

SCIENCE

YEAR 5

LEVELS 2 - 5



Teacher's Guide

1. *Cooking Rice*

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

- 800.

Allow:

- 790–810 inclusive.

Do not give credit for a response with incorrect units.

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

- It conducts heat well.

(c) Award **ONE** mark for a **comparative** response indicating that both wood and metal conduct heat, but at different rates: 1m

- heat travels more easily through metal than through wood;
- the heat does not travel through the wood as easily;
- metal is a better conductor;
- wood is a poorer conductor.

Allow: a reference to both wood and metal in **absolute** terms:

- metal conducts heat, but wood does not;
- the metal conducts heat, but wood is an insulator.

Do not give credit for an insufficient response which indicates that the metal is over the heat but the wood is not.

Do not give credit for a response using an incorrect synonym for conduction:

- metal absorbs the heat better.

Do not give credit for an insufficient response that does not compare or refer to both materials:

- wood is a poor conductor;
- wood does not conduct heat;
- metal is a conductor;
- wood is an insulator.

(d) Award **ONE** mark for any of the following immediate safety hazards identified: 1m

- the heating element on the cooker (which gets very hot);
- the flames/fire from a (gas) cooker;
- the boiling water (as the rice cooks);
- steam (rising) from the saucepan.

Allow:

- a metal spoon could get hot (and burn you);
- the rice.

***Do not** give credit for a response that identifies safety hazards which are not*

related to the process of cooking:

- *they might slip on the floor;*
- *they might break a glass jar;*
- *they might leave the gas turned on.*

***Do not** give credit for:*

- *saucepan [given].*

2. Cigarette Smoking

(a) Award **ONE** mark for an explanation of how smoking might affect the health of humans: 1

- impairs breathing/lungs/lung capacity/makes you short of breath;
- makes lungs dirty/blocked/damaged/poisoned;
- impairs circulation to heart;
- causes disease (or specific related diseases, eg lung cancer, asthma, heart disease).

Allow

- makes them cough.

Do not give credit for:

- *smoking will make them unhealthy/unfit/ill [given in question];*
- *affects lungs [not specific];*
- *bad for you/harms you [imprecise].*

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

- you breathe in their smoke;
- passive smoking can cause you to take in/breathe polluted/contaminated/smoky air.

Allow:

- creditworthy answers outline in part (a).

Do not give credit for reference to emotional damage, eg:

- *'I am very worried because my dad smokes.'*

3. Balanced Diets

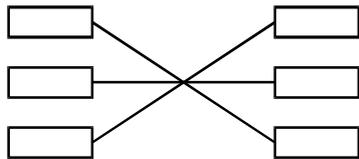
(a) Award **ONE** mark for: 1

- 6;
- six.

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

- (eleven) children said they eat vegetables once a week;
- once a week.

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



(d) Award **ONE** mark for identifying the **two** best facts: 1

To stay healthy you should:	
	<input type="checkbox"/>
• eat different kinds of food.	<input checked="" type="checkbox"/>
	<input type="checkbox"/>
• exercise often	<input checked="" type="checkbox"/>

4. Shadows

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

1

- the Sun;
- sunlight.

Allow:

- daylight.

***Do not** give credit for a response that includes incorrect science describing the use of artificial light sources [they would not produce a dark shadow on a sunny day]:*

- spotlights.

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

- the sky [this is the location of the source, not the source itself].

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

1

- opaque.

(c) Award **ONE** mark for an indication that the shadow became shorter:

1

- the shadow kept getting shorter;
- it got shorter.

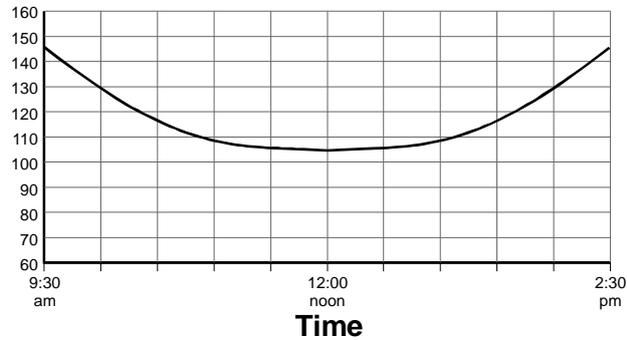
Allow:

- it was less long at lunchtime;
- it was longer at first.

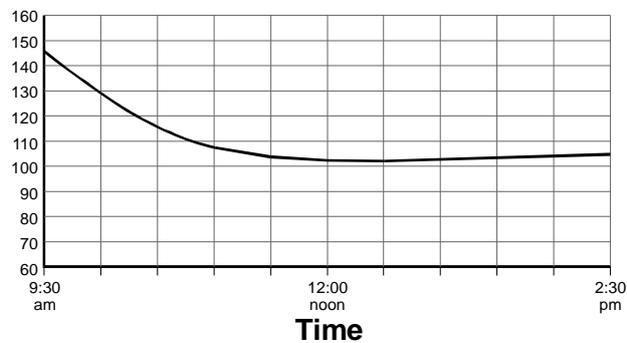
- (d) Award **ONE** mark for a graph with a minimum point of no lower than 95cm, occurring between noon and 1pm. Following the minimum point, the graph should go upwards to a maximum point of no more than 160cm and no less than 105cm.

1

Minimum at noon



Minimum at 1pm



Do not give credit for an insufficient response where the line remains level or gets lower at any time after 1pm.

[4]

5. Germinating Seeds

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

1

- 0 [in correct cell in table].

Allow:

a correct response outside the table or in the wrong place in the table.

(b) Award **ONE** mark for identifying both the independent variable [the temperature]

1

and one of the dependent variables [the (number of) seeds germinating **or** the time taken (to start) to grow]:

- how many seeds germinated at (different) temperatures?
- how many seeds (started to) grow at (different) temperatures?
- how long it takes lettuce seeds to (start to) grow/germinate at different temperatures?

Allow:

- how does temperature affect germination?
- how many seeds came up at each temperature?
- what is the best temperature for seeds to grow?

Allow:

statements which are not framed as questions:

- the number of seeds germinating at each temperatures;
- the time taken for seeds to (start to) grow at different temperatures;
- the number of seeds that (start to) grow at different temperatures.

***Do not** give credit for an insufficient response giving a conclusion:*

- *more seeds grew at higher temperatures.*

***Do not** give credit for questions identifying an incorrect independent variable or dependent variable:*

- *which seeds grow at different temperatures?*

(c) Award up to **TWO** marks for **all four** correct:

2

	True	False	Can't tell
The quickest germination was 25°C.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At 25°C all the seeds germinated by Day 6.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5°C is too cold for the seeds to germinate.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The best temperature for seeds to germinate was 15°C.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

or

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

1

(d) Award **ONE** mark for **both** parts correct:

- agree with Faiza

AND

a response which shows an awareness that only one kind of seed has been tested or that all temperatures were not tested:

- they did not test different kinds of seed;
- they only tested one kind of seed;
- they only used lettuce seeds;
- they didn't test all other temperatures.

Allow:

- some seeds may need more heat to germinate;
- 25°C might be the best temperature for lettuce seeds;
- they might not have allowed sufficient time;
- you do not know what would happen if you left it longer.

Allow:

if neither box is ticked but the creditworthy explanation indicates that the pupils believe Faiza is correct, the mark may be awarded.

Do not give credit where a box other than 'agree with Faiza' is ticked.

Do not give credit for an insufficient response:

- more information.

[5]

6. Playing Football

(a) Award **ONE** mark for an indication that pulse rate is a measure of heart rate 1

- heart rate;
- the number of heart beats per minute;
- how fast your heart is pumping;
- how much the heart beats.

Allow:

- (the speed of your) heart beat;
- the number of beats per second.

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

- *how fast you are breathing.*

Do not give credit for an insufficient response:

- *how fast your heart is moving/going;*
- *(the speed of) your heart.*

(b) Award **ONE** mark for a response indicating that the heart rate had increased: 1

- their heart beat was faster;
- their hearts were pumping more quickly.

Allow:

- the heart pumps more blood around the body;
- the blood is pumped around the body faster.

Do not give credit for an insufficient response:

- *their pulse goes up because they are running/moving around [given];*
- *they need more blood.*

◆ **Give credit** for a correct response that goes beyond the key stage 2 programme of study indicating that the human body requires more oxygen/energy from the blood during exercise:

- the blood moves more quickly because the body needs more energy;
- they needed more oxygen/food/glucose so their hearts were pumping faster;
- to get rid of carbon dioxide from cells more quickly.

- (c) Award **ONE** mark for an indication that their pulse would decrease and/or return to normal:

1

The children's pulse rates will...

- return to normal;
- go down;
- get slower.

Allow:

- drop;
- calm down.

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

*The children's pulse rates will...
change.*

7. Earth and Space

(a) Award **ONE** mark for a response giving a time period equivalent to a year: 1m

- response between 365 and 366 days inclusive;
- 12 months;
- 52 weeks;
- 1 year.

Do not give credit for a response without units.

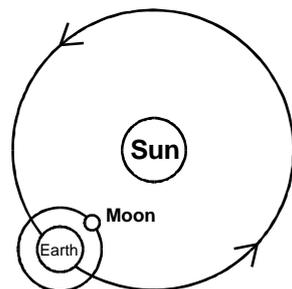
(b) Award **ONE** mark for: 1m

	<input type="checkbox"/>	<input type="checkbox"/>
• 	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

<input type="checkbox"/>	spin the ball on the string	<input checked="" type="checkbox"/>
• <input type="checkbox"/>		<input type="checkbox"/>

(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.

Test A question 7: Building materials

	Allowable answers	
<p>Award ONE mark for identifying both the independent variable (IV) and the dependent variable (DV), eg:</p> <ul style="list-style-type: none"> 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? <p>❖ Give credit for a correct response that goes beyond the key stage 2 programme of study:</p> <ul style="list-style-type: none"> rate of absorption of the bricks. 	<p>ONE mark may be awarded for a response which implies bricks are being compared:</p> <ul style="list-style-type: none"> which one was most absorbent? do different bricks absorb water? which is least permeable? which is most waterproof? which is best at absorbing water? <p>ONE mark may be awarded for reference to 'liquid' rather than water:</p> <ul style="list-style-type: none"> how much liquid each absorbed. <p>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:</p> <ul style="list-style-type: none"> the amount of water held/absorbed by each brick. 	<p>Do not give credit for an insufficient response which describes a different investigation:</p> <ul style="list-style-type: none"> 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? <p>Do not give credit for an insufficient response:</p> <ul style="list-style-type: none"> which is best? <p>Do not give credit for an insufficient response that gives a conclusion:</p> <ul style="list-style-type: none"> the hardest/heaviest bricks hold the most water.
<p>Award ONE mark for any acceptable factor that describes the IV:</p> <ul style="list-style-type: none"> the type of brick. 	<p>ONE mark may be awarded for:</p> <ul style="list-style-type: none"> brick A, B, C and D; substance; material; brick. <p>ONE mark may be awarded for a reference to the difference between the bricks as being shape:</p> <ul style="list-style-type: none"> the shape of the bricks. 	<p>Do not give credit for an insufficient response which makes reference to imported materials:</p> <ul style="list-style-type: none"> glass.
<p>Award TWO marks for two relevant controls for this investigation:</p> <ul style="list-style-type: none"> 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. <p>If you are unable to award two marks, award ONE mark for any one correct control.</p>	<p>Allowable answers</p> <p>A mark may be awarded for any of the following responses:</p> <ul style="list-style-type: none"> 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. 	<p>Do not give credit for an insufficient response suggesting that all factors are kept the same:</p> <ul style="list-style-type: none"> do everything the same. <p>Do not give credit for an insufficient response which is an IV or DV:</p> <ul style="list-style-type: none"> the water left. <p>Do not give credit for a second response that is a repetition or restatement of the first.</p>
<p>Award ONE mark for any acceptable alternative DV identified, eg:</p> <ul style="list-style-type: none"> 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. 	<p>ONE mark may be awarded for:</p> <ul style="list-style-type: none"> 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. 	<p>Do not give credit for a response in which the DV is not clearly identified:</p> <ul style="list-style-type: none"> see which brick is best to build with.

9. Sound

- (a) Award **ONE** mark for an understanding that the sound is caused when the stick and/or the air vibrates: 1

- the stick vibrates;
- the stick moves up and down;
- the movement of the stick makes the air vibrate.

Allow:

- it vibrates.

Do not give credit for:

- *he presses the stick [given];*
- *the stick moves [insufficient];*
- *vibration [this alone does not specify what is vibrating].*

- (b) Award **ONE** mark for a recognition that a greater force is required to increase the volume: 1

- push the stick harder;
- press it down more.

- (c) Award **ONE** mark for an indication that a shorter stick creates a higher-pitched note, and/or a longer stick creates a lower-pitched note: 1

- the longer sticks make lower notes;
- the shorter sticks make higher notes;
- a long stick makes a low note and a short stick makes a high note;
- the biggest stick makes the lowest note;
- the shortest stick makes the highest note;
- the sound is higher when the stick is shorter.

Do not give credit for an insufficient response:

- *stick 1 makes the lowest sound [does not describe the effect of length];*
- *stick 5 makes the highest note [given].*

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

- *the longer the stick, the louder the note.*

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

- wood, air and plastic



10. Bath Time

- (a) Award **ONE** mark for an understanding that the towelling is absorbent: 1
- it soaks up the water;
 - it absorbs water (well).

Allow:

- it takes in water.

Do not give credit for an insufficient response:

- it is soft;
- it is like a sponge [does not describe the appropriate property];
- it is flexible.

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

- it sucks up water.

- (b) Award **ONE** mark for: 1
- | | | |
|-------------------|-------------------------------------|--------------------------|
| | <input type="checkbox"/> | <input type="checkbox"/> |
| • are waterproof. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

- (c) Award **ONE** mark for: 1
- condensation;
 - condensing.

Do not give credit for a response that includes incorrect science referring to the water droplets as steam:

- the water is steam on the window;
- steam.

Do not give credit for an insufficient response:

- cooling [the water can cool but may not necessarily condense];
- liquidise [water liquidises on melting].

(d) Award **ONE** mark for an indication that the water (vapour) is in the air: 1

- water in the air.

Allow:

- water in the atmosphere.

Do not give credit for an insufficient response:

- evaporation/water vapour [does not say where the water is];
- the room.

(e) Award **ONE** mark for an awareness of the dangers caused by water conducting electricity: 1

- you might get an electric shock;
- because water can conduct electricity.

Allow:

- it might short circuit;
- you might be killed;
- it will explode.

Do not give credit for an insufficient response:

- it might get wet;
- it is not safe;
[repetition of stem];
- electricity and water do not mix
[does not explain the danger];
- it could cause a fire;
- sparks will fly.

FINDING THE LEVEL

Maximum marks: **40**

0 – 5	No level awarded
6 – 9	Level 2
10 – 13	Level 3C
14 – 17	Level 3B
18 – 20	Level 3A
21 – 30	Level 4
31 – 40	Level 5

A single test score should be taken as indicative and the teacher assessment should be strongly incorporated into any reporting level.