

SCIENCE

YEAR 4

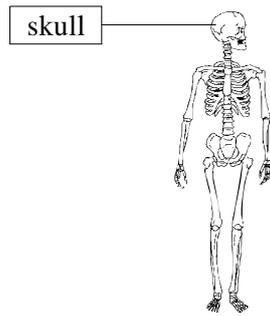
LEVELS 2 - 5



Teacher's Guide

1. (a) (i)(ii) Award **TWO** marks for correct identification of **all three**:

2

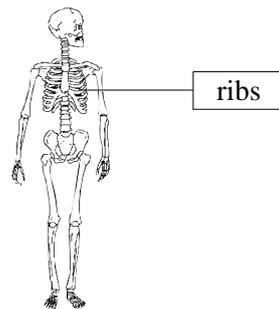


Allow:

- cranium.

Do not give credit for:

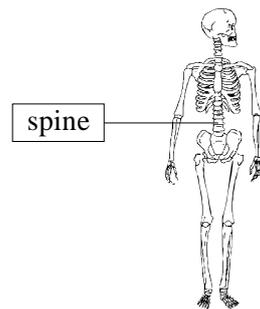
- head.



Allow:

- ribcage.

or



Allow:

- vertebra;
- backbone.

If you are unable to award two marks, award **ONE** mark for any **two** correctly identified.

Do not give credit for only one correctly identified.

(b) (i) Award up to **TWO** marks for descriptions of the function of the skeleton in any of the following categories:

Up to 2m

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

Movement

- it is needed to move;
- it helps you move/run/other specific movement;
- it has joints in it so that you can move.

Allow:

- you can't walk/stand up without a skeleton;
- muscles are joined to it/for muscles to pull on.

Support

- stand/upright/straight;

- it gives you shape;
- prevents collapse.

Allow:

- for muscles to be attached/pull on;
- stops you being floppy.

Protection

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

- it protects your organs;
- the ribs protect your heart;
- the skull prevents damage to the brain.

Importance to blood cells

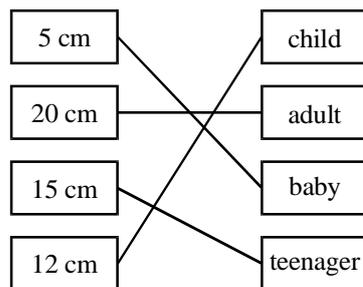
Give credit for a correct response that goes beyond the key stage 2 programme of study:

- it makes red blood (cells).

Do not give credit for an insufficient 'support' response that does not recognise the substance of the other parts of the body:

- *without it, you would be (like) a puddle;*
- *it stops you being (like) jelly;*
- *it stops you wobbling;*
- *it holds your body/organs together.*

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



1

[5]

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

1

- the wire is not connected/joined;
- the wire should touch the battery.

Give credit for:

- *there is a gap;*
- *there is a break in the circuit;*
- *there is no electricity/electric current flowing.*

Do not give credit for:

- *it is not being used;*
- *the circuit is wrong.*

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

1

- the wires should be connected to each end (of the battery/cell);
- the wires are connected to one end (of the battery/cell).

Give credit for:

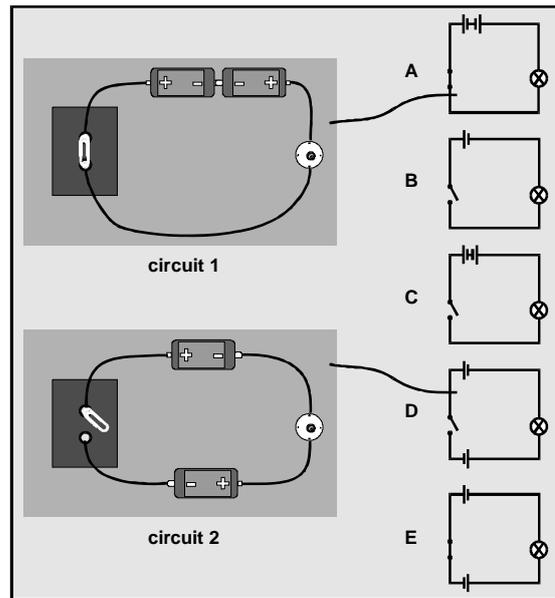
- *there is no electricity/electric current flowing.*

Do not give credit for:

- *the wiring is wrong;*
- *not connected properly.*

(c) (i)

1



Give credit for:

- any unambiguous link between circuit diagrams and correct circuit.

NOTE:

if more than two lines are drawn, deduct **ONE** mark for each incorrect line.

Do not award a negative number of marks.

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

1

- the switch is not closed;
- the paper clip is not touching the drawing pin.

Give credit for:

- there is a gap;
- there is a break in the circuit;
- there is no electricity/electric current flowing.

Do not give credit for:

- it is not turned on;
- it is not connected;
- it is not being used;
- the circuit is wrong.

[5]

3. (a) Award **ONE** mark for: 1
- blue tits (eat caterpillars);
 - magpies (eat hedge sparrows/eggs);
 - sparrowhawks (eat birds/ hedge sparrows);
 - spiders (eat flies);
 - thrushes (eat snails).

Do not give credit for.

- fly;
- snail;
- caterpillar.

- (b) Award **ONE** mark for: 1
- magpie;
 - sparrowhawk.

- (c) (i) Award **ONE** mark for each of: Up to 2
- lettuce;
 - cabbage;
 - (green) plant.

Up to a maximum of **TWO** marks.

Give credit for.

- tree

Do not give credit for.

- snails eat lettuce;
- caterpillars eat cabbage.

- (d) (i)-(iii) Award **ONE** mark for each of: 3

	<input type="checkbox"/>	grow	<input checked="" type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>	feed	<input checked="" type="checkbox"/>
get rid of waste	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Give credit for.

- any unambiguous mark other than a tick.

NOTE:

*If more than three boxes are ticked, deduct **ONE** mark for each incorrect answer.*

Do not award a negative number of marks.

4. Tractor

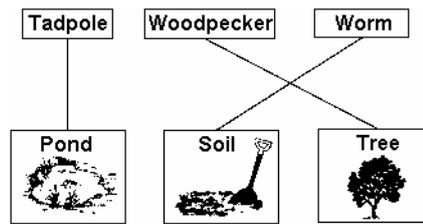
Requirements	Mark	Additional guidance
<p>Award ONE mark for an indication that there are forces of attraction between the magnets OR that the magnets have opposite poles facing each other:</p> <ul style="list-style-type: none"> ■ they are attracted (to each other); ■ because opposite poles attract; ■ 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. <p>Allow:</p> <ul style="list-style-type: none"> ■ the magnets stick/stay together; ■ they are opposite poles. <p>Allow:</p> <p>a response implicitly indicating that the magnet attracts the toy:</p> <ul style="list-style-type: none"> ■ the magnet attracts the trailer/ tractor. 	1m	<p>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:</p> <ul style="list-style-type: none"> ■ because the force is pulling it. <p>Do not give credit for an insufficient response:</p> <ul style="list-style-type: none"> ■ the magnets touch; ■ opposite sides on the magnets are together.
<p>Award ONE mark for an understanding that the magnets repel each other OR that the magnets have like poles facing each other:</p> <ul style="list-style-type: none"> ■ because the magnets are now repelling each other; ■ because two like poles push each other away; ■ she has put like poles together. <p>Allow:</p> <ul style="list-style-type: none"> ■ they are like poles; ■ like poles do not attract; ■ the tractor and trailer repel each other. <p>Allow:</p> <p>a response implicitly indicating that the magnet repels the toy:</p> <ul style="list-style-type: none"> ■ the magnet repels the tractor; ■ the magnet is pushing it away. 	1m	
<p>Award ONE mark for:</p> <ul style="list-style-type: none"> ■ friction. <p>Allow:</p> <ul style="list-style-type: none"> ■ air resistance. <p>Award ONE mark for:</p> <ul style="list-style-type: none"> ■ weight; ■ gravitational attraction. <p>Allow:</p> <ul style="list-style-type: none"> ■ gravity. 	1m 1m	
<p>Award ONE mark for:</p> <ul style="list-style-type: none"> ■ <input type="checkbox"/> floorboards <input checked="" type="checkbox"/> ■ <input type="checkbox"/> <input type="checkbox"/> 	1m	

5. Toffee

Requirements	Mark	Additional guidance
<p>Award ONE mark for a response that indicates sugar dissolves:</p> <ul style="list-style-type: none"> ■ the sugar dissolves; ■ it forms a solution. 	1m	<p>Do not give credit for an insufficient response:</p> <ul style="list-style-type: none"> ■ it mixes with water.
<p>Award ONE mark for a response describing the evaporation of the water:</p> <ul style="list-style-type: none"> ■ the water evaporates; ■ it changes into water vapour. <p>Allow:</p> <ul style="list-style-type: none"> ■ it boils. 	1m	<p>Do not give credit for a response that includes incorrect science implying the sugar evaporates with the water:</p> <ul style="list-style-type: none"> ■ the mixture will evaporate/change to water vapour. <p>Do not give credit for an insufficient response describing what happens to the whole mixture not just the water:</p> <ul style="list-style-type: none"> ■ it bubbles; ■ it goes golden brown.
<p>Award ONE mark for:</p> <ul style="list-style-type: none"> ■ <input type="checkbox"/> temperature <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 	1m	
<p>Award ONE mark for:</p> <ul style="list-style-type: none"> <input type="checkbox"/> ■ Wood is a poor conductor of heat. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 	1m	
<p>Award ONE mark for a response stating that the mixture has cooled:</p> <ul style="list-style-type: none"> ■ the tray cooled the mixture down; ■ the temperature of the mixture has dropped; ■ it cooled down. <p>Allow:</p> <ul style="list-style-type: none"> ■ it has frozen. 	1m	<p>Do not give credit for an insufficient response:</p> <ul style="list-style-type: none"> ■ 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. <p>Do not give credit for an insufficient response referring to a procedure:</p> <ul style="list-style-type: none"> ■ they put it in a tray; ■ the tray has been in a freezer (given).

6. (a) Award **ONE** mark for correct match of **all three**:

1



Allow:

worm linked to pond.

- (b) Award **ONE** mark for an identification that Highland cattle have long, thick fur (which protects them in colder climates):

1

- they have (a) thicker fur/coat;
- they have longer hair;
- their thicker coat traps the air and keeps them warm.

Allow:

- they have more/long hair;
- they have a lot of fur;
- they have (a) thick fur/coat;
- they have a woolly coat.

Do not give credit for an insufficient response:

- *they have hair;*
- *a Highland cow has fur, but a Jersey cow does not;*
- *their coat traps the air to keep them warm;*
- *they have horns;*
- *the Highland cow has thick skin.*

(c) Award **ONE** mark for **both** boxes in the row completed correctly, indicating that a

Polar Bear has a specific feature for a purpose:

- (thick) fur ... to help keep warm;
- a thick layer of fat under its fur ... to keep it warm;
- an acute sense of smell ... to find prey;
- white fur ... to camouflage/hide itself;
- sharp claws ... to catch prey/fish/ food;
- a waterproof coat ... to help in the water;
- sharp teeth ... to eat its food.

Allow:

- it has the ability to swim ... to catch fish;
- limbs ... to help it swim.

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

- large paws ... to help it exert less pressure on the snow;
- a large body .. to help it retain energy;
- small ears ... to minimise heat loss;
- tiny hairs on the soles of its feet... to stop it slipping (on the ice);
- hollow hairs ... for insulation.

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

- *large paws to wrap around itself to keep warm;*
- *thick fur to protect its eyes.*

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

- *it does not mind the cold .. so it can live in the Arctic; [these are not **features** of the animal which aid survival].*

***Do not** give credit when the second box does not match the first box.*

[3]

7. (a) (i) Award **ONE** mark for an unambiguous indication of: 1
- 5;
 - controls the body.
- (ii) Award **ONE** mark for an unambiguous indication of: 1
- 2;
 - pumps the blood.
- (b) Award **ONE** mark for: 1
- the ribs;
 - the rib cage.
- Allow:**
- the sternum;
 - the backbone/vertebrae/spine.
- Do not give credit for an insufficient response:*
- the chest.
- (c) Award **ONE** mark for an indication that she must measure her pulse for a short time [six minutes or less] and multiply to reach an estimate: 1
- she can measure her pulse for one minute and multiply (by 60).
- Allow:**
- a response where ‘it’ clearly indicates a pulse or a heartbeat:
- measure it for a minute and times by sixty.
- Allow:**
- an indication of measuring the pulse for a short time [six minutes or less] and multiplying, where the calculation is non-specific:
- she can take her pulse for a little while and ‘times’ it to get the number for one hour.
- Do not give credit for an insufficient response:*
- she can measure her pulse rate;
 - she measures her heart rate for one minute;
 - she measures her heart.
- [4]**
- affects lungs [not specific];
 - bad for you/harms you [imprecise].

8. Separating Materials

	Allowable answers	
<p>Award ONE mark for:</p> <ul style="list-style-type: none"> ■ filtering; ■ filtration. 	<p>ONE mark may be awarded for:</p> <ul style="list-style-type: none"> ■ filter. 	<p>Do not give credit for an insufficient response:</p> <ul style="list-style-type: none"> ■ evaporation.
<p>Award ONE mark for explaining that sand remains in the filter and/or the water passes through:</p> <ul style="list-style-type: none"> ■ the water goes through the filter but the sand cannot because it is too big; ■ the holes in the filter paper let the water through, but the sand is too big; ■ only the water can go through the filter; ■ the sand stays in the filter. 	<p>ONE mark may be awarded for a response that recognises that the sand does not dissolve or that the sand has larger particles than the water (and therefore will not go through the filter with the water):</p> <ul style="list-style-type: none"> ■ because it does not dissolve; ■ the particles of sand are larger than the particles of water. <p>ONE mark may be awarded for a response that describes the water evaporating to leave the sand behind.</p>	<p>Do not give credit for an insufficient response:</p> <ul style="list-style-type: none"> ■ the sand can be separated because it has large particles [no comparison with water].
<p>Award ONE mark for naming the process of separation:</p> <ul style="list-style-type: none"> ■ sieving/using a sieve. 	<p>ONE mark may be awarded for:</p> <ul style="list-style-type: none"> ■ sieve. <p>ONE mark may be awarded in 7c ia if sieving is named in part 7c ib and the response to part 7c ia is general or not attempted.</p> <p>ONE mark may be awarded for:</p> <ul style="list-style-type: none"> ■ blowing/air. 	<p>Do not give credit for a response that includes incorrect science describing filtering with paper:</p> <ul style="list-style-type: none"> ■ using filter paper.
<p>Award ONE mark for a correct description of the sieving process indicating that the flour passes through while the rice stays in the sieve:</p> <ul style="list-style-type: none"> ■ The flour goes through the sieve. The rice stays in the sieve; ■ The flour goes through the holes. The rice is too big. 	<p>ONE mark may be awarded for the correct description of blowing the flour away:</p> <ul style="list-style-type: none"> ■ The flour gets blown away. The rice stays. <p>ONE mark may be awarded for a correct description of sieving if 7c ia is insufficient or incorrect.</p>	<p>Do not give credit for a response that includes incorrect science clearly indicating that a filter is being used:</p> <ul style="list-style-type: none"> ■ The flour stays in the filter; The rice stays in the filter. <p>Do not give credit for an insufficient response that does not describe what happens to both the flour and the rice:</p> <ul style="list-style-type: none"> ■ The flour... The rice stays in the sieve.
<p>Award ONE mark for naming the process of separation:</p> <ul style="list-style-type: none"> ■ using a magnet. <p>Award ONE mark for a correct description of the separation indicating that the steel/ nails will be attracted to the magnet and the brass/screws will not:</p> <ul style="list-style-type: none"> ■ The steel nails will be attracted to the magnet. The brass screws will not; ■ The steel nails will go/stick to the magnet. The brass screws will stay behind. 	<p>ONE mark may be awarded in 7c iia if a 'magnet' is named in part 7c iib and the response to 7c iia is general or not attempted.</p>	<p>Do not give credit for an insufficient response that does not describe what happens to both the nails and screws:</p> <ul style="list-style-type: none"> ■ The steel nails will be attracted by the magnet. The brass screws...

FINDING THE LEVEL

Maximum marks: **40**

0 – 5	No level awarded
6 – 9	Level 2
10 – 15	Level 3C
16 – 19	Level 3B
20 – 23	Level 3A
24 – 33	Level 4
34 – 40	Level 5

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