus starts to be lost as menstrual blood.	5	The egg cell (ovum) travels from the ovary to the uterus.	3	A new egg cell (ovum) starts to develop in the ovary.	(1)	<p>Inner lining of uterus starts to be lost as menstrual blood (5) = 1 mark.</p> <p>Other 3 statements are in correct sequence, e.g. ovulation occurs before egg cell travels before the levels of hormones drop, etc = 1 mark.</p>
statement	order														
Ovulation occurs.	2														
The levels of the female sex hormones drop quickly.	4														
Inner lining of uterus starts to be lost as menstrual blood.	5														
The egg cell (ovum) travels from the ovary to the uterus.	3														
A new egg cell (ovum) starts to develop in the ovary.	(1)														
(b)	1	It stops.	Accept no menstrual blood loss.												
(c) (i)	1	oviduct	Accept any clear indication.												
(ii)	1	in the uterus	Accept womb.												
<b>Total</b>	<b>5</b>														

Question	7		
Part	Mark	Answer	Further Information
(a) (i)	1	increase	Accept any indication of more paper clips attracted.
(ii)	1	electromagnet is stronger (with more turns of wire)	Accept idea of magnetism increasing.
(b) (i)	1	no pattern / none	Accept a description, e.g. goes down, up, down.
(ii)	1	using paperclips of different sizes / masses / weights	Accept idea of changing more than one variable.
(iii)	1	use same size paper clips repeat each reading / take means take more readings, e.g. 10, 14 turns	any two Accept other suitable improvements, e.g. test paper clips in size order.
<b>Total</b>	<b>5</b>		

Question	8		
Part	Mark	Answer	Further Information
(a)	1	to make a fair comparison / make the test fair	Accept it may take longer with larger volume.
(b) (i)	1		<p>all points plotted correctly = 1 mark</p> <p>Accept a tolerance of <math>\pm \frac{1}{2}</math> small square of graph paper.</p>
(ii)	1	20 (°C)	
(iii)	1	<p>straight line of best fit drawn on graph e.g.</p>	Accept any reasonable attempt of a line of best fit.
(c)	1	(idea that) the higher the temperature of the water, the quicker the ink diffuses	Accept the lower the temperature of the water, the slower the ink diffuses.
(d)	1	<p>repeat the 20°C result</p> <p>repeat and work out the mean</p> <p>take results at more temperatures</p> <p>record the time more accurately / use e.g. 10 second intervals</p> <p>have a comparison (diffused) to know when diffusion is complete</p>	<p>any one</p> <p>Accept any reasonable improvement.</p>
<b>Total</b>	<b>6</b>		



Question	9		
Part	Mark	Answer	Further Information
(a) (i)	1	nitrogen	
(ii)	1	carbon dioxide	Accept any clear indication of carbon dioxide.
(ii)	1	made of two or more (different) elements joined together <b>or</b> made of carbon and oxygen joined together	Do not accept mixture for idea of joined together.
(b)	1	copper + oxygen → copper oxide	more than one ticked = 0 marks
<b>Total</b>	<b>4</b>		

Question	10		
Part	Mark	Answer	Further Information
(a) (i)	1	turns yellow or brown or black / changes colour	
(ii)	1	collects tar (from the cigarette)	
(b)	1	lungs	Accept named part of the lung e.g. alveoli / bronchiole / bronchus.
(c)	1	cancer / named cancer e.g. lung cancer emphysema bronchitis / smoker's cough increases heart rate high blood pressure heart attack heart disease blocking of blood vessels loss of circulation to limbs / legs lack of oxygen in the blood problems during pregnancy / low birth weight babies	any one
<b>Total</b>	<b>4</b>		