

# Science Mark Scheme

## Test B

2001

1. (a) Award **ONE** mark for an indication that the height or area of the water mark is greater on material B than on the other strips: 1m

- the water has travelled furthest up paper B.

**Allow:**

- it has the highest line;
- the colour on B is higher;
- B has more/the most colour on it.

*Do not give credit for an insufficient response:*

- *by measuring the length;*
- *the line shows you;*
- *it has a high level;*
- *it has a long, bold strip of colour;*
- *of the strip is dark;*  
*[these do not make a comparison];*
- *B has absorbed/soaked up most water*  
*[given];*
- *B is the most damp [given];*
- *B is darker [implies the colour is more concentrated].*

- (b) Award **ONE** mark for **both**: 1m

- |               |  |                |
|---------------|--|----------------|
| Kitchen roll  |  | Cotton fabric  |
| Plastic sheet |  | Aluminium foil |

2. (a) Award **ONE** mark for: 1m
- 20cm.

*Do not give credit for a response with incorrect units added.*

- (b) Award **ONE** mark for an unambiguous indication of Joe: 1 m
- Joe;
  - it grew fastest between weeks 3 and 4.

- (c) Award **ONE** mark for a response between 121 and 139cm inclusive. 1 m
- Do not give credit for a response with incorrect units added.*

- (d) Award **ONE** mark for an indication that the stem is involved in the transport systems of the plant: 1 m
- to transport water/nutrients to other parts of the plant;
  - to transport new materials/food for growth to other parts of the plant.

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

- to photosynthesise;
- to help it move/grow towards the light.

*Do not give credit for an incorrect description of the transport system:*

- it sucks up water.

*Do not give credit for an insufficient response:*

- it stores water.

3. (a) Award **ONE** mark for: 1 m
- D  C  A  B

*Do not give credit for a response that orders the force, not the surface:*

6  16  19  30

- (b) Award **ONE** mark for: 1 m
- The brick moves more easily.
  - 
  - 
  -

- (c) Award **ONE** mark for: 1 m
- friction.

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

- air resistance [applies once an object is moving; force B makes it hard to **start** the brick moving];
- drag [synonym for air resistance].

4. (a) Award **ONE** mark for **both**: 1 m
- swimming
  - running

- (b) Award **ONE** mark for: 1m
- pulse;
  - pulse rate.

**Allow:**

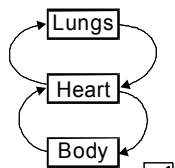
- beats (per minute);
- heart beat;
- heart rate.

*Do not give credit for an insufficient response:*

- the heart.

- (c) Award **ONE** mark for: 1m
- muscle
- 

- (d) Award **ONE** mark for: 1m
- 



- 

- (e) Award **ONE** mark for an indication that the lungs will take in more air: 1m
- air;
  - oxygen.

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

- blood;
- energy/fuel.

*Do not give credit for an insufficient response:*

- breath [repetition];
- gas.

*Do not give credit for an insufficient response referring to a specific gas which is taken in but is not used by the body:*

- nitrogen;
- carbon dioxide.

5. (a) Award **ONE** mark for: 1m
- 50

- (b) Award **ONE** mark for an understanding that the mass has decreased: 1 m
- it went down;
  - it is less;
  - it gets lighter.

**Allow:** a numerical response that implicitly indicates a decrease in mass:

- it has changed from 50g to 30g;
- it has gone down by 20g ( $\pm 2$ ).

*Do not give credit for a numerical response that implies an upward trend:*

- it went up by 20g;
- it changed from 30g to 50g.

*Do not give credit for an insufficient response:*

- it is a straight line;
- it is sloping down; [these describe the line, not the mass of the sponge];
- it has changed;
- it changed by 20g; [do not indicate direction of change].

- (c) Award **ONE** mark for an indication of evaporation: 1 m
- evaporation;
  - evaporating.

**Allow:**

- the liquid becoming a gas.

*Do not give credit for an insufficient response that indicates the presence of liquid water in the pan of the scales:*

- the water leaking out;
- dripping.

*Do not give credit for an insufficient response:*

- drying [given in stem].

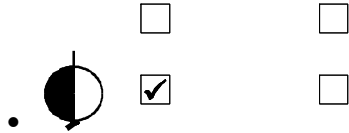
- (d) Award **ONE** mark for: 1 m
- 30g

- (e) Award **ONE** mark for all three answers correct: 1 m
- Bob : true  
Ruth : false  
Komal : true

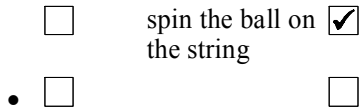
6. (a) Award **ONE** mark for a response giving a time period equivalent to a year: 1 m
- response between 365 and 366 days inclusive;
  - 12 months;
  - 52 weeks;
  - 1 year.

*Do not give credit for a response without units.*

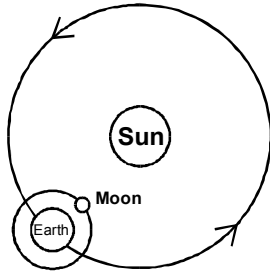
(b) Award **ONE** mark for: 1m



(c) Award **ONE** mark for: 1m



(d) Award **ONE** mark for an indication of the Moon orbiting the Earth: 1m



**Allow:** a response with arrows on the path of orbit in either direction.

7. (a) Award **ONE** mark for a description of observable change in the wood, indicating that it burns: 1m

- burns;
- smoke and flames;
- flames;
- flames and turns black.

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

- *burns then melts.*

**Allow:**

- it turns to charcoal;
- ash is left;
- it gets smaller.

*Do not give credit for an insufficient response:*

- *it goes black.*

(b) Award **ONE** mark for **both** materials correctly identified [in either order]: 1m

- chocolate;

**and**

- wax.

8. (a) (i)(ii) Award up to **TWO** marks for correct responses identifying the importance of the nettle plant. Up to 2m

**NOTE:** only one scoring response can be credited from each category.

They are the **food** plant of the caterpillars:

- because the caterpillars eat them;
- because the caterpillars would have less/no food without them;
- they eat them.

They are the site of **egg laying**:

- because the butterfly lays its eggs on them;
- because the butterfly would have nowhere to lay its eggs otherwise;
- they lay their eggs on the nettles  
[‘they’ refers to the butterflies named in the stem].

**Allow:** reference to the butterfly’s **habitat**:

- caterpillars live on them;
- pupae hang from them;
- they live on them.

*Do not give credit for an insufficient response:*

- the butterflies drink nettle nectar.
- they produce food.

- (b) Award **ONE** mark for both living things entered into the chain correctly: 1m

- nettle plant → caterpillar → (bird);  
leaves → caterpillar → (bird).

*Do not give credit for:*

- plant/leaves → butterfly → (bird)  
[the butterfly does not eat the nettle leaves].

9. (a) (i) Award **ONE** mark for both objects unambiguously indicated [in either order]: 1m

- cork;

**and**

- (plastic) ruler.

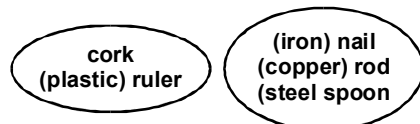
- (ii) Award **ONE** mark for both objects unambiguously indicated [in either order]: 1m

- (iron) nail; **and**  
(copper) rod.

- (b) Award **ONE** mark for **all five** letters sorted correctly: 1m

- **A D**      **B C E**

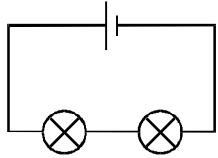
**Allow:** a correct response naming objects rather than letters:



*Do not give credit for a response including repetition of letters/objects.*

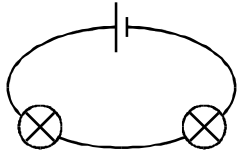
- (c) Award **ONE** mark for a complete circuit diagram showing symbols 1m

[in any order or orientation] for **TWO** bulbs and **ONE** cell:

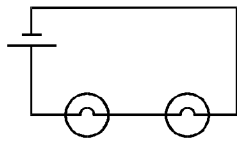


**Allow:**

- a non-rectilinear circuit:

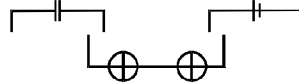


- use of the obsolete symbol for a bulb:



**Do not** give credit for:

- extra components;
- circuit diagrams with gaps of more than 2mm between components;
- incorrectly drawn components, eg



10. (a) Award **ONE** mark for: 1 m
- 
- permeable
- (b) Award **ONE** mark for both: 1 m
- sandstone;
- and**
- limestone.
- (c) Award **ONE** mark for: 1 m
- granite.
- (d) Award **ONE** mark for a response that includes an appropriate interpretation of the table, indicating that the hardest rock made a mark on **all** of the other rocks and/or could not be scratched by **any** of the rocks: 1 m
- the granite scratched the slate, the sandstone and the limestone;
  - the granite was the only rock that scratched all of the other rocks;
  - the other rocks could not scratch the granite.

**Allow:**

- it scratched all the others;
- it scratched more rocks than the others;
- none of the others could scratch it.

*Do not give credit for an insufficient answer that does not refer to the table:*

- *I know that granite is a hard rock.*

*Do not give credit for an insufficient response:*

- *it said 'no' three times on the table;*
- *it has three 'yes' on the table.*

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

- the air;
- it travels through air;
- vibrations travel through the air.

**Allow:**

- gases;
- air particles;
- the atmosphere.

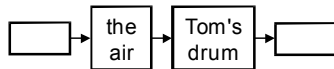
*Do not give credit for a response that includes incorrect science:*

- *airwaves.*

*Do not give credit for an insufficient response:*

- *vibrations;*
- *oxygen [or other named gas];*
- *particles;*
- *waves [the sound travels in the form of vibrations or waves, not through vibrations or waves].*

- (b) Award **ONE** mark for a complete chain showing the direct path of the vibrations: 1m



- (c) (i)(ii) Award **TWO** marks for a general comparison describing the relationship between distance and volume of the sound: 2m

- the closer they are, the louder it sounds;

**or**

- the further apart they are, the quieter it sounds.

Award **ONE** mark for two specific comparisons describing the relationship: 1m

- when they are close, it is loud, but when they are further apart, it sounds quiet.

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

- it is louder when they are close;
- it is quieter when they are far away.



**Do not** give credit for a response that changes a variable:

- *the further away they are, the higher it sounds;*
- *the closer they are, the better it sounds.*

**Do not** give credit for a response that attempts to explain rather than describe the relationship:

- *if you stand further away, the vibrations die out;*
- *when you are far away, the sound has further to travel.*