

Science SAT

Paper A

2005

0 min

0 marks

1. (a) Award **ONE** mark for an indication that the pond life is not able to fit through the holes in the net but the water flows through it: 1
- the pond life is trapped in the net but the water goes through the holes;
 - the plants and animals stay in the net as they are too big to fit through the holes, but the water flows through;
 - the water can go through the holes in the net but the pond life cannot.
- ONE mark may be awarded for a response which describes what happens to either the pond life **or** the water:*
- the pond life is trapped in the net;
 - the water can go through the holes (of the net);
 - it sieves animals/living things (from the water).
- Do not give credit for an insufficient response that does not clearly imply the pond life remains in the net or the water goes through:*
- it sieves;
 - there are holes in the net.
- Do not give credit for an insufficient response that restates or repeats the stem of the question:*
- the net separates the living things and water.
- (b) Award **ONE** mark for identifying a feature shown in the pictures that could be used to sort the two animals into the same group: 1
- they both have shells;
 - they do not have legs;
 - they have stalks /antennae on their head.

ONE mark may be awarded for giving a reason for sorting the animals which cannot be seen by looking at the pictures:

- they move on a slimy foot;
- they have eyes on the end of stalks;
- they have the same body (shape).

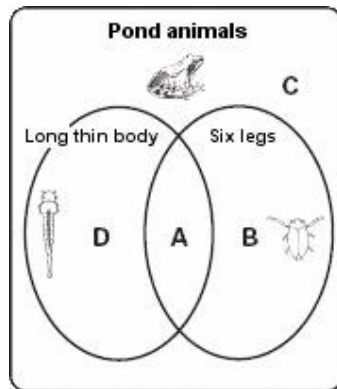
Do not give credit for an insufficient response that does not describe a feature but states that the animals belong to the same species:

- they are both snails;
- they are the same animals.

Do not give credit for an insufficient response giving a feature of many animals that would not be sufficient to distinguish a group of snails:

- eyes;
- body;
- foot.

- (c) Award **TWO** marks for putting **all four** animals in the correct areas of the diagram: 2



or

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

[4]

2. (a) Award **ONE** mark for an indication that the jumper is heavier because it has absorbed water: 1

- it has absorbed some water;
- it has soaked in water.

ONE mark may be awarded for:

- it is wet/damp;
- it has water on it;
- they are weighing some water with the jumper.

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

- evaporation.

Do not give credit for an insufficient response:

- dripping [this will not dry the jumper completely].

Do not give credit for an insufficient response describing the process:

- the water in the jumper turns into a gas.

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

1

- 7 hours.

ONE mark may be awarded for a response indicating that the jumper dries in between 6 and 7 hours exclusively.

(d) Award **ONE** mark for a response indicating an increase in temperature and/or wind:

1

- it was hotter (the next day);
- the wind was stronger;
- on the first day it was colder and there was less wind.

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

- it was drier/less humid.

ONE mark may be awarded for:

- the sun was brighter;
- it was sunnier.

Do not give credit for an insufficient response where no clear comparison of the weather types is made:

- it might be windy;
- it could have been sunny;
- it was hot;
- the weather was nicer/better.

Do not give credit for an insufficient response that describes a different method of washing/drying the jumper:

- they hung it out at a different time;
- they hung it in a different place;
- there was less water in it at the start;
- the washing machine was spinning more quickly.

Do not give credit for an insufficient response indicating that the jumper changed during the washing process and therefore dried more quickly:

- *it had shrunk;*
- *it had been washed before so it was smaller;*
- *it was no longer brand new.*

[4]

3. (a) Award **ONE** mark for: 1

- steel

(b) Award **ONE** mark for labelling the equipment as a forcemeter: 1

- forcemeter;
- Newton meter.

ONE mark may be awarded for:

- *spring balance.*

Do not give credit for an insufficient response giving the units of measurement:

- *newtons.*

Do not give credit for an insufficient response:

- *Newton force measurer.*

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

- (magnet) B.

ONE mark may be awarded for:

- *the second magnet.*

Do not give credit for an insufficient response that does not interpret the data:

- *10.*

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

- just before the magnet pulls away from the board

(e) Award **ONE** mark for a response indicating that the reliability/accuracy of the test is improved: 1

- so she can check her results;
- so her results will be more reliable;
- it is difficult to read the forcemeter accurately;
- to help improve the accuracy.

ONE mark may be awarded for a response indicating that she is checking her

measurements/method:

- she might have read one wrong;
- to check it;
- to make sure you have got it right;
- to check/see if her results are correct/right.

Do not give credit for an insufficient response implying that there is a correct answer:

- to get the right answer.

Do not give credit for an insufficient response implying that all the results need to be the same:

- to make it a fair test;
- you might get a different answer;
- the result may change each time;
- the results could be different.

Do not give credit for an insufficient response:

- to get an average result [given].

[5]

4. (a) Award **ONE** mark for **all four** letters in the correct order: 1
- | |
|---|
| B |
|---|

A

C

D

- Do not** give credit for an insufficient response:
- 8, 11, 13, 16.
- (b) Award **ONE** mark for: 1
- friction.
- Do not** give credit for an insufficient response:
- grip.
- (c) Award **ONE** mark for **all four** letters in the correct order: 1
- | |
|---|
| D |
|---|

A

C

B

- (d) (i) Award **ONE** mark for: 1
- (fabric) D.
- (ii) Award **TWO** marks for identifying the **two** reasons (given in any order) why the fabric makes the best bath mat: 2
- NOTE:** Only one scoring response may be taken from each category.

The fabric does not slip as easily:

- it was the least slippery;
- it did not slip easily;
- a person would not slip as easily if they were standing on it;
- it has the most friction (with the ramp).

Items 4di and 4dii should be marked independently so marks may be awarded for creditworthy responses to 4dii if the response to 4di is not creditworthy.

ONE mark may be awarded for the following responses given in either category:

The fabric does not slip as easily:

- *it had the highest ramp (before it slid).*

Do not award two marks if both responses are from the same category.

*Do not give credit for an insufficient response giving an absolute indication that the fabric/person **does not** slip:*

- *the fabric/it did not slip off;*
- *you will not slip/you cannot slip;*
- *you can slip on the other fabrics.*

Do not give credit for an insufficient response referring to the time taken for the fabric to slide:

- *it takes a long time to slide.*

Do not give credit for an insufficient response that reads information from the table in test 1 without interpretation:

- *it went up to 16cm high;*
- *it took 16cm to slide.*

AND

The fabric is the most absorbent:

- this is the most absorbent;
- it absorbed the most water;
- it soaked up more water than the others.

The fabric is the most absorbent:

- *it absorbed lots of water;*
- *it absorbed all the water.*

Do not give credit for an insufficient response which ambiguously refers to the absorbency of the fabric:

- *it soaks up/absorbs water;*
- *it absorbs most of the water;*
- *hardly any water drips off;*
[they all absorb water].

or

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

***ONE** mark may be awarded for a response that correctly gives information from the table in test 2:*

- no water drips off.

[6]

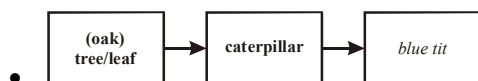
5. (a) Award **ONE** mark for: 1

-
- root

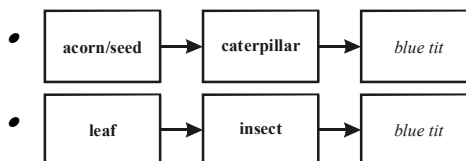
(b) Award **ONE** mark for: 1

- seed dispersal
-

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



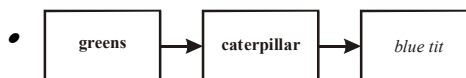
***ONE** mark may be awarded for:*



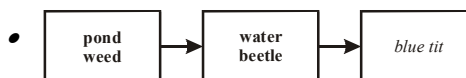
***ONE** mark may be awarded for an alternative biologically correct woodland food chain which includes a producer and an animal on which the blue tit could feed:*



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



***Do not** give credit for a response that includes incorrect science introducing organisms from different habitats:*



(d) Award **ONE** mark for one of the following correct responses:

1

- air;
- water/moisture/rain;
- nutrients/minerals.

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

- oxygen/O₂/O;
- carbon dioxide/CO₂.

ONE mark may be awarded for:

- warmth/heat;
- fertilizers.

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

- temperature;
- soil.

Do not give credit for an insufficient response:

- (Sun) light [given];
- nutrition [describes a life process, not what is taken in];
- vitamins;
- (plant) food.

[4]

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

1

- | | | | |
|---|--------------------------|-----------------|-------------------------------------|
| | <input type="checkbox"/> | | <input type="checkbox"/> |
| • | <input type="checkbox"/> | computer screen | <input checked="" type="checkbox"/> |

- (b) Award **ONE** mark for a description of the light level increasing: 1
- the light level increased;
 - there was gradually more light;
 - it got lighter/brighter.

***ONE** mark may be awarded for a response that may either refer to the graph or the light level:*

- *it went up/got higher;*
- *it went up smoothly/evenly/steadily.*

***Do not** give credit for an insufficient response explicitly referring to the graph line going up rather than the light level:*

- *the line went up.*

- (c) Award **ONE** mark for a description of an event that could result in a sudden increase in the light level: 1
- a light was turned on;
 - the Sun came out from behind a cloud;
 - someone pulled the blind up;
 - they moved a lamp next to the sensor.

***ONE** mark may be awarded for a response indicating that the sudden rise in the graph means the light has got brighter/there is more light, but with no description of what could have caused this:*

- *light from the Sun made it brighter;*
- *the light suddenly increased;*
- *it became brighter (outside);*
- *more light came into the classroom.*

***Do not** give credit for an insufficient response which describes an event which would not necessarily result in a **sudden** increase in light:*

- *the Sun shone through the windows;*
- *the Sun shone in a different direction;*
- *the Sun came up;*
- *the Sun moved.*

- (d) Award **ONE** mark for **all three** sentences correctly classified: 1
- The light source is above the desk. *..True..*
 - The light cannot pass through the desk. *..True..*
 - There is a shadow underneath the desk. *..True..*

- (e) Award **ONE** mark for: 1
- The sensor reading is lower when it is below the desk because the desk is **opaque**.

Do not give credit for an insufficient response giving an alternative term for opaque:

- *not see through.*

[5]

7. (a) Award **ONE** mark for identifying both the independent variable (IV) and the dependent variable (DV), eg: 1

- how much water was absorbed by each brick?
- which brick would absorb the most?
- how much water each substance absorbed?
- how is the mass of different bricks affected by water?

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

- *rate of absorption of the bricks.*

ONE mark may be awarded for a response which implies bricks are being compared:

- *which one was most absorbent?*
- *do different bricks absorb water?*
- *which is least permeable?*
- *which is most waterproof?*
- *which is best at absorbing water?*

ONE mark may be awarded for reference to 'liquid' rather than water:

- *how much liquid each absorbed.*

ONE mark may be awarded for a response which is not in the form of a question but which identifies a relevant IV and a DV:

- *the amount of water held/absorbed by*
- *each brick.*

Do not give credit for an insufficient response which describes a different investigation:

- *how much do bricks weigh?*
- *is this brick heavy or light?*
- *what would happen to the mass when dry and wet?*
- *which substance has the largest mass?*
- *what dried the fastest?*

Do not give credit for an insufficient response:

- *which is best?*

Do not give credit for an insufficient response that gives a conclusion:

- *the hardest/heaviest bricks hold the most water.*

(b) Award **ONE** mark for any acceptable factor that describes the IV:

1

- the type of brick.

ONE mark may be awarded for:

- *brick A, B, C and D;*
- *substance;*
- *material;*
- *brick.*

ONE mark may be awarded for a reference to the difference between the bricks as being shape:

- *the shape of the bricks.*

Do not give credit for an insufficient response which makes reference to imported materials:

- *glass.*

(c) Award **TWO** marks for **two** relevant controls for this investigation:

2

- the volume of water in each container at the start;
- the length of time the bricks are left in the water;
- the starting dryness/dampness of bricks.

or

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

1

A mark may be awarded for any of the following responses:

- *the amount of water;*
- *the container in which they are placed;*
- *temperature;*
- *the same place;*
- *make sure all the bricks are dry;*
- *mass/weight of dry bricks;*
- *size/height of bricks.*

Do not give credit for an insufficient response suggesting that all factors are kept the same:

- *do everything the same.*

Do not give credit for an insufficient response which is an IV or DV:

- *the water left.*

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

(d) Award **ONE** mark for any acceptable alternative DV identified, eg: 1

- the hardness of bricks;
- the strength of bricks;
- the permeability of bricks;
- the insulating properties of bricks;
- whether or not bricks are waterproof;
- time to dry.

ONE mark may be awarded for:

- *which scratches easily?*
- *which breaks most easily?*
- *how much water can go through?*
- *temperature effects on bricks or water?*
- *the mass/weight of the bricks;*
- *whether they dissolve or not;*
- *how high the water moves up the brick.*

Do not give credit for a response in which the DV is not clearly identified:

- *see which brick is best to build with.*

[5]

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

- freeze/freezing/frozen.

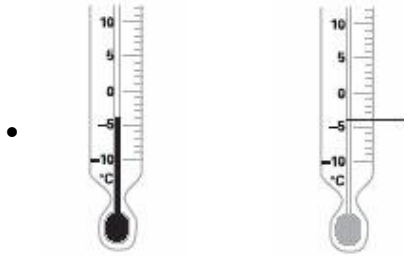
ONE mark may be awarded for:

- *solidifies;*
- *becomes solid.*

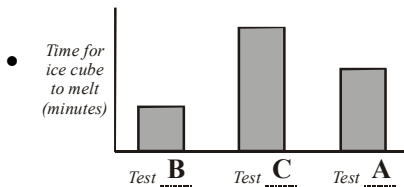
Do not give credit for an insufficient response:

- *solid;*
- *frosted.*

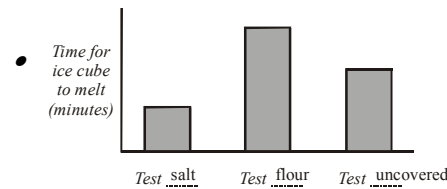
- (b) Award **ONE** mark for an unambiguous indication of -4°C (below -3°C and above -5°C) marked on/near the thermometer: 1



- (c) Award **ONE** mark for correctly labelling **all three** bars on the graph: 1



ONE mark may be awarded for:



Do not give credit for an insufficient response giving the times taken for the ice to melt in place of identifying le

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

- Flour insulates ice.

[4]

9. (a) Award **ONE** mark for an indication that people with wet feet are **less likely** to slip on rougher tiles: 1

- there is more friction (on rough tiles);
- you will not slip as easily (on rough floor tiles);
- shiny floor tiles are more slippery (than rough floor tiles);
- rough tiles have more grip.

ONE mark may be awarded for an absolute response:

- it prevents slipping;
- you will not slip (on rough tiles);
- you will slip on a smooth surface;
- there is friction.

Do not give credit for an insufficient response that describes what happens on a smooth surface, without explicit reference to a smooth surface [as the subject of the sentence is the rough tiles]:

- they will slip.

(b) Award **ONE** mark for an understanding that Ian floats because there is a force acting upwards from the water:

1

- the water pushes up on Ian;
- upthrust from the water pushes against the force pulling him down.

Give credit for a correct response that goes beyond the key stage 2 programme of study, indicating that the average density of a body is less than that of water (so the person will float) or that the forces are balanced:

- he is less dense than the water;
- the forces (of gravity and upthrust) are balanced;
- the force up and the force down are balanced;
- buoyancy.

ONE mark may be awarded for:

- there is a force up;
- because of upthrust;
- the water holds him up.

ONE mark may be awarded for a response indicating that Ian floats because there is air in his lungs/body:

- there is air in his body.

Do not give credit for an insufficient response:

- because he floats well;
- Ian is a (good) floater;
- he is treading water;
- he is lighter/weights less;
- water pressure.

Do not give credit for an insufficient response:

- the air holds him up;
- because of air.

(c) Award **ONE** mark for both:

1

There is more weight.

There is more friction.

[3]