

Science Mark Scheme

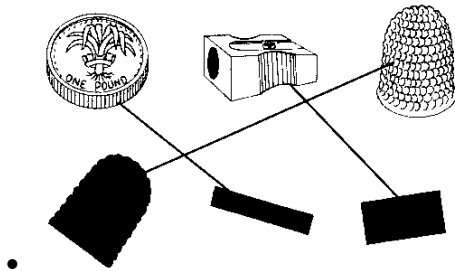
Test B

2002

1. (a) (i) Award **ONE** mark for **both**: 1
- thrush; **and**
 - sparrow;
[given in either order].
- (ii) Award **ONE** mark for **both**: 1
- snail; **and**
 - caterpillar;
[given in either order].
- (iii) Award **ONE** mark for an unambiguous indication of **all three**: 1
- A (B) (C) D (E) F

[3]

2. (a) Award **ONE** mark for **all three** lines correctly matched: 1



- (b) (i),(ii) Award **TWO** marks for correct classification of all **five**: 2

Material	Some light passes through	No light passes through
tissue paper	✓[given]	
glass	✓	
mirror		✓
clear plastic	✓	
cardboard		✓
foil		✓

or

If you are unable to award two marks, award **ONE** mark for any **three** or **four** correctly classified. 1

- (c) (i) Award **ONE** mark for an unambiguous indication of: 1

- television.

Do not give credit for a response that includes incorrect science:

- mirror [will not cause a shadow to form in a dark room].*

Do not give credit for an insufficient response naming other light sources not depicted.

- (ii) Award **ONE** mark for: 1

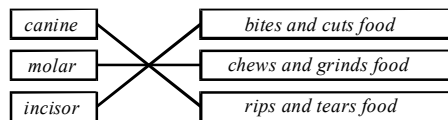
- is a light source.

[5]

3. (a) Award **ONE** mark for correct identification of **both** teeth: 1

- tooth A: molar; **and**
- tooth B: incisor.

- (b) Award **ONE** mark for **all three** correctly matched: 1



(c) (i),(ii)

Award **TWO** marks for correct identification of any **two** of the following:

2

- eat fewer sugary foods;
- do not drink fizzy drinks;
- do not eat lots of acidic foods;
- visit the dentist (regularly);
- use a toothpick;
- use dental floss;
- chew sugar-free gum;
- get a new toothbrush (regularly);
- use fluoride toothpaste;
- use mouth wash;
- wear a gumshield when playing contact sport;
- brush before you go to bed/after meals;
- brush thoroughly;
- do not brush your teeth too long/too much/too often/too hard;
- wear a brace (if needed).

Allow:

- eat a balanced diet/eat foods that keep you healthy;
- do not open bottles with your teeth;
- drink water/fluoridated water/use fluoride supplements;
- eat lots of calcium-containing products/drink milk;
- do not smoke.

***Do not** give credit for a second response that is a repetition or restatement of the first.*

***Do not** give credit for an insufficient response:*

- *brush teeth [given];*
- *use toothpaste [given];*
- *do not suck your thumb;*
- *brush your teeth three times a day;*
- *eat fruit (and vegetables).*

or

If you are unable to award two marks, award **ONE** mark for **one** correct response.

1

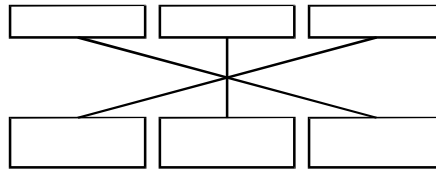
4. (a) Award **ONE** mark for correct identification of freezing: 1
- freezing.
- Allow:**
- solidifying.
- Do not give credit for an insufficient response:*
- cooling/getting colder [given in stem; will not necessarily cause a change of state];
 - turning to ice;
 - becoming ice;
 - freezer [indicates a place, not a process].
- (b) Award **ONE** mark for **both**: 1
- it has a fixed shape.
 -
 -
 -
 - it cannot be poured.
- (c) (i),(ii) Award **TWO** marks for a general comparison 2
describing the relationship between the two variables
of **volume** of the lolly and **time** it takes the lolly to melt:
- the more ice (in the lolly), the longer it takes to melt;
 - the less ice (in the lolly), the less/shorter time it takes to melt;
 - the bigger the lolly, the longer it takes to melt.
- Allow:**
- the longer the lolly, the longer it takes to melt
[‘longer’ implies bigger in this context].
- Do not give credit for a response that changes a variable:*
- the more volume, the colder it is [replaces time taken with temperature];
 - the smaller the lolly, the easier it will melt;
 - the more volume, the longer the liquid takes to freeze.
- or**
- If you are unable to award two marks, award **ONE** mark for two **specific** comparisons describing the relationship: 1
 - ice lollies with a small volume melt quicker than big ice lollies;
 - the biggest ice lollies melt slowly, the smallest ice lollies melt quickly.

Award **ONE** mark for a single comparison of the variables:

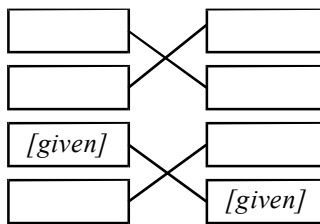
- little ice lollies melt quickest;
- big ice lollies take the longest to melt.

[4]

5. (a) Award **ONE** mark for **all three** correctly matched: 1



- (b) Award **ONE** mark for all **three** stages correctly matched: 1



[2]

6. (a) Award **ONE** mark for an understanding that the sound travels through the air: 1

- the air;
- vibrations travel through the air.

Allow:

- the atmosphere.

Do not give credit for a response that includes incorrect science:

- airwaves.

Do not give credit for an insufficient response:

- vibrations;
- (sound) waves;
- wind.

- (b) (i) Award **ONE** mark for an indication that pitch describes how high or low a note is: 1

- how high or low the note is;
- how low the sound is;
- how high the note is.

Allow:

- high and low;
- how high/low it is.

Do not give credit for a response that includes incorrect science:

- how loud/quiet the sound is;
- the volume of the note.

Do not give credit for an insufficient response:

- low;
- high;
[these do not suggest a scale];
- different sounds;
- tone of the sound.

Give credit for a correct response that goes beyond the key stage 2 programme of study:

- frequency;
- a change in the frequency of the vibration;
- differences in frequency.

(ii) Award **ONE** mark for an indication that the pitch rises:

1

- it makes a higher note;
- the pitch goes up.

Do not give credit for an insufficient response:

- the pitch is high [does not say how the pitch has changed].

Give credit for a correct response that goes beyond the key stage 2 programme of study:

- the vibrations are faster;
- the frequency increases.

7. (a) (i),(ii) Award **TWO** marks for **both**:

2

- | | | |
|--------|-------------------------------------|-----------------------------------------------|
| • grow | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | <input type="checkbox"/> | <input type="checkbox"/> |
| • | <input type="checkbox"/> | suck milk <input checked="" type="checkbox"/> |
| | <input type="checkbox"/> | <input type="checkbox"/> |

or

If you are unable to award two marks, award **ONE** mark for **one** correct response.

1

- (b) Award **ONE** mark for an indication that an adult can reproduce: 1
- reproduce;
 - have a baby;
 - produce offspring;
 - produce sperm.

Do not give credit for an insufficient response that does not describe a life process:

- have sex;
- drive a car.

[3]

8. (a) Award **ONE** mark for: 1
- sea lettuce.

- (b) Award **ONE** mark for an unambiguous indication of: 1

permeable impermeable rough

- strong absorbent

[2]

9. (a) (i),(ii) Award **TWO** marks for any **two** specific reasons giving possible faults with the following components: 2

Bulb

- the bulb is faulty/blown;
- the bulb is not screwed in properly.

Switch

- the switch is faulty/broken.

Cell

- the battery is flat/dead/gone.

Wires

- the wires are broken/faulty.

Do not give credit for a second cause that is a repetition or restatement of the first.

Do not give credit for an insufficient response:

- the switch is open [given that they close it];
- the battery is old [does not imply it has discharged];
- the wires are not connected properly [given that they are];
- the bulb is not working [given; not clear whether this is an explanation or observation].

OR

If you are unable to award two marks award **ONE** mark for any **one** specific reason. 1

Do not award a second mark for a general reason given with a specific reason [the specific reason elaborates on the general reason].

or

Allow:

ONE mark for a **general** reason relating to the circuit as a whole;

- there is a break in the circuit;
- the circuit is not complete.

(b) Award **ONE** mark for: 1

- conductors.

Allow:

a response that indicates understanding of conduction:

- conductive.

Do not give credit for:

- metals [given].

(c) Award **ONE** mark for **all three** rows correctly ticked: 1

Wire	Must be the same	Must be different
Type of metal		✓
Length	✓	
Thickness	✓	

(d) Award **ONE** mark for an indication of an increase in voltage:

- add a cell/battery;
- use a more powerful battery.

Allow:

- use a stronger cell;
- put another cell in;
- recharge the battery;
- use a new cell.

Do not give credit for an insufficient response:

- *change the battery;*
- *use a bigger cell;*
[these do not indicate an increase in voltage];
- *change the bulb [indicated that the same bulb is used];*
- *close the switch [given];*
- *use a thicker/shorter/different type of wire [given].*

Give credit for a response that goes beyond the key stage 2 programme of study.

- use a cell with a higher voltage.

[5]

10. (a) Award **ONE** mark for an understanding that mesh facilitates separation/evaporation of water from the pulp: 1

- the holes help the water to separate from the mixture;
- they let (warm) air through;
- they let the water drip out;
- the holes allow air to reach both sides of the paper, so that it dries more quickly.

Allow:

- the mesh acts as a sieve.

Do not give credit for an insufficient response:

- *the holes help it dry faster [does not say how];*
- *they keep it flat;*
- *the mesh gives it shape;*
[the holes in the mesh do not have these functions].

(b) Award **ONE** mark for: 1

- evaporation;
- evaporating.

Do not give credit for an insufficient response:

- *dripping [dripping alone will not result in drying];*
- *drying;*
- *heating.*

(c) Award **ONE** mark for an indication that increasing the ambient temperature would speed drying: 1

- put it somewhere hot;
- put it on a (hot) radiator;
- put it in direct sunlight.

Allow:

a correct response referring to an increase in exposure to or movement of the air:

- use a hairdryer;
- leave it somewhere breezy/windy;
- use a mesh with larger holes.

Allow:

a response describing a method to squeeze the water from the paper or to increase the surface area:

- roll it;
- squeeze it;
- flatten it;
- press it;
- make it a thinner layer;
- spread it out more.

Do not give credit for an insufficient response:

- leave it on the window sill [does not indicate an increase in temperature or air movement];
- use less water [the amount of water that can be absorbed will be the same].

[3]

11. (a) (i) Award **ONE** mark for: 1

- forcemeter;
- Newton meter.

Allow:

- spring balance.

Do not give credit for:

- Newton measurer.

(ii) Award **ONE** mark for: 1

- newtons (N)

- (b) Award **ONE** mark for: 1
-
- There is an upward force from the water.

- (c) (i),(ii) Award **ONE** mark for **either** of the following types of correct response: 1

EITHER

- Yes

and

an explanation that the results achieved in liquids are lower in comparison to that in air:

- because in all the liquids he tried, the block weighed less than in air.

Allow:

if neither box is ticked, but the creditworthy explanation indicates that the pupil believes the prediction is correct, the mark may be awarded.

OR

- No

and

an explanation that four liquids is an insufficient number from which to generalise to all liquids:

- because he needs to try more than four liquids to be sure of his conclusion;
- because he did not try enough different liquids;
- because in some liquids they might weigh more than in air.

Give credit for a correct response that goes beyond the key stage 2 programme of study:

- No

and

- the weight of the block will always stay the same [because gravity is constant on Earth].

Allow:

if neither box is ticked, but the creditworthy explanation indicates that the pupil believes the prediction is incorrect, the mark may be awarded.

Do not give credit for a response that includes incorrect science:

- there is an upthrust in the liquids but not in air.

Do not give credit for an insufficient response that refers to forces in air/liquids **but** does not refer to evidence from the investigation:

- liquids have more upthrust than air;
- there is more upthrust than in air;
- liquids will support objects more than air.

Do not give credit for a response where the box ticked is inconsistent with the explanation.

[4]

12. (a) Award **ONE** mark for:

1

- 102°C.

Allow:

- a response within the range of 101–104°C inclusive.

Do not give credit for an insufficient response:

- just over one hundred,
- just over 100°C.

(b) Award **ONE** mark for an indication that the temperature stays constant (while there is water in the container):

1

- the temperature will stay the same;
- the temperature will stay at 102°C until all the water has boiled.

Allow:

- it stays at 100°C [if 100°C is given in part a].

Give credit for a correct response that goes beyond the key stage 2 programme of study indicating a slight increase in temperature, if qualified by a recognition of the increasing salt concentration:

- the temperature may increase (slightly) due to the increasing concentration of salt.

[2]