



Pearson

# Mark Scheme (Results)

Summer 2017

Pearson Edexcel PLSC  
Primary Science (JSC01) Paper 01  
Science Year 6 Achievement

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

## SECTION A

Question Number	Answer	Mark
1	<p><b>1. The only correct answer is D</b></p> <p><i>A is not correct because a mirror is not a source of light</i></p> <p><i>B is not correct because a raindrop is not a source of light</i></p> <p><i>C is not correct because a shiny coin is not a source of light</i></p>	(1)
2	<p><b>2. The only correct answer is D</b></p> <p><i>A is not correct because dispersal is not a life process removing waste</i></p> <p><i>B is not correct because disposal is not a life process removing waste</i></p> <p><i>C is not correct because evaporation is not a life process removing waste</i></p>	(1)
3	<p><b>3. The only correct answer is D</b></p> <p><i>A is not correct because a solid changing to a liquid is not evaporating and a liquid changing to a gas is not melting</i></p> <p><i>B is not correct because a solid changing to a liquid is not evaporating and a liquid changing to a gas is not condensing</i></p> <p><i>C is not correct because a solid changing to a liquid is not freezing</i></p>	(1)
4	<p><b>4. The only correct answer is A</b></p> <p><i>B is not correct because a fish does not live in a burrow with a hole similar in size to leaves</i></p> <p><i>C is not correct because a tiger does not live in a burrow with a hole similar in size to leaves</i></p> <p><i>D is not correct because a large bird of prey does not live in a burrow with a hole similar in size to leaves</i></p>	(1)

5	<p><b>5. The only correct answer is A</b></p> <p><i>B is not correct because an opaque object does not conduct light</i></p> <p><i>C is not correct because an opaque object does not filter light</i></p> <p><i>D is not correct because an opaque object does not separate light</i></p>	(1)
6	<p><b>6. The only correct answer is C</b></p> <p><i>A is not correct because a sieve could not be used to separate a mixture of oil and vinegar</i></p> <p><i>B is not correct because a sieve could not be used to separate a mixture of water and sugar</i></p> <p><i>D is not correct because a sieve could not be used to separate a mixture of water and ink</i></p>	(1)
7	<p><b>7. The only correct answer is A</b></p> <p><i>B is not correct because insulation is not measured in newtons</i></p> <p><i>C is not correct because temperature is not measured in newtons</i></p> <p><i>D is not correct because time is not measured in newtons</i></p>	(1)
8	<p><b>8. The only correct answer is A</b></p> <p><i>B is not correct because it is not the symbol for a buzzer</i></p> <p><i>C is not correct because it is not the symbol for a buzzer</i></p> <p><i>D is not correct because it is not the symbol for a buzzer</i></p>	(1)
<b>Total marks</b>		<b>(8)</b>

Question	Acceptable answers	Additional guidance	Mark
9		<p>All four correct = 2 marks                  2 or 3 correct = 1 mark                  No marks for fewer than 2 correct</p>	(2)
<b>Total for question</b>		<b>(2)</b>	

Question	Acceptable answers	Additional guidance	Mark
<b>10</b>	<p>An answer that includes the following:</p> <ul style="list-style-type: none"> <li>- yoghurt with reference to bacteria <b>OR</b> reference to (micro-organisms affect) taste/flavour/texture or a description <b>(1)</b></li> <li>- (blue) cheese with reference to fungus/fungi/mould/bacteria <b>OR</b> reference to (micro-organisms affect) taste/flavour/ texture or a description <b>(1)</b></li> <li>- bread with reference to fungus/fungi/yeast <b>OR</b> reference to (micro-organisms) makes it rise <b>(1)</b></li> </ul>	<p>If micro-organisms not linked to each food, or linked to the wrong food, then award:</p> <p>max 2 marks if the words <b>yeast AND fungus/mould AND bacteria all mentioned</b> but not linked to a food, or linked to wrong food</p> <p>max 1 mark if <b>two of the above mentioned</b> but not linked to a food, or linked to the wrong food</p>	<b>(3)</b>
<b>Total for question</b>			<b>(3)</b>

Question	Answer	Mark
<b>11</b>	<p><b>11. The only correct answer is A</b></p> <p><i>B is not correct because the photograph shows a root not a shoot</i></p> <p><i>C is not correct because the description does not refer to the emerging root, so is not the best description, and there is no evidence to support damage by micro-organisms</i></p> <p><i>D is not correct because although the seed may have been dispersed, the description does not refer to the emerging root, so is not the best description, and there is no evidence to support an animal having bitten the seed</i></p>	<b>(1)</b>

12	<p><b>12. The only correct answer is B</b></p> <p><i>A is not correct because salt and water would be separated by evaporating the water not condensing</i></p> <p><i>C is not correct because salt and water would be separated by evaporating the water not filtration</i></p> <p><i>D is not correct because salt and water would be separated by evaporating the water not sieving</i></p>	(1)
13	<p><b>13. The only correct answer is C</b></p> <p><i>A is not correct because S is the skull of a herbivore and T is the skull of a carnivore</i></p> <p><i>B is not correct because S is the skull of a herbivore, but herbivores do not eat meat and T is the skull of a carnivore, but carnivores do not eat plants</i></p> <p><i>D is not correct because S is the skull of a herbivore and T is the skull of a carnivore</i></p>	(1)
14	<p><b>14. The only correct answer is A</b></p> <p><i>B is not correct because it is not a beaker</i></p> <p><i>C is not correct because it does not contain sugar solution</i></p> <p><i>D is not correct because it is not a beaker and it does not contain sugar solution</i></p>	(1)
15	<p><b>15. The only correct answer is C</b></p> <p><i>A is not correct because a black bean is not spotted</i></p> <p><i>B is not correct because a black bean is not round</i></p> <p><i>D is not correct because a black bean is not round</i></p>	(1)
16	<p><b>16. The only correct answer is C</b></p> <p><i>A is not correct because the bean in the photograph is oval and a garbanzo bean is round</i></p> <p><i>B is not correct because the bean in the photograph is spotted and a kidney bean is not spotted</i></p> <p><i>D is not correct because the bean in the photograph is not white and a white northern bean is white</i></p>	(1)

17	<p><b>17. The only correct answer is B</b></p> <p><i>A is not correct because using hotter water <b>will</b> speed up dissolving</i></p> <p><i>C is not correct because more stirring <b>will</b> speed up dissolving</i></p> <p><i>D is not correct because using smaller sugar cubes <b>will</b> speed up dissolving</i></p>	(1)
18	<p><b>18. The only correct answer is D</b></p> <p><i>A is not correct because baking a cake is not a reversible change</i></p> <p><i>B is not correct because burning wood is not a reversible change</i></p> <p><i>C is not correct because making a pot by heating clay is not a reversible change</i></p>	(1)
<b>Total marks</b>		<b>(8)</b>

Question	Acceptable answers	Additional guidance	Mark
19	<p><b>Freshwater shrimp numbers:</b></p> <p>increase <b>and</b> fewer predators</p> <p>OR</p> <p>increase <b>and</b> fewer (freshwater shrimps) being eaten <b>(1)</b></p> <p><b>Mayfly larvae numbers:</b></p> <p>decrease <b>and</b> less food/producers <b>(1)</b></p> <p>OR</p> <p>decrease <b>and</b> more (freshwater) shrimps eating producers/food <b>(1)</b></p>	<p><b>Freshwater shrimp numbers:</b></p> <p>Ignore fewer sticklebacks on its own</p> <p>Allow (freshwater shrimps) not being eaten</p> <p><b>Mayfly larvae numbers:</b></p> <p>Allow: decrease <b>and</b> more competition, i.e. without reference to food/producers</p>	(2)
<b>Total for question</b>			<b>(2)</b>



Question	Acceptable answers	Additional guidance	Mark
20 (a)	Ben (1)		(1)
20 (b)	(the shadow becomes) triangular (1)  shadows take the shape of the object blocking the light/ OWTTE light travels in straight lines/OWTTE (1)	Accept triangle shape for first point  Allow reference to shape blocking light	(2)
20 (c)	(the shadow becomes) square (because the mirror is opaque/blocks light) (1)	Allow a shadow will still form but some light will be reflected	(1)
20 (d)	line from light to book and from book to boy's eye (1)  arrowheads (on line) pointing from light to book <u>and</u> from book to eye (1)	lines should be joined  Marks can be awarded if answered on photograph instead of diagram	(2)
<b>Total for question</b>			<b>(6)</b>

Question	Answer	Mark
21	<b>21. The only correct answer is C</b>  <i>A is not correct because it has two cells; Tom's circuit has one cell</i>  <i>B is not correct because the bulbs are not connected in the same way as the lamps in Tom's circuit</i>  <i>D is not correct because it has two cells; Tom's circuit has one cell</i>	(1)
22	<b>22. The only correct answer is A</b>  <i>B is not correct because this is not an example of dissolving</i>  <i>C is not correct because a liquid foam is not formed</i>  <i>D is not correct because this is not an example of dissolving</i>	(1)
23	<b>23. The only correct answer is C</b>	(1)

	<p><b>A</b> is not correct because the best description of the role of magnesium ions is to help plants stay green (chlorophyll) and the best description of the role of nitrates is to help plant growth</p> <p><b>B</b> is not correct because the best description of the role of magnesium ions is to help plants stay green (chlorophyll) and the best description of the role of nitrates is to help plant growth</p> <p><b>D</b> is not correct because the best description of the role of magnesium ions is to help plants stay green (chlorophyll) and the best description of the role of nitrates is to help plant growth</p>	
<b>24</b>	<p><b>24. The only correct answer is B</b></p> <p><b>A</b> is not correct because this car would move backwards, not forward</p> <p><b>C</b> is not correct because this car has equal opposing forces, so would not move forward</p> <p><b>D</b> is not correct because this car has equal opposing forces, so would not move forward</p>	<b>(1)</b>
<b>25</b>	<p><b>25. The only correct answer is C</b></p> <p><b>A</b> is not correct because ice cream melting is a reversible change and wood decaying is an irreversible change</p> <p><b>B</b> is not correct because ice cream melting is a reversible change, wax burning is an irreversible change and wood decaying is an irreversible change</p> <p><b>D</b> is not correct because wax burning is an irreversible change</p>	<b>(1)</b>
<b>26</b>	<p><b>26. The only correct answer is A</b></p> <p><b>B</b> is not correct because current is not measured in volts</p> <p><b>C</b> is not correct because a voltmeter is not used to measure current</p> <p><b>D</b> is not correct because a voltmeter is not used to measure current and current is not measured in volts</p>	<b>(1)</b>

27	<p><b>27. The only correct answer is B</b></p> <p><i>A is not correct because, when floating, the upthrust will equal Jack's weight of 300N</i></p> <p><i>C is not correct because, when floating, the upthrust will equal Jack's weight of 300N</i></p> <p><i>D is not correct because, when floating, the upthrust will equal Jack's weight of 300N</i></p>	(1)
28	<p><b>28. The only correct answer is B</b></p> <p><i>A is not correct because as temperature increases, the solubility of substance A changes less than the solubility of substance B</i></p> <p><i>C is not correct because as temperature increases, the solubility of substance C changes less than the solubility of substance B</i></p> <p><i>D is not correct because as temperature increases, the solubility of substance D changes less than the solubility of substance B</i></p>	(1)
29	<p><b>29. The only correct answer is C</b></p> <p><i>A is not correct because fertiliser is not used to kill crops, so this is not the best answer</i></p> <p><i>B is not correct because fertiliser is used to help crops grow bigger, not animals</i></p> <p><i>D is not correct because fertiliser is used with the intention of making crops grow, and only some of the fertiliser has washed off the field, so this is not the best answer</i></p>	(1)
<b>Total for question</b>		<b>(9)</b>

Question	Acceptable answers	Additional guidance	Mark
<b>30 (a)</b>	<p>An answer that includes any <b>three</b> of the following:</p> <ul style="list-style-type: none"> <li>- pour mixture into filter/funnel <b>(1)</b></li> <li>- reference to use of filter paper <b>(1)</b></li> <li>- reference to water passing through (filter) funnel/paper</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>- reference to collecting water in flask/beaker/container <b>(1)</b></li> <li>- sand (stays) in (filter) funnel/paper <b>(1)</b></li> </ul>	<p>Pour mixture into filter paper scores 2 marks</p> <p>If no other marks scored allow 1 mark for mention of filter(ing)/filtration</p>	<b>(3)</b>
<b>30 (b)</b>	<p>An answer that includes</p> <ul style="list-style-type: none"> <li>- put (salty) water/solution in (evaporating) basin/dish <b>(1)</b></li> <li>- heat <b>(1)</b></li> <li>- water <u>evaporates</u> <b>(1)</b></li> <li>- salt remains (in dish/basin) <b>(1)</b></li> </ul>	<p>Allow (evaporating) bowl</p> <p>Allow boil Allow use of sun/candle/Bunsen burner</p> <p>Allow <u>evaporation/evaporating</u> if clearly not the salt evaporating</p> <p>Allow solid remains (in dish/basin)</p> <p>Evaporate <b>solution</b> alone scores 0 but evaporate solution leaving salt scores 2</p>	<b>(4)</b>
<b>Total for question</b>			<b>(7)</b>

**TOTAL FOR SECTION A = 45 MARKS**

## SECTION B

Question	Acceptable answers	Additional guidance	Mark
<b>31(a)</b>	Any two points from: <ul style="list-style-type: none"> <li>- (same) size paper <b>(1)</b></li> <li>- (same size) hole <b>(1)</b></li> <li>- (same) position of hole <b>(1)</b></li> <li>- (same) fixing at the top (1)</li> <li>- (same) sort of masses/mass holder <b>(1)</b></li> </ul>	Reject same type/thickness of paper – this is the independent variable Allow same length/width/area  Reject same NUMBER of masses – this is the dependent variable  Reject (same) mass	<b>(2)</b>
<b>31(b)</b>	Any one point from: <ul style="list-style-type: none"> <li>- keep feet clear (of falling masses)</li> <li>- take care making hole in card/paper</li> </ul>	Ignore references to gloves/lab coats Allow reference to safe footwear	<b>(1)</b>
<b>31(c)(i)</b>	writing paper <b>(1)</b>  it held most masses (before tearing) <b>(1)</b>	Allow weight(s) for masses Allow needed more masses than the others	<b>(2)</b>
<b>31(c)(ii)</b>	repeat (the experiment) <b>(1)</b>	Accept: do it again/do it more times	<b>(1)</b>
<b>Total for question</b>			<b>(6)</b>

Question	Acceptable answers	Additional guidance	Mark
<b>32(a)</b>	In case the three readings differed/ in case his pulse rate changed / to get a more reliable (starting) value <b>(1)</b>	Ignore to check it is correct unqualified	<b>(1)</b>
<b>32(b)(i)</b>	(stop) watch / (stop) clock / timer <b>(1)</b>	Allow use of heart rate monitor	<b>(1)</b>
<b>32(b)(ii)</b>	3 (minutes) <b>(1)</b>		<b>(1)</b>
<b>32(b)(iii)</b>	6 (minutes) <b>(1)</b>		<b>(1)</b>
<b>Total for question</b>			<b>(4)</b>

Question	Acceptable answers	Additional guidance	Mark
<b>33 (a)(i)</b>	<u>temperature</u> (of water) <b>(1)</b>		<b>(1)</b>
<b>33 (a)(ii)</b>	<u>mass</u> (of dissolved copper sulfate crystals) <b>(1)</b>		<b>(1)</b>
<b>33(b)(i)</b>	Point at 60°C circled <b>(1)</b>		<b>(1)</b>
<b>33(b)(ii)</b>	37 (g) <b>(1)</b>	Allow 37-38	<b>(1)</b>
<b>33(b)(iii)</b>	Any one point from:  water wrong temperature/ water cooler than it should be/ misread thermometer/ let water cool too much/ misread balance or mass/ used less water (than in others) / misread volume/OWTTE <b>(1)</b>	Ignore references to stirring unless linked to temperature	<b>(1)</b>
<b>Total for question</b>			<b>(5)</b>

**TOTAL FOR SECTION B = 15 MARKS**

**TOTAL FOR PAPER = 60 MARKS**

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