

Question	Answer	Marks	Further Information
1(a)	hinge	1	
1(b)	antagonistic	1	
1(c)	(muscle A) contracts (muscle B) relaxes	1	Both answers correct for the mark Accept shortens Accept lengthens

Question	Answer	Marks	Further Information
2(a)	centre	1	Accept middle
2(b)	protons neutrons positive electrons	4	each correct answer = 1 mark Accept protons and neutrons in either order

Question	Answer	Marks	Further Information
3	core	1	Accept (liquid) outer core or molten iron or molten nickel

Question	Answer	Marks	Further Information
4(a)(i)	(idea that weather is the) change in conditions of the atmosphere (at a particular place) during a short period of time	1	<p>Accept how the conditions change day to day or how the conditions change month to month or how the conditions change year to year</p> <p>Accept named conditions, e.g. rainfall or temperature or cloud cover</p>
4(a)(ii)	8 (°C) 20 (°C) 12 (°C)	1	all three correct = 1 mark
4(b)(i)	(idea that) the temperatures have increased (from 1920 to 2020)	1	Accept the temperatures are different (between 1920 and 2020)
4(b)(ii)	(idea of) atmospheric change	1	<p>Accept examples of atmospheric change, e.g. increasing emissions of carbon dioxide or increasing emissions of methane or more burning of fossil fuels or deforestation or cutting down more trees</p> <p>Accept global warming or global temperature increases</p>
4(c)	<p>any one from</p> <p>(idea that) thermometers may not have been as accurate in 1920 compared to 2020</p> <p>no digital thermometers to measure temperature or no data loggers to record temperature</p> <p>may be easier to make more readings in 2020 than in 1920</p>	1	Accept other possible suggestions, e.g. the temperatures were recorded a long time ago (before computers) or the temperatures were written on paper (and may be hard to see now)

Question	Answer	Marks	Further Information																																			
5(a)	syringe or graduated pipette or burette	1	Ignore measuring cylinder																																			
5(b)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="5">number of drops of fruit juice to turn blue solution colourless</th> </tr> <tr> <th>fruit juice</th> <th>test 1</th> <th>test 2</th> <th>test 3</th> <th>mean average</th> </tr> </thead> <tbody> <tr> <td>orange</td> <td>20</td> <td>18</td> <td>19</td> <td>19</td> </tr> <tr> <td>pineapple</td> <td>100</td> <td>102</td> <td>104</td> <td>102</td> </tr> <tr> <td>lime</td> <td>14</td> <td>14</td> <td>12</td> <td>13</td> </tr> <tr> <td>lemon</td> <td>16</td> <td>15</td> <td>14</td> <td>15</td> </tr> <tr> <td>grapefruit</td> <td>12</td> <td>11</td> <td>12</td> <td>.....</td> </tr> </tbody> </table>	number of drops of fruit juice to turn blue solution colourless					fruit juice	test 1	test 2	test 3	mean average	orange	20	18	19	19	pineapple	100	102	104	102	lime	14	14	12	13	lemon	16	15	14	15	grapefruit	12	11	12	2	fruit juice in the correct order = 1 mark number of drops (of fruit juice) to turn (blue) solution colourless = 1 mark
number of drops of fruit juice to turn blue solution colourless																																						
fruit juice	test 1	test 2	test 3	mean average																																		
orange	20	18	19	19																																		
pineapple	100	102	104	102																																		
lime	14	14	12	13																																		
lemon	16	15	14	15																																		
grapefruit	12	11	12																																		
5(c)	12	1																																				
5(d)	yes ticked and (idea that) he did repeats and they are similar	1	if no ticked then = 0 marks for the question Note he did repeats is not sufficient																																			
5(e)	any one from exercise drugs alcohol smoking	1	Accept any suitable answer, e.g. stress																																			

Question	Answer	Marks	Further Information
6(a)	solvent line is above pencil start line / baseline or the solvent line is above the sample spot (idea that) the spot will dissolve in the solvent in the beaker and not move up the paper	2	each correct answer = 1 mark Accept ora
6(b)	D	1	Accept any indication of the correct answer, e.g. D circled on the diagram, but answer line takes precedence

Question	Answer	Marks	Further Information
7(a)	<p>distance travelled in kilometres</p> <p>time taken in minutes</p>	2	<p>all four points plotted correctly = 1 mark</p> <p>straight lines between each point plotted = 1 mark</p> <p>Accept a tolerance of \pm half a small square</p>
7(b)	constant speed, not moving and then constant faster speed	1	<p>more than one answer ticked = 0 marks</p> <p>Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence</p>
7(c)	<p>(speed =) distance \div time or $8 \div 4$</p> <p>(speed =) 2</p> <p>(unit) km/min</p>	3	<p>2 km/min with or without working = 3 marks</p> <p>2 with or without working but incorrect units or no units, e.g. 2 m/min = 2 marks</p> <p>correct formula for speed = 1 mark</p> <p>correct unit = 1 mark</p> <p>Accept correct answer with converted units, e.g. 120 km/h = 3 marks</p>

Question	Answer	Marks	Further Information
8(a)	put the iron bar inside the tube close the switch	2	each correct answer = 1 mark Accept coil for tube
8(b)	any one from sorting scrap metal (door) bell or buzzer (electric) motor loudspeaker	1	Accept any answer that contains an electromagnet, e.g. relay or circuit breaker or generator or transformer or magnetic recording devices/hard discs or MRI machines
Question	Answer	Marks	Further Information
9(a)	(idea that) the rabbits/mice/locusts eat the maize (which had been sprayed with DDT) (idea that) the hawk eats many rabbits/mice/locusts	2	each correct answer = 1 mark Accept bioaccumulation (of DDT) = 2 marks Accept biomagnification (of DDT) = 2 marks
9(b)	(description) increase (explanation) less hawks to eat the snakes and more mice for snakes to eat	2	each correct answer = 1 mark

Question	Answer	Marks	Further Information
10	decrease the number of particles of solvent increase the number of particles of solute	2	each correct answer = 1 mark three boxes ticked and one incorrect = 1 mark two incorrect boxes = 0 marks Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence
Question	Answer	Marks	Further Information
11(a)	(idea that) it is a comparison between one thing and another to explain a scientific idea or a comparison between one thing and another to model an idea	1	
11(b)	refraction	1	more than one answer circled = 0 marks Accept any indication of the correct answer, e.g. ticking or underlining, but circling takes precedence
11(c)	(idea that) the car changes speed when it changes surfaces and light changes speed when it changes medium	1	Accept specific examples for change of medium, e.g. air to glass or air to water Accept (idea that) the car changes direction when it changes surfaces and light changes direction when it changes medium

Question	Answer	Marks	Further Information
12(a)	(stellar) dust and gas stars planetary systems	3	each correct answer = 1 mark Accept suns Accept planets or moons or asteroids or comets or meteors
12(b)	Galaxies have not collided.	1	more than one answer ticked = 0 marks Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence

Question	Answer	Marks	Further Information
13(a)(i)	calcium silver	1	both correct for the mark Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence.
13(a)(ii)	sodium + water → sodium hydroxide + hydrogen	2	Accept reactants in either order = 1 mark Accept products in either order = 1 mark Accept = sign instead of arrow Note arrow or = sign must be present for 2 marks Do not accept and instead of +
13(b)	unreactive or does not react	1	

Question	Answer	Marks	Further Information
14	<p>A Venn diagram with three overlapping circles labeled green, red, and blue. The intersections are labeled with color names in boxes: yellow (top), cyan (left), magenta (right), and blue (bottom).</p>	1	all three correct = 1 mark