



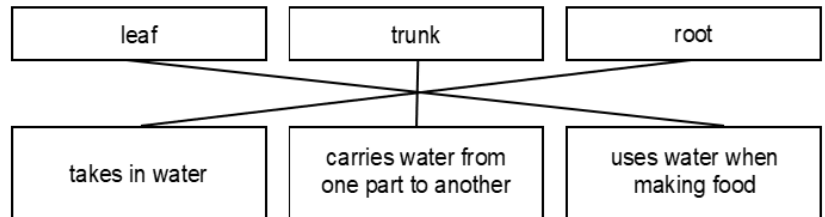
Year 3/4 Science Assessment Cycle 1

Mark Scheme

Total Marks: 62

Plants

1. Award **ONE** mark for **all three** correctly matched:



2. Award **ONE** mark for each identification of any of the following points

- **competition for light;**

Give credit for:

- *shaded by tree/not enough light;*
- *doesn't get much light;*
- *fully grown tree blocks out light;*
- *Sun can't get to it;*
- *shaded by a big tree.*

- **competition for water;**

Give credit for:

- *not enough water;*
- *rain can't get to it;*
- *all water it is given will be sucked up by roots of tree;*
- *under foliage of another tree and might not get as much rainwater;*
- *trees keep rain from coming down.*

- **competition for nutrients**

Give credit for:

- *not enough nutrients/minerals;*
- *goodness of soil being taken up by big tree;*
- *big tree would take up all the nutrients;*
- *big tree taken all its nutrition;*
- *too close to the other tree.*

Do not give credit for:

- *not enough food;*
- *not enough room;*
- *roots of the tree are in the way.*

3. Award **ONE** mark for:

- stem.

Allow:

- stalk.
- capillary tubes

Do not give credit for an insufficient response:

- *roots;*
- *shoot.*

4. Award **ONE** mark for predicting that the flowers would turn red:

- the (bunch of) flowers would turn red/pink;
- it would turn red/pink.

Allow:

- the plant turns red;
- the flowers change colour;
- the red dye would travel up the stem(s) to the flower(s).

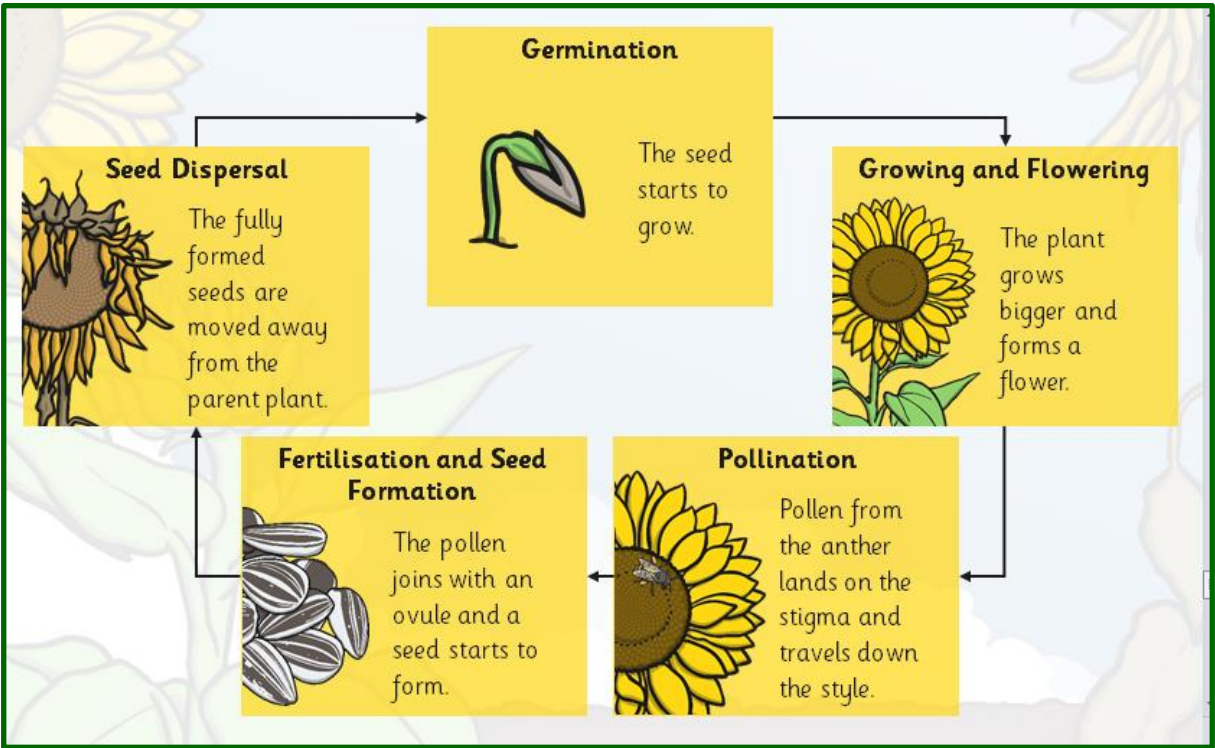
Do not give credit for an insufficient response indicating that the flowers themselves have been dipped in dye:

- *there would be drops of dye on the flowers.*

Do not give credit for an insufficient response:

- *half the flower(s) changed colour;*
- *the flowers turned blue.*

5. Award ONE mark for all correctly identified as follows:

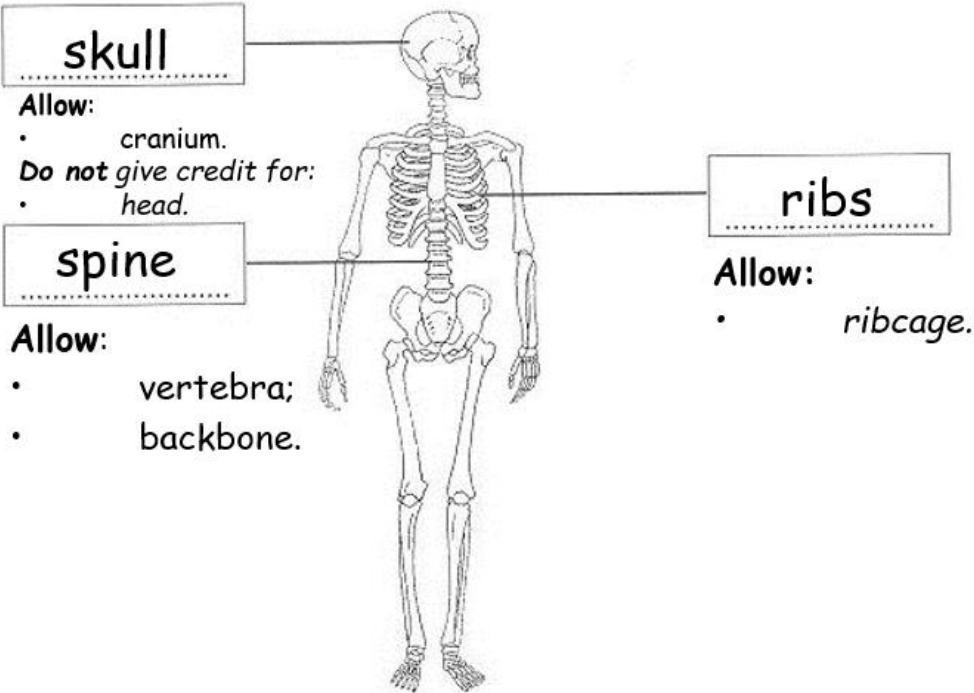


6. Award ONE mark for both correctly identified:

light	☒	worms	☐	gravel	☐
darkness	☐	nutrients	☒	pots	☐

Animals, Including Humans

7. Award ONE marks for correct identification of all three:



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

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.*

9 Award ONE mark for identifying both:

A: **contracting**

B: **Relaxing**

10. Award ONE mark for an unambiguous answer that identifies that **muscles work in pairs**.

- Muscles act in PAIRS
- Also accept in twos

Do not accept: together or at the same time

11. Award ONE mark for C

12. Award ONE mark for A

13. Award ONE mark for:

Humans ☐ Cats ☐ Parrots ☒

14. Award ONE mark for:

Humans ☐ Cats ☒ Parrots ☐

15. Award ONE mark for:

Omnivore ☐ Herbivore ☐ Carnivore ☒

16. Award ONE mark for identifying an example of a carnivore:

E.g.: lion, tiger, shark, bird of prey, polar bear, anteater, penguin, etc

Do not allow an example of an omnivore e.g.: dog, bear (brown bear), hedgehog, pig, fox etc

Do not allow description e.g. carnivore.

Do not allow Cat (mentioned in the question)

Do not allow non-specific ambiguous generalisations e.g. bird

17. Award ONE mark for identifying an example of a herbivore:

E.g.: rabbit, sheep, cow, Giant panda, horse, giraffe, koala, etc

Do not allow an example of an omnivore e.g.: dog, bear (brown bear), hedgehog, pig, fox etc

Do not allow description e.g. herbivore.

Do not allow parrots (mentioned in the question)

Do not allow non-specific ambiguous generalisations e.g. bird

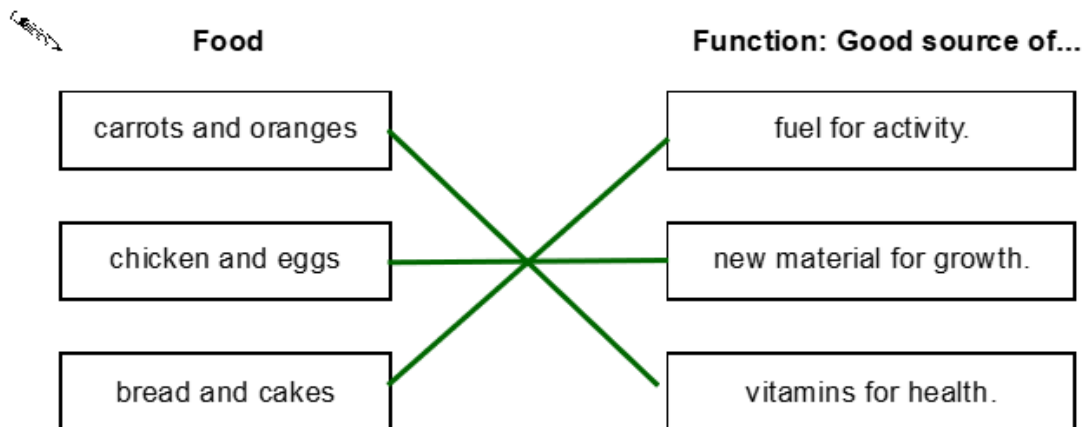
18. Award ONE mark for:

- Eating foods from different food groups

19. Award ONE mark for all three correct responses

- 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**)

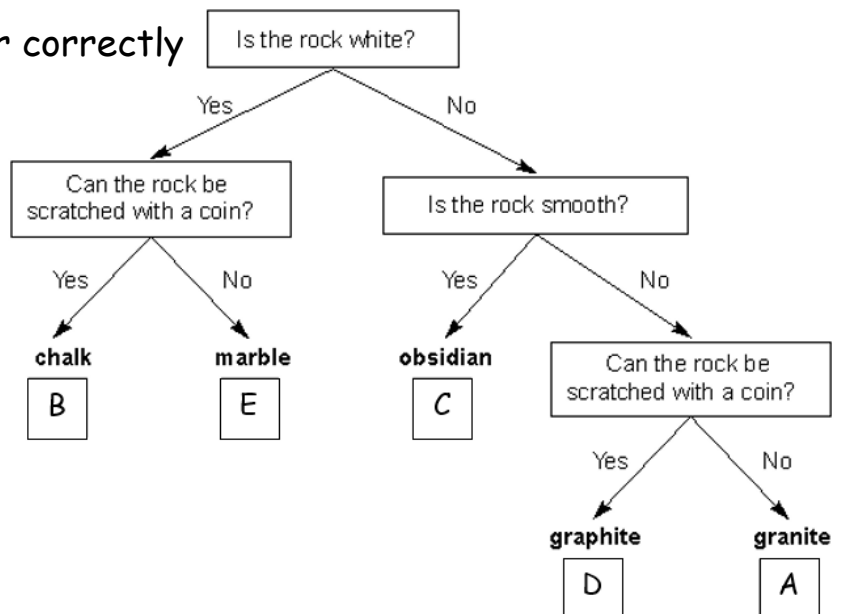
20. Award ONE mark for all three correctly identified as follows:



Rocks (and soils)

21. Award **TWO** marks for correctly identifying **all five** rocks:

Or if you are unable to award two marks, award **ONE** mark for **any three** or **four** rocks correctly identified.



22. Award **ONE** mark for:

- talc

23. Award **ONE** mark for a response indicating that **granite was the only rock not to be scratched by the objects**:

- 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.*

24. Award **ONE** mark for all the rocks written in the correct place:

talc	sandstone	marble	granite
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25. Award **ONE** mark for:

The rocks were different sizes.	☐	The shapes of the objects were different.	☐
Some of the objects were harder than others.	☐	It was difficult to scratch each rock with the same force.	☒

26. Award **ONE** mark for correctly identifying one rock which cannot be scratched with a knife:

- **granite.**

27. Award **ONE** mark for correctly identifying all four rocks according to permeability:



28. Award **ONE** mark for correctly identifying how the rocks in group A are different from the rocks in group B:

- they **cannot** be split into **flat** pieces.

Allow:

- slate can be split into flat pieces.

Do not give credit for:

- they are all rocks [given];
- by looking at the table.

29. Award **ONE** mark for: D

A	B	C	D
☐	☐	☐	☒

30. Award **ONE** mark for identifying any constant in the investigation e.g.:

- **Same amount of soil in each test**
- **Same amount of water poured onto the soil**
- **Same size funnel (upturned bottle)**
- **Same time allowed for each water sample to pass through each soil sample**

• Do not allow non-specific responses, variables or incorrect scientific answers e.g.:

- The amount of water
- The time
- Different soil
- Soil
- Bottle
- Room
- Same stopwatch

31. Award **ONE** mark for:

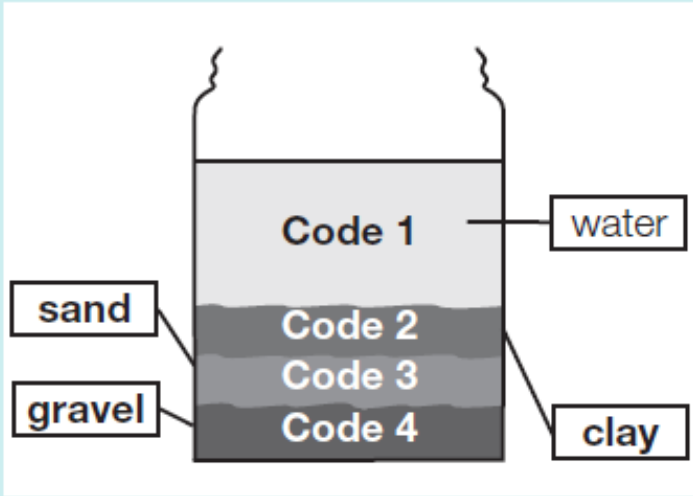
all clay	D
mostly clay, some sand	A
mostly sand, some clay	B
all sand	C

32. Award **ONE** mark for a bar (or bar line) drawn for *small stones* which is more than 250cm³ and less than or equal to 300cm³

33. Award **ONE** mark for: To check their results.

34. Award **ONE** mark for all correctly identified as follows:

Award **ONE** mark for:



35. Award ONE mark for identifying that **humus is the organic component of soil, formed by the decomposition of leaves and other plant material by soil microorganisms.**

Allow

- dead/ decaying plants

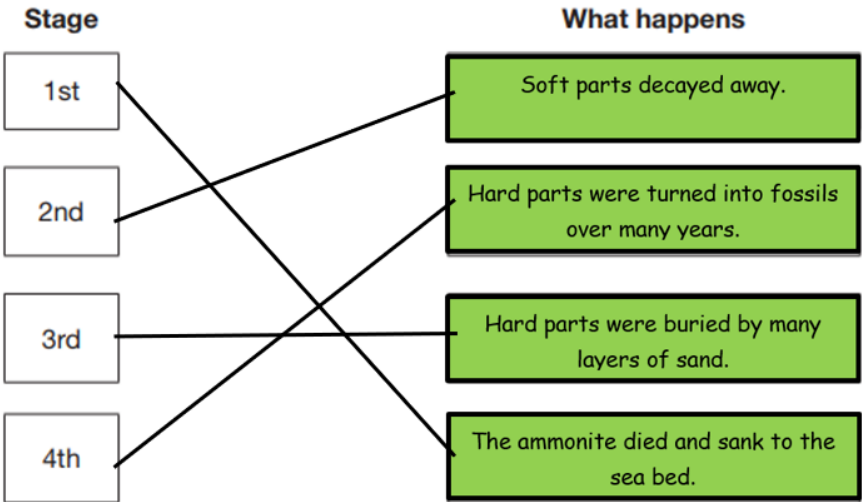
Allow

- dead plants and/ or animals

Do not allow references to other non contextualised items referred to as humus e.g.

- A chick-pea dip

36. Award ONE mark for correctly identifying:



37. Award ONE mark for all 3 correctly identified:

- | | |
|---------------------------------------|-------|
| • how long ago the animal lived | TRUE |
| • what size the animal was. | TRUE |
| • what colour the animal's eyes were. | FALSE |

Light

38: Award **ONE** mark for:

plant

☐

mirror

☐

radiator

☐

computer screen

☒

39. Award **ONE** mark for an awareness that light **reflects** off the moon's surface:

- the moon reflects the light from the sun;
- light bounces on/off the moon
- the moon (it) acts like a mirror.

Allow:

- light reflects on/off the moon
- it reflects/is a reflection;
- the light is scattering off the moon

Do not give credit for an insufficient response:

- because the moon is shiny;
 - because the light is shining on it
- [restatement of the stem - no acknowledgement of reflection];
- the light reflects on to the moon
- [implies light is reflected from another surface on to the moon but not off it again].

40. Award 1 mark for: It could damage your eyes. Also accept it is dangerous / it can hurt your eyes.

41: Award **ONE** mark for:
(no other boxes ticked)

opaque.

☒

smooth.

☐

solid.

☐

transparent.

☐

tall.

☐

heavy.

☐

42. Award **ONE** mark for an indication that the shadow became shorter:

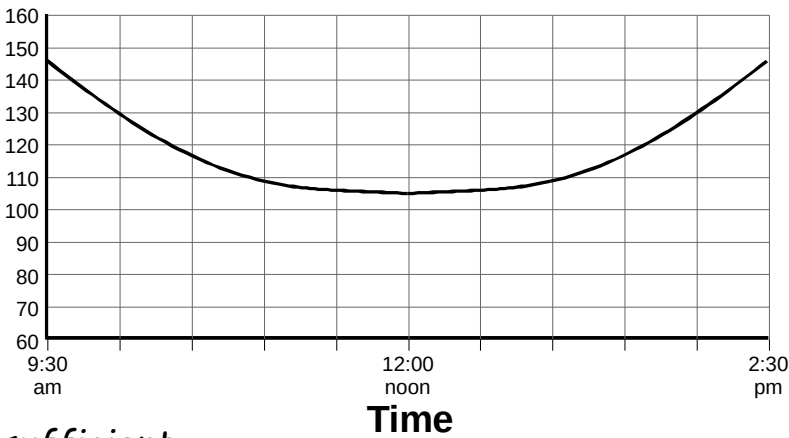
- the shadow kept getting shorter;
- it got shorter.

Allow:

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

43. 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.

Minimum at noon



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

44: Award **ONE** mark for:

The Sun orbits the Earth.

☐

The Sun comes closer to the Earth.

☐

The Sun moves and goes up in the day and down at night.

☐

The Earth spins on its axis.

☒

45. Award **TWO** marks for correct classification of all **five**:

or
If you are unable to award two marks, award **ONE** mark for any **three** or **four** correctly classified.

Material	Some light passes through	No light passes through
tissue paper	✓[given]	
glass	✓	
mirror		✓
clear plastic	✓	
cardboard		✓
foil		✓

46. Award **ONE** mark for acknowledgement that humans need light in order to see

- No, as there is no light
- Jenny needs light to see

Do not allow poorly or un-explained answers or incorrect science eg:

- No (with no explanation)
- Yes (incorrect science)
- It will be dark
- She will find it hard to see
- She can see a bit

Do not allow answers which change the context of the question, despite scientific accuracy e.g.:

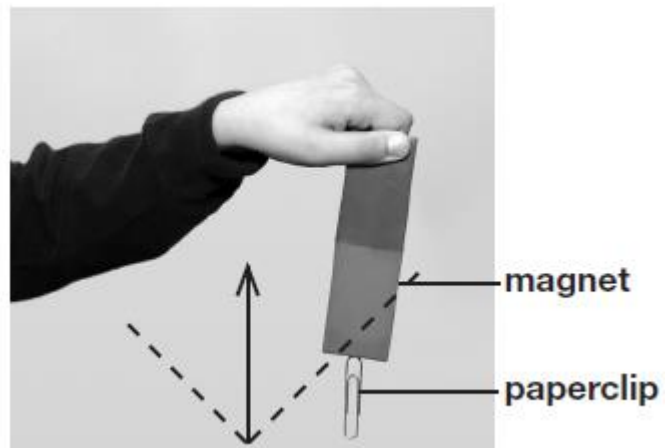
- If the door is made of glass and the sun is shining through it than yes.

Forces and Magnets

47. Award **ONE** mark for an arrow pointing upwards that is less than 45° either side of the vertical.

Do not give credit for a response that includes incorrect science showing an arrow pointing downwards.

Do not give credit for an insufficient response where a line, rather than an arrow, is drawn.



48. Award **ONE** mark for:

- Gravity

or

- Weight

ONE mark may be awarded for:

- the pull of the Earth
- gravitational attraction

Do not give credit for an insufficient response that does not recognise the force is due to the Earth, for example:

- a pulling force towards the Earth
- downwards pull

Do not give credit for an insufficient response that may refer to the magnet's force, for example:

- attraction

49. Award **ONE** mark for an indication that the strongest magnet will hold the largest number of paperclips, for example:

- it has more paperclips
- the best magnet holds the most paperclips

ONE mark may be awarded for:

- the magnet/it holds the most

Do not give credit for an insufficient response in which no comparison is given:

- by the amount of paperclips it holds
- magnet C holds 6 clips

Do not give credit for an insufficient response referring to the results on the graph:

- it is the biggest bar on the graph

50. Award **ONE** mark for correctly labelling the axis to indicate the number of paperclips.

ONE mark may be awarded for:

- paperclips

51. Award **ONE** mark for an indication that the magnets are **repelling** each other **or** that like poles are together, for example:

- they repel each other
- they are repelling
- the same poles are facing each other
- two North/N poles/ends are facing
- two South/S poles/ends are facing

ONE mark may be awarded for:

- the same ends are facing each other

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

- negative and positive are facing

Do not give credit for an insufficient response that implies each magnet is the same pole:

- they are both North
- they are the same poles

Do not give credit for an insufficient response:

- the poles are the same [does not imply the facing poles]
- the same sides are facing

52. Award **ONE** mark for all identified correctly:

Do not give credit if more than one box has been ticked in a row.

Do not give credit if no ticks are given in a row.

Magnets	Move together	Move apart	Do not move
	✓		
		✓	
	✓		
		✓	

53. Award **ONE** mark for:

They are not made of a magnetic metal

They are rusty ☐

They are dirty ☐

They are not made of a magnetic metal ☒

They repel the magnet ☐

54. Award **TWO** marks for correctly attributing properties of all **FOUR** of the materials.

If Two marks cannot be awarded award **ONE** mark for identifying the **TWO** metal objects:

- steel and copper both correct.

	is attracted	is not attracted
wooden pencil		✓
steel safety pin	✓	
plastic bead		✓
cardboard box		✓
copper wire		✓

55. Award **ONE** mark for: D C A B

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

6 16 19 30

56. Award **ONE** mark for:

Tick **ONE** box.

The brick moves more easily.

☒

The brick is harder to move.

☐

The brick will not move.

☐

The brick floats.

☐

57. Award **ONE** mark for:
• **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].*

58. Award **ONE** mark for:

- forcemeter;
- Newton meter.

Allow:

- spring balance.

Do not give credit for:

- *Newton measurer.*

59. Award **ONE** mark for: Tick **ONE** box.

grams (g)

☐

kilometres (km)

☐

degrees ($^{\circ}\text{C}$)

☐

newtons (N)

☒

60. Award **ONE** mark for:

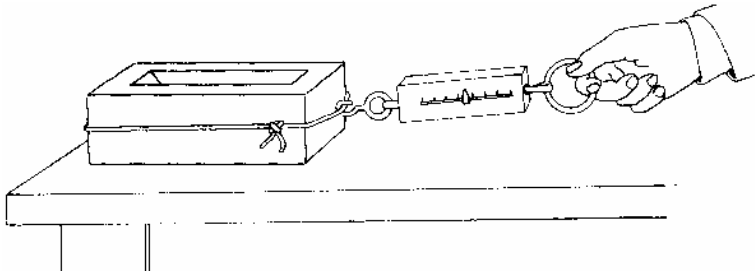
- **weight.**

or:

- **gravity.**

Measuring forces

Lizzie uses a force-meter.
She measures the force
needed to start a brick
moving on different
surfaces.



Here are her results:

Surface	Pulling force (Newtons)
A	19
B	30
C	16
D	6

55. Write **A**, **B**, **C** or **D** in
each box below to put
the surfaces in order of
force needed to start
the brick moving.

easiest surface
to pull the brick
on

hardest surface
to pull the brick
on

1 mark

Lizzie uses the force-meter to pull the brick on a table top.
She spreads a spoonful of oil on the table top.
She puts the brick on the oil.

56. What happens when she tries pulling the brick on the oil?

Tick **ONE** box.

The brick moves more easily.

☒

The brick is harder to move.

☐

The brick will not move.

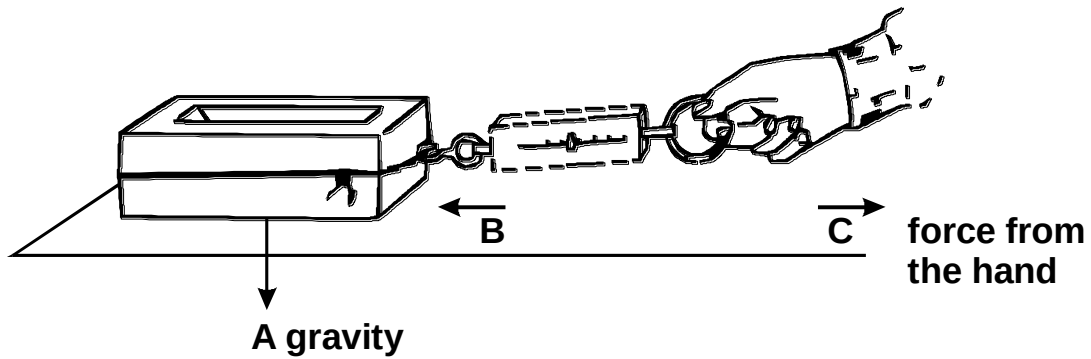
☐

The brick floats.

☐

1 mark

The diagram below shows three forces acting on the brick as it is pulled on each surface.



Force B makes it hard to start the brick moving.

57. Write the name of Force B below.

1 mark

58. Name the equipment that Lizzie uses to measure the force needed to move the brick.

1 mark

59. What units does this equipment use to measure the force?

Tick **ONE** box.

grams (g)

☐

kilometres (km)

☐

degrees (°C)

☐

newtons (N)

☒

60. Dave goes over a jump on his skateboard. When he jumps he stays in the air for a short time. What force makes him return to the ground?

1 mark

