

# Science Mark scheme

## Test A

2004

1. (a) Award **ONE** mark for: 1
- eating foods from  different food groups
  -
- (b) Award **ONE** mark for **all three** responses correct [in the given order]: 1

A balanced diet will help my bones grow strong.  
.....**true**.....

A balanced diet gives me all the nutrients I need.  
.....**true**.....

A balanced diet means I do not need to exercise to stay healthy.  
.....**false**.....

[2]

2. (a) Award **ONE** mark for indicating that the string vibrates to make a sound: 1
- it vibrates;
  - it is vibrating.

**Allow:**

a description of vibration:

- it moves up and down quickly.

**Do not give credit for an insufficient response describing the guitar vibrating:**

- the guitar vibrates.

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

- it moves/twangs/wobbles.

- (b) Award **ONE** mark for a response that indicates the loudness of the sound gets quieter: 1
- it gets quieter;
  - the volume decreases;
  - the louder the sound, the closer she is;
  - it/the sound gets softer.

**Allow:**

- (when Julia is far away) the sound is quiet;
- the sound is harder to hear.

*Do not give credit for an insufficient response that describes the pitch getting lower:*

- *the sound/it gets lower.*

- (c) Award **ONE** mark for naming **one** of the following: 1
- wall/stone/brick/concrete;
  - glass/window;
  - door/wood.

**Allow:**

- eardrum;
- floor.

*Do not give credit for an insufficient response:*

- *air [given];*
- *solid/gas.*

[3]

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

- (b) Award **ONE** mark for a response indicating that granite was the only rock not to be scratched by the objects: 1
- none of the objects were able to scratch granite, but some could scratch the other rocks;
  - all the other rocks were scratched by at least one object;
  - fewer objects/tools could scratch granite than the others.

**Allow:**

an absolute response that does not describe whether the other rocks were scratched:

- no object could scratch granite;
- it could not be scratched.

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

- *it only has crosses, where the other rocks have at least one tick.*

- (c) Award **ONE** mark for all the rocks written in the correct place: 1

talc	sandstone	marble	granite
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- (d) Award **ONE** mark for: 1
- 
- It was difficult to scratch each rock with the same force.

- (e) Award **ONE** mark for identifying that granite feels rough **and** is not permeable: 1
- granite is rough/not smooth; **and**
  - granite is not permeable/water cannot pass through granite.
- Do not give credit for a response that includes incorrect science:*
- water can pass through granite.
- Do not give credit for an insufficient response describing the results of the scratch test:*
- granite is hard to scratch.

[5]

4. (a) Award **ONE** mark for **both** correct boxes ticked: 1
- They both have fur or hair.
  - They both have four legs.

- (b) Award **TWO** marks for placing **all four** animals in the table correctly: 2

	<b><i>Has feathers</i></b>	<b><i>Does not have feathers</i></b>
<b>Can fly</b>	Sparrowhawk	Butterfly
<b>Cannot fly</b>	Ostrich [Given]	Cow Camel (in any order)

If you are unable to award two marks, award **ONE** mark for a response that correctly places **two** or **three** animals. 1

*Do not give credit for an insufficient response naming other animals clearly not given in the question.*

**or**

*Do not give credit for an insufficient response where 'bird' is given in place of 'sparrowhawk'.*

- (c) Award **ONE** mark for **all three** questions correctly classified: 1

<b>Question</b>	<b>The question goes in box ...</b>
<i>Does it have a long neck?</i>	1 ② 3
<i>Does it have horns?</i>	1 2 ③
<i>Does it have antennae?</i>	① 2 3

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

- to compare the many types of animal
- 

[5]

5. (a) Award **ONE** mark for an awareness of specific danger: 1

- they could fall over (and hurt themselves);
- the forcemeter might spring back and hurt them;
- the thread could hit them in the eye;
- the forcemeter might break and hurt someone.

**Allow:**

- they should be careful not to fall over.

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

- *the thread might break;*
- *they could hurt themselves.*

- (b) Award **ONE** mark for recognition of the difficulty of taking accurate readings from the forcemeter at the point when the thread breaks: 1

- the forcemeter reading when the thread breaks will be difficult to read;
- when the thread breaks the forcemeter will spring back;
- the reading will go back to zero;
- you need to be quick to read the meter;
- you need an extra person to read it.

**Allow:**

- the measurement might go off the forcemeter;
- unless you know when the string breaks it will be difficult.

- (c) Award **ONE** mark for recognising that the range on the 10 N forcemeter was too small: 1
- 10 was the biggest number on the forcemeter;
  - it took at least 10 N to break the threads but it could have been more/off the scale;
  - you would not expect all the results to be the same.

**Allow:**

- the threads were different;
- they expected some difference in results.

*Do not give credit for an insufficient response:*

- the results are the same;
- all the threads turn out to be 10 N.

- (d) Award **TWO** marks for **all four** statements correctly classified: 2

<b>Statements</b>	<b>must be the same.</b>	<b>must be different</b>	<b>make no difference</b>
<i>The kinds of threads they use...</i>		✓ [given]	
<i>The colours of the threads...</i>			✓
<i>The persons doing the pulling...</i>			✓
<i>If the strengths of the threads are the same, the forces required to break each one...</i>	✓		
<i>If the strengths of the threads are different, the forces required to break each one...</i>		✓	

If you are unable to award two marks, award **ONE** mark for **any three** correct responses. 1

[5]

6. (a) Award **ONE** mark for a response that indicates sugar dissolves: 1
- the sugar dissolves;
  - it forms a solution.

*Do not give credit for an insufficient response:*

- it mixes with water.

- (b) Award **ONE** mark for a response describing the evaporation of the water: 1
- the water evaporates;
  - it changes into water vapour.

**Allow:**

- it boils.

**Do not give credit for a response that includes incorrect science implying the sugar evaporates with the water:**

- the mixture will evaporate/change to water vapour.

**Do not give credit for an insufficient response describing what happens to the whole mixture not just the water:**

- it bubbles;
- it goes golden brown.

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

- temperature
- 

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

- 
- Wood is a poor conductor of heat
- 
- 

- (e) Award **ONE** mark for a response stating that the mixture has cooled: 1

- the tray cooled the mixture down;
- the temperature of the mixture has dropped;
- it cooled down.

**Allow:**

- it has frozen.

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

- it goes hard because water evaporates;
- it dries up [enough water does not evaporate when it is poured into the tray];
- the mixture solidifies/goes hard/ sets.

**Do not give credit for an insufficient response referring to a procedure:**

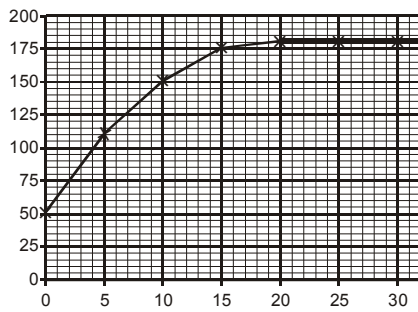
- they put it in a tray;
- the tray has been in a freezer (given).

[5]

7. (a) Award **ONE** mark for correctly ordering **all six** pictures: 1
- 5    3    1  
 •    6    2    4
- (b) Award **TWO** marks for correctly naming **two** of the following: 2
- nutrition;
  - movement;
  - reproduction.
- Allow:**
- move [if movement is not already given].
- or**
- Give credit** for a correct response that goes beyond the key stage 2 programme of study:
- respiration;
  - excretion;
  - sensitivity.
- If you are unable to award two marks, award **ONE** mark for naming **one** life process. 1
- Do not give credit for an insufficient response that describes a life process:***
- *having babies;*
  - *moving away from hot things;*
  - *getting rid of body waste.*
- Do not give credit for an insufficient response:***
- *growth [given];*
  - *breathing;*
  - *feeding/eating.*
- (c) Award **ONE** mark for: 1
- 110 cm.
- Allow:**
- a response within the range 107–113 cm.
- (d) Award **ONE** mark for: 1
- 0-5 years

- (e) Award **ONE** mark for a graph line which levels off to become horizontal (points do not need to be marked on the graph at 25 and 30 years):

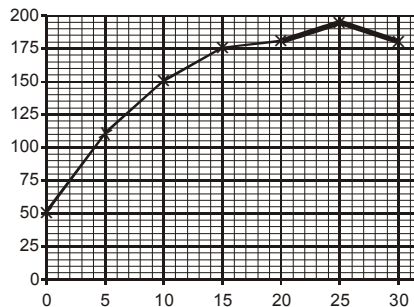
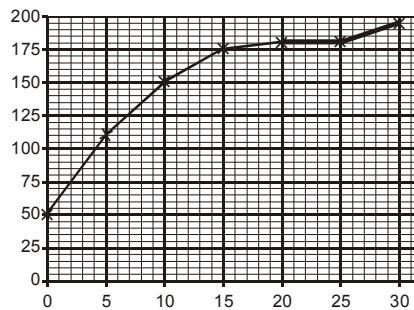
1



**Allow:**

a response which does not decrease below 175 cm.

*Do not give credit for an insufficient response where the graph line intentionally increases or decreases after becoming horizontal or forms a peak without becoming horizontal:*



[6]



8. (a) Award **ONE** mark for any factor in an experiment or survey that is a relevant independent variable (IV) in an investigation about drinks and teeth, eg: 1

- type of drink;
- amount of drink;
- frequency of drinking;
- amount of sugar in drinks;
- temperature of drinks.

**Allow:**

- drink(s);
- the liquid.

*The draft box can be consulted for clarification of any ambiguity in the marked response, or when no answer is given in the expected place but the correct answer is given in the drafting box.*

- (b) (i) Award **ONE** mark for any acceptable dependent variable (DV) identified, eg:1
- discoloration;
  - dissolving of marble chips;
  - mass of marble chips.

**Allow:**

- marble chips;
- how much teeth rot.

*A dependent variable (DV) without an independent variable (IV) can gain credit. If there is an IV the DV must agree with it.*

- (ii) Award **ONE** mark for a response which indicates a way of measuring the DV given or implied in 8bi, eg: 1

- time taken to dissolve;
- amount of marble chip dissolved;
- amount of damage to marble chips.

**Allow:**

- use a stop watch;
- use a newton meter/balance;
- count how many of each colour;
- order according to colour change;
- use a machine/chart to measure colour.

**Allow:**

- specification of units, eg:
- seconds;
- grams;
- cc.

*Do not give credit for a measurement strategy if a DV is not given.*

*A response in 8bi which describes measurement of the DV can gain credit.*

- (c) Award **ONE** mark for any acceptable control that is not already used as an IV, eg:1
- amount of drink;
  - quantity of marble chips;
  - the time marble chips left in drink;
  - put the drinks in the same place;
  - kind of teeth/marble.

**Allow:**

- how healthy teeth are;
- type of drink.

*Only give credit for a control variable which is relevant to the stated IV/DV*

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

- *marble chips.*

[4]

9. (a) Award **ONE** mark for an indication that there are forces of attraction between the 1 magnets **OR** that the magnets have opposite poles facing each other:

- they are attracted (to each other);
- because opposite poles attract;
- the tractor magnet pulls on the trailer magnet;
- because the North pole of the trailer's magnet is facing the South pole of the tractor's magnet.

**Allow:**

- the magnets stick/stay together;
- they are opposite poles.

**Allow:**

a response implicitly indicating that the magnet attracts the toy:

- the magnet attracts the trailer/tractor.

**Do not give credit for an insufficient response where it is unclear as to whether Rachel's pulling force or the magnetic force is being discussed:**

- *because the force is pulling it.*

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

- *the magnets touch;*
- *opposite sides on the magnets are together.*

(b) Award **ONE** mark for an understanding that the magnets repel each other **OR** 1  
that the magnets have like poles facing each other:

- because the magnets are now repelling each other;
- because two like poles push each other away;
- she has put like poles together.

**Allow:**

- they are like poles;
- like poles do not attract;
- the tractor and trailer repel each other.

**Allow:**

a response implicitly indicating that the magnet repels the toy:

- the magnet repels the tractor;
- the magnet is pushing it away.

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

- friction.

**Allow:**

- air resistance.

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

- weight;
- gravitational attraction.

**Allow:**

- gravity.

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

- floorboards
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[5]