

# Sparx Science

## Year 7 Baseline assessment

Time allowed: **40 minutes**

First name :

Surname :

Teacher :

Teaching group :

### Instructions

- Use black ink.
- Fill in your name, teacher and teaching group in the boxes above.
- Answer all questions.
- Answer the questions in the spaces provided.

### Information

- The assessment is 40 minutes long.
- The maximum mark for this assessment is 50.
- The marks available for each question are shown in brackets [ ].

Total marks :

**/50**

# 1. Vegetable patch

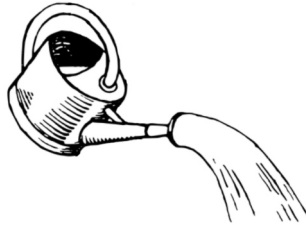
(a) Finn sees all of these things when he is working on his vegetable patch.

Which of these things are living?

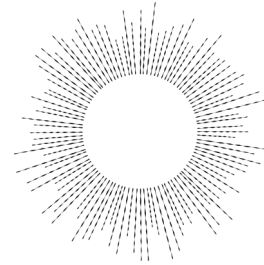
Tick **five** boxes.



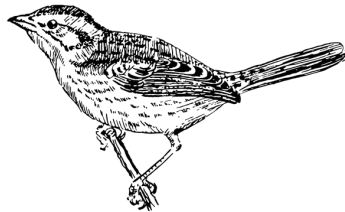
Oak tree

☐

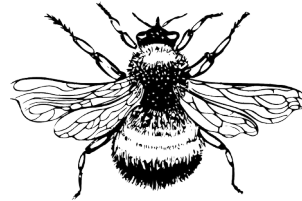
Water

☐

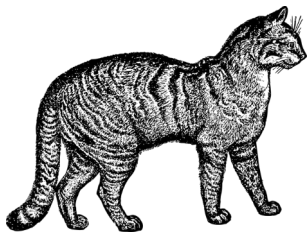
Sun

☐

Sparrow

☐

Bee

☐

Cat

☐

Bonfire

☐

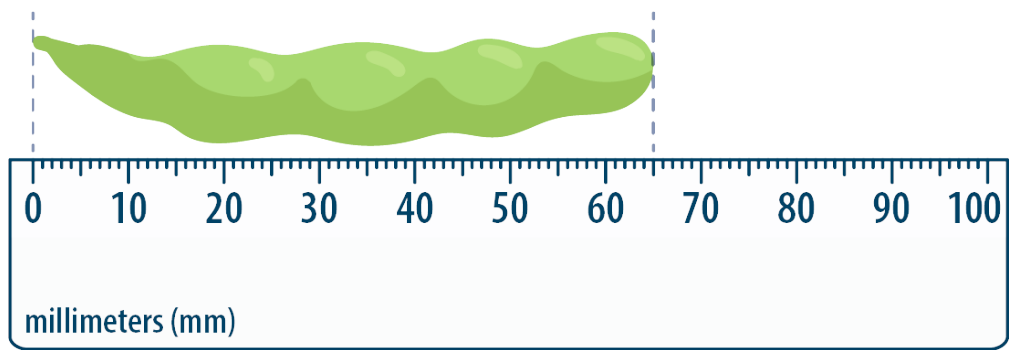
Dandelion

☐

[2 marks]

(b) Finn is growing beans.  
One bean is shown.

Read the **length** of the bean from the ruler.



 ..... mm [1 mark]

(c) Finn measures the lengths of the beans on one plant.

| Range of lengths (mm) | Tally | Frequency |
|-----------------------|-------|-----------|
| 25 - 49               |       | 2         |
| 50 - 74               |       | 1         |
| 75 - 99               |       | 5         |
| 100 - 124             |       | 4         |
| 125 - 149             |       |           |

What is the frequency for the beans between **125 and 149 mm**?

 ..... [1 mark]

(d)

One bean plant grows in the shade of a tree.  
This plant is smaller than other plants that are not under the tree.

Why is the bean plant growing under the tree smaller?

Tick **one** box.



The bean plant gets less air

☐

The bean plant gets less light

☐

The bean plant gets more minerals

☐

The bean plant gets more water

☐

[1 mark]

(e)

Some of the beans are eaten by rabbits.  
Some rabbits are eaten by foxes.

Draw a **food chain** to show this information.  
Use arrows in your food chain.

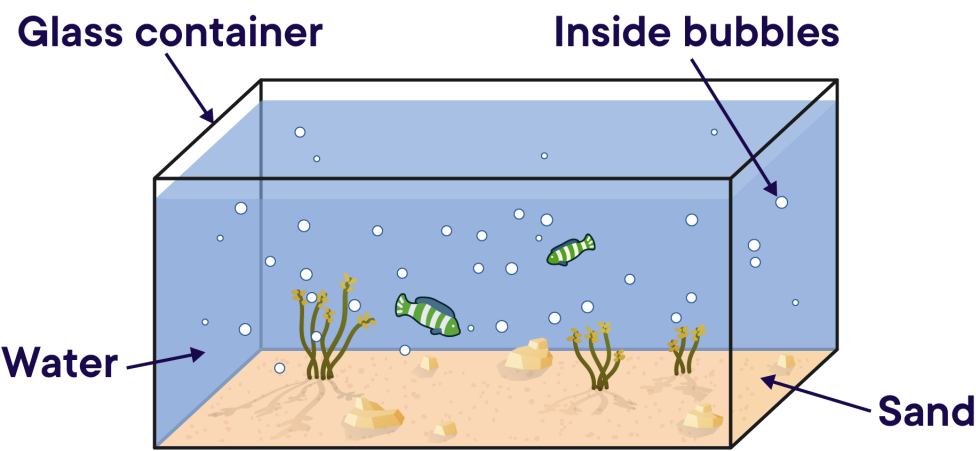


.....

[2 marks]

2. Fish tank

(a) Emily has a fish tank.



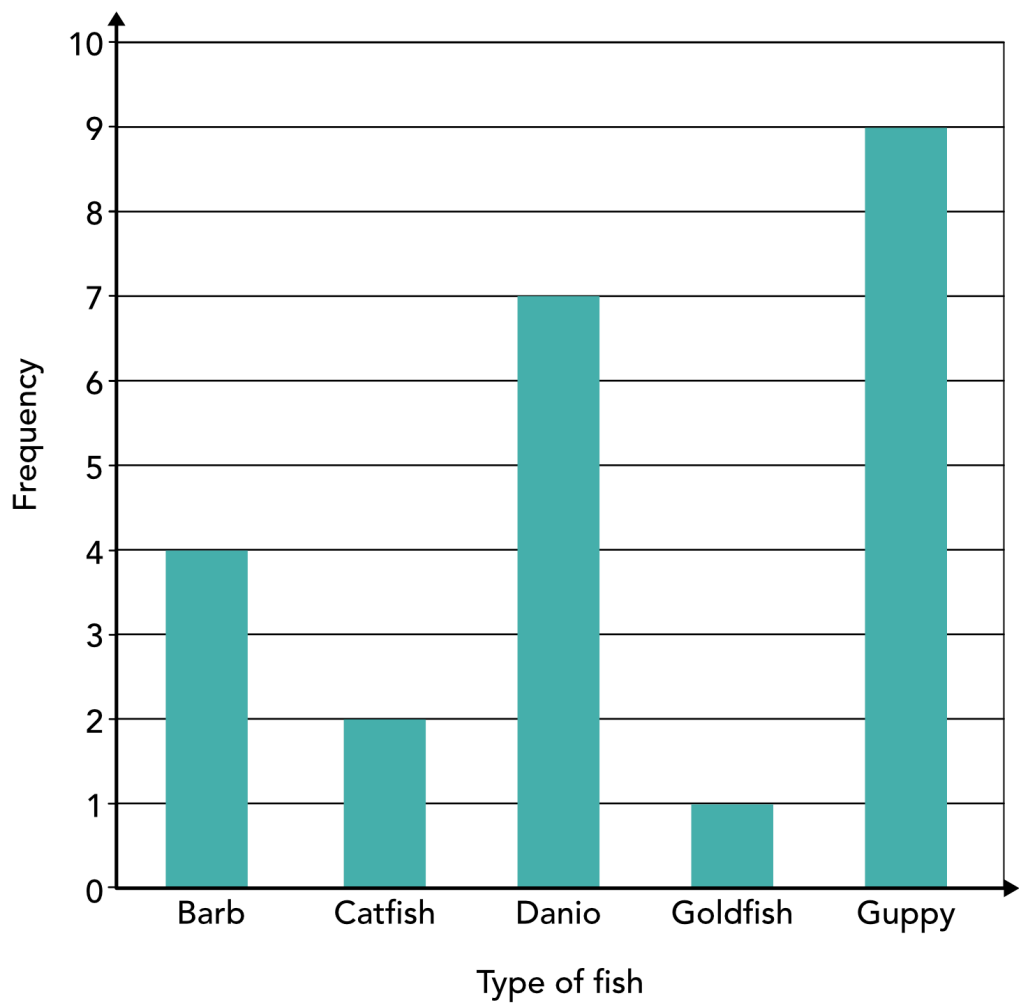
Show whether each substance labelled in the image above is a **solid**, **liquid** or **gas**. Tick **one** box in each row. The first row has been done for you.



| Substance       | Solid | Liquid | Gas |
|-----------------|-------|--------|-----|
| Glass container | ✓     |        |     |
| Inside bubbles  |       |        |     |
| Water           |       |        |     |
| Sand            |       |        |     |

[1 mark]

(b) Emily counts the number of fish in the tank.



How many **danio** fish were in the tank?



..... [1 mark]

(c) The fish tank contains pondweed.  
The pondweed has roots in the sand which keep the plant stable.

Describe **one** other function of the roots.



.....  
.....

[1 mark]

### 3. In the kitchen

(a) Some activities that Catrin does in the kitchen are listed in the table.

Tick **one** box in each row to show whether each activity causes a reversible change or not.



| Activity                  | Reversible | Not reversible |
|---------------------------|------------|----------------|
| Baking a cake             |            |                |
| Dissolving sugar in water |            |                |
| Freezing ice cream        |            |                |
| Frying eggs               |            |                |

[2 marks]

(b) Catrin measures out a mass of chocolate.

Which of these units could mass be measured in?

Tick **one** box.



cm<sup>3</sup> ☐

mm ☐

g ☐

ml ☐

N ☐

[1 mark]

(c) Catrin heats the chocolate in a pan.

What is the main **hazard** as Catrin heats the chocolate?

Tick **one** box.



The pan becomes dirty ☐

The pan breaks ☐

The chocolate and pan get hot ☐

The chocolate takes a long time to heat up ☐

[1 mark]

(d)

The chocolate melts as Catrin heats it.

What happens when a substance **melts**?

Tick **one** box.



It changes from a gas to a liquid

☐

It changes from a liquid to a gas

☐

It changes from a liquid to a solid

☐

It changes from a solid to a liquid

☐

[1 mark]

(e)

Catrin notices that some of the chocolate burns as it is heated.

Which of these observations shows that burning is a **non-reversible** change?

Tick **one** box.



The chocolate melts

☐

The chocolate gets warmer

☐

Smoke comes off the chocolate

☐

The shape of the chocolate changes

☐

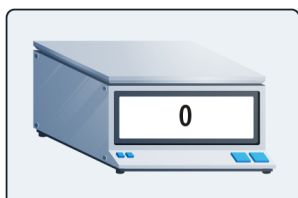
[1 mark]



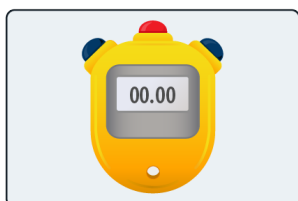
#### 4. Dissolving salt

Marlow wants to find out how the temperature of water affects the time it takes for salt to dissolve.

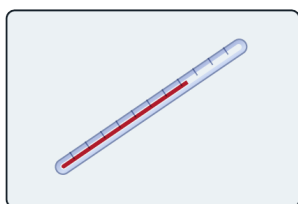
- (a) Draw **one** line from each piece of equipment to the measurement it would be used to make.



the **temperature** of the water



the **mass** of salt



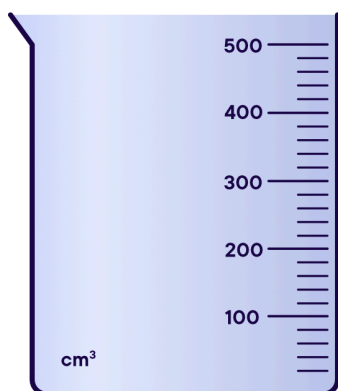
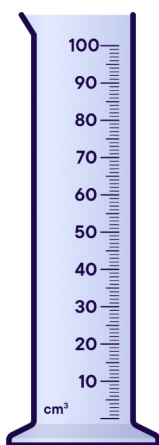
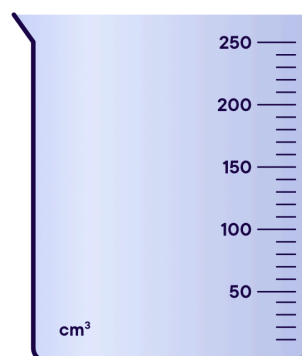
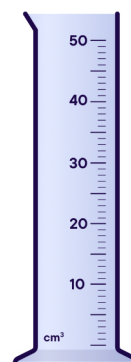
the **time** for the salt to dissolve

[2 marks]

- (b) These diagrams show four measuring containers.

Which container is best to measure **75 cm<sup>3</sup>** of water?

Tick **one** box.

☐☐☐☐

[1 mark]

(c) The table shows how long it took salt to dissolve in different temperatures of water.

| Water temperature (°C) | Time for salt to dissolve (seconds) |
|------------------------|-------------------------------------|
| 30                     | 10                                  |
| 40                     | 8                                   |
| 50                     | 7                                   |
| 60                     | 6                                   |

Describe how the water temperature affects the time it takes for the salt to dissolve.



.....

.....

.....

[1 mark]

## 5. Building circuits

Ahaan is investigating materials in an electrical circuit.

- (a) What is the most sensible step Ahaan should take to stay safe when investigating the circuit?

Tick **one** box.



Check the equipment before he uses it

☐

Build each circuit twice

☐

Keep a beaker of water nearby

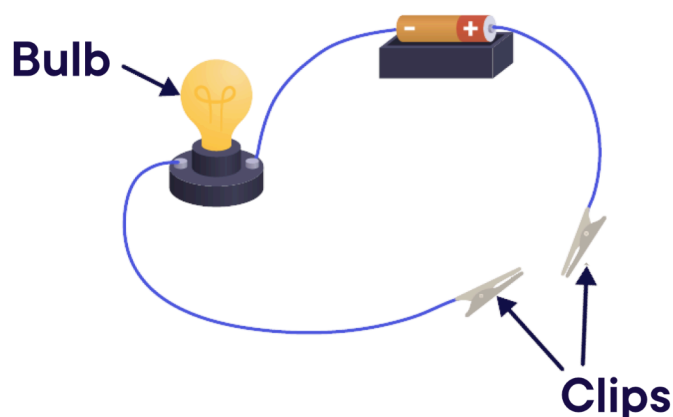
☐

Wear a lab coat and safety goggles

☐

[1 mark]

- (b) Ahaan builds the circuit shown.



The circuit contains clips and a bulb.

Which other components are in the circuit?

Tick **two** boxes.



Buzzer

☐

Cell

☐

Motor

☐

Switch

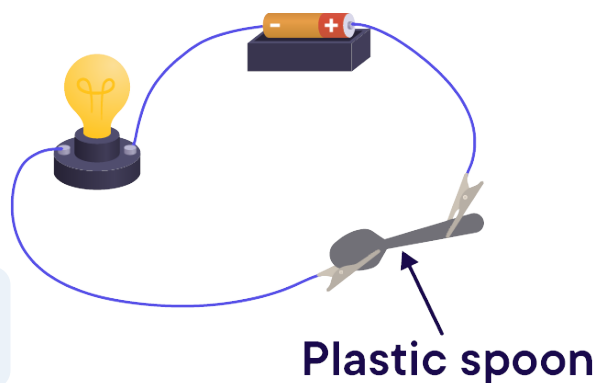
☐

Wires

☐

[1 mark]

- (c) Ahaan connects the clips to a plastic spoon.  
The bulb does not light up.



Which property of the plastic spoon causes the bulb to not light up?

Tick one **box**.



It is a poor conductor of heat

☐

It is an electrical insulator

☐

It has a smooth surface

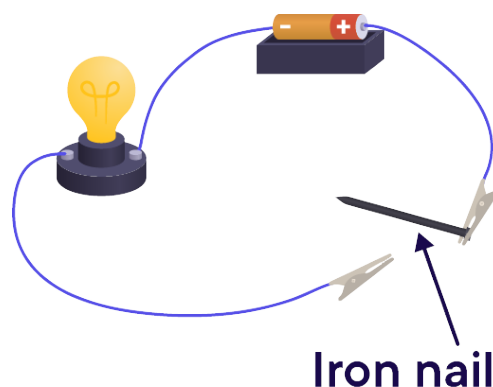
☐

It is a solid

☐

[1 mark]

- (d) Ahaan connects one end of an iron nail to one of the clips.  
The bulb does not light up.



Complete the sentence to give a reason why the bulb does not light up.



The bulb does not light up because.....

.....

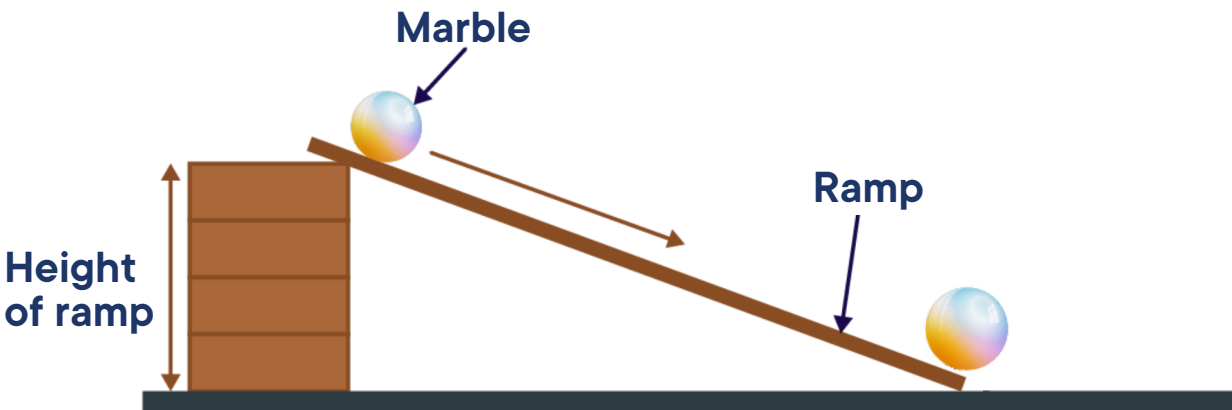
.....

[1 mark]


6. Rolling marbles

Zac is carrying out an investigation with a marble and a ramp.

- (a) Zac changes the height of the ramp.  
He then rolls the marble from the top of the ramp.  
He measures how long it takes for the marble to roll down the ramp.



Tick **one** box in each row to show how he should do his investigation to give reliable results.



| Factor                         | Must be the same | Must be different | Makes no difference |
|--------------------------------|------------------|-------------------|---------------------|
| Length of the ramp             |                  |                   |                     |
| Height of the ramp             |                  |                   |                     |
| Mass of the marble             |                  |                   |                     |
| Material the ramp is made from |                  |                   |                     |

[2 marks]

(b) Zac records the height of the ramp in centimetres (cm).

Suggest **one** other unit he could use to record the height of the ramp.


 ..... [1 mark]

(c) Once the marble reaches the end of the ramp, it rolls along the floor. A force called friction acts in the opposite direction to the direction in which the marble moves.



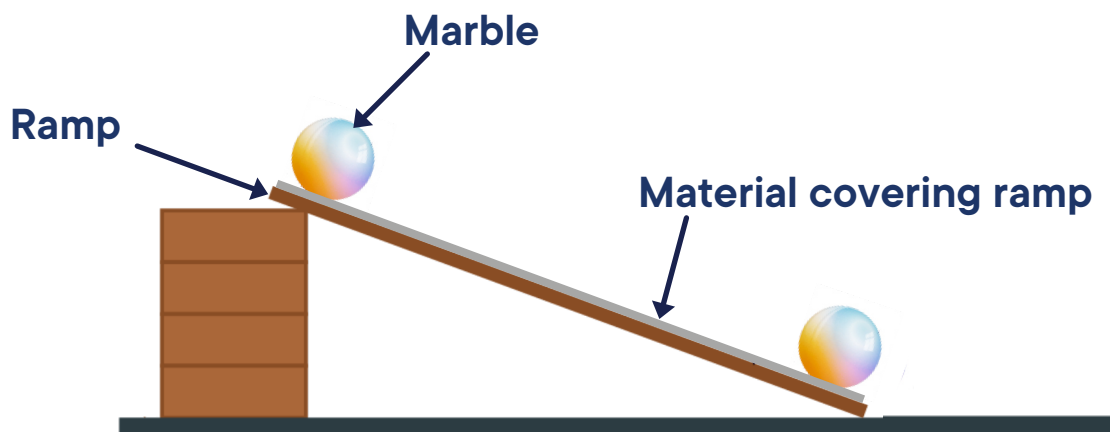
What effect does friction have on the marble?

Tick **one** box.

-  It causes the marble to speed up as it rolls further ☐
- It causes the marble to slow down and come to a stop ☐
- It causes the marble to move closer towards the floor ☐
- It causes the marble to suddenly change direction ☐

[1 mark]


- (d) Zac carries out a second experiment.  
This time, he covers the ramp with different materials.  
Again, he measures how long it takes for the marble to roll to the bottom of the ramp.



The table shows his results.

| Material         | Time for marble to roll down ramp (seconds) |
|------------------|---|
| Sandpaper        | 5   |
| Wood             | 3   |
| Plastic sheeting | 2   |
| Carpet           | 6   |
| Cardboard        | 4   |

On which material did the marble travel the **slowest** down the ramp?

 Sandpaper ☐

Wood ☐

Plastic sheeting ☐

Carpet ☐

Cardboard ☐

[1 mark]

## 7. Light

Isabella has a statue in her garden.  
The Sun is a light source that allows her to see the statue.

(a)

Which of these is also a light source?

Tick **one** box.



The Moon

☐

A torch

☐

Isabella's eyes

☐

A mirror

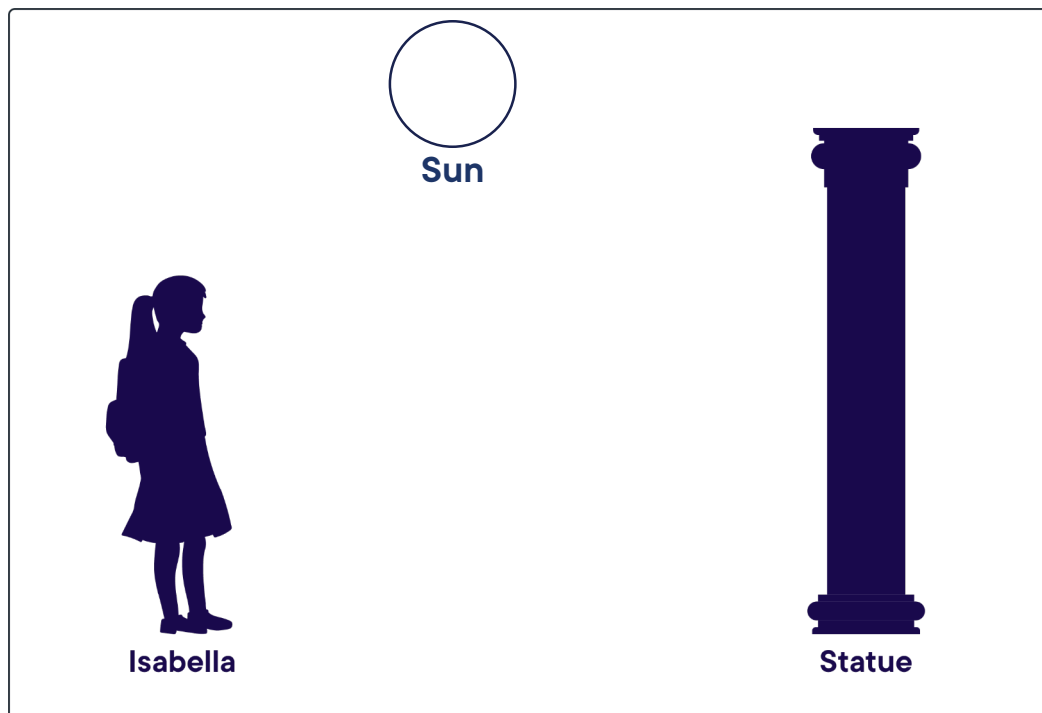
☐

[1 mark]

(b)

Isabella stands facing the statue.

Draw **two** arrows on the diagram to show how light from the Sun allows Isabella to see the statue.



[2 marks]



(c) Part of the statue is made from metal.  
The metal looks shiny.

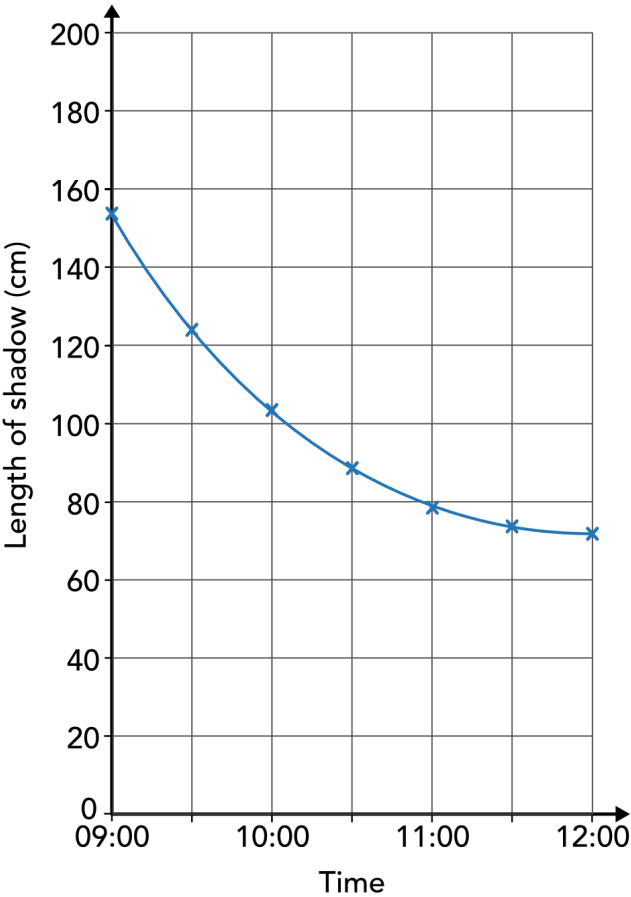
Complete the sentence to say why the metal looks shiny.  
Choose the correct word from the box.

- blocks,
- creates,
- dissolves,
- reflects



The metal ..... the light that shines on it. [1 mark]

(d) The statue casts a shadow.  
Isabella records the length of the shadow throughout the morning.  
The graph shows her results.



Describe what happens to the length of the shadow throughout the morning.



.....

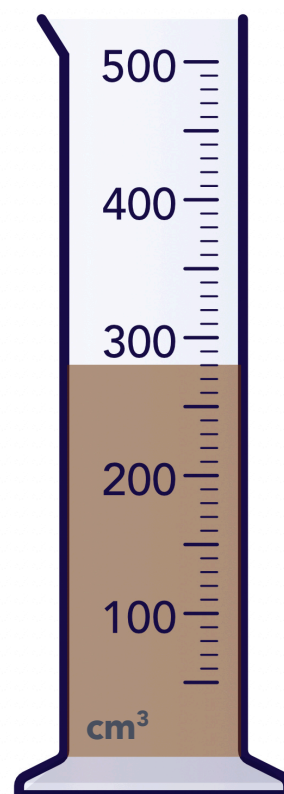
.....

[1 mark]

## 8. Investigating vinegar

Leia is investigating the boiling point of vinegar.

- (a) She pours some vinegar into a measuring cylinder.



What volume of vinegar is in the measuring cylinder?

 .....cm<sup>3</sup> [1 mark]

- (b) Leia places the vinegar into a container.

What could Leia do to boil the vinegar?

Tick **one** box.



Stir the vinegar with a spoon

☐

Heat the vinegar above a flame

☐

Place the vinegar in a freezer

☐

Place the vinegar in a dark cupboard

☐

[1 mark]

(c)

Leia records the boiling point of vinegar.  
She repeats this test four times.

Her results are shown in the table.

| Test number | Boiling point (°C) |
|-------------|--------------------|
| 1           | 118                |
| 2           | 117                |
| 3           | 118                |
| 4           | 118                |

How can you tell Leia's results are **precise**?

Tick one **box**.



The values are close together

☐

The values are whole numbers

☐

The values are close to 100

☐

The values are close to the true value

☐

[1 mark]

## 9. Bouncing balls

Some students investigate how high a ball bounces on different surfaces. They plan to drop the ball from 100 cm on to different surfaces.

- (a) Draw **one** line from each factor in the investigation to its description.



the height the ball  
is dropped from

the factor that is  
**changed**

the height the ball  
bounces

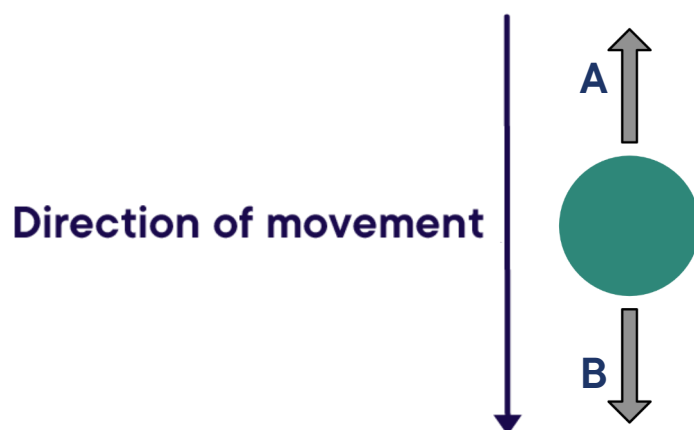
the factor that is  
**measured**

the surface the ball  
is dropped on

a factor that is  
**kept the same**

[2 marks]

- (b) This image represents the ball as it is falling.  
A and B represent forces that act on the ball as it falls.



Complete these sentences to name forces A and B.  
Use words from the box.

air resistance, thrust, tension, upthrust, weight



Force A is .....

Force B is ..... [2 marks]

(c)

The students bounce the ball three times on four different surfaces.  
The table shows their results.

| Surface         | Height of bounce (cm) |        |        |
|-----------------|-----------------------|--------|--------|
|                 | Test 1                | Test 2 | Test 3 |
| Concrete        | 65                    | 65     | 68     |
| Carpet          | 36                    | 34     | 37     |
| Grass           | 40                    | 43     | 21     |
| Wood floorboard | 53                    | 49     | 50     |

Which result in the table should they check again?  
Write the surface and the test number.

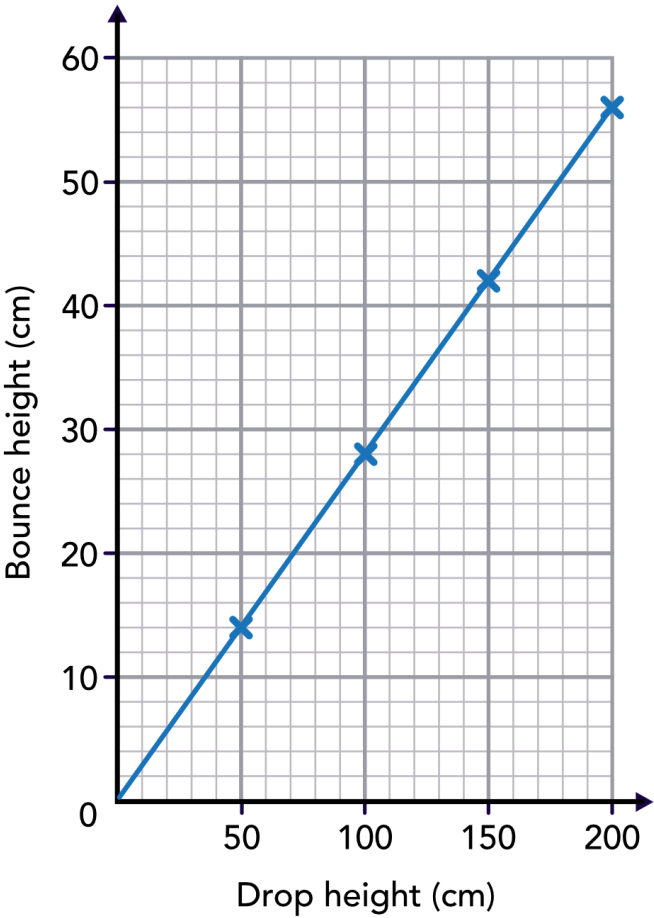


Surface: .....

Test number: ..... [1 mark]

(d)

The students carry out a second investigation.  
They drop a ball from different heights onto a tiled floor.  
Each time, they record how high the ball bounced.  
The graph shows their results.



How high did the ball bounce when it was dropped from **150 cm**?



..... cm [1 mark]

## 10. Keeping drinks warm

Molly is investigating the properties of materials.



**Aluminium foil**




**Cotton**



**Plastic wrap**

- (a) Some materials that Molly will investigate are shown above.

Complete the table to show the properties of **plastic wrap**.  
The rows for aluminium foil and cotton have been done for you.



| Material       | Property |       |             |
|----------------|----------|-------|-------------|
|                | Flexible | Shiny | Transparent |
| Aluminium foil | ✓        | ✓     |             |
| Cotton         | ✓        |       |             |
| Plastic wrap   |          |       |             |

[1 mark]

- (b) Molly wants to find the best material to wrap a cup in to keep a drink warm.

Which property will a material have if it can keep a drink warm?

Tick one **box**.



Electrical conductor

☐

Opaque

☐

Soft

☐

Thermal insulator

☐

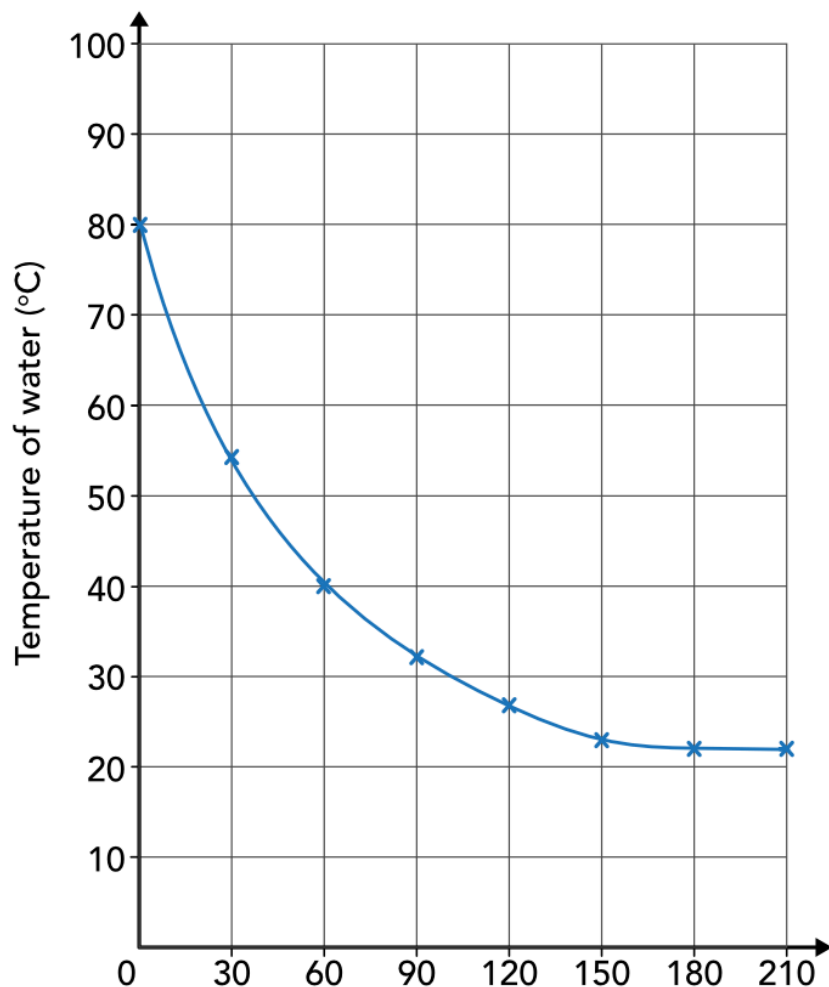
[1 mark]

(c)

Molly wrapped a cup of boiling water with aluminium foil. She recorded the temperature of the water in the cup every 30 minutes. The graph shows her results.

The vertical axis is labelled.

Write the label and units of the **horizontal axis**.

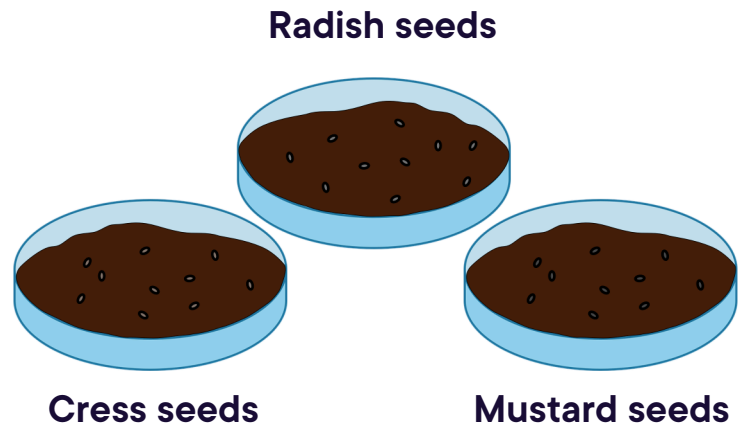


.....

[1 mark]

## 11. Germinating seeds

Ibrahim wants to find out if some types of seed germinate more quickly than others. He fills three dishes with soil and plants different types of seeds in each dish.



- (a) Ibrahim plants ten seeds of each type.

Suggest why it is a good idea to plant ten seeds rather than just one.



.....

.....

.....

[1 mark]

- (b) Ibrahim needs to make sure the seeds have all they need to germinate.

What should Ibrahim should do to make sure the seeds can germinate?

Tick **one** box.



Blow air over the seeds

☐

Heat the seeds in an oven

☐

Put the seeds in a dark cupboard

☐

Water the seeds

☐

[1 mark]



(c) Ibrahim counts how many of the ten seeds in each dish had germinated after 3 days, 5 days and 7 days. The table shows his results.

| Type of seed | Number of seeds germinated |              |              |
|--------------|----------------------------|--------------|--------------|
|              | After 3 days               | After 5 days | After 7 days |
| Cress        | 3                          | 4            | 9            |
| Mustard      | 2                          | 6            | 7            |
| Radish       | 0                          | 0            | 4            |

Use Ibrahim's results to decide if each conclusion is **true** or **false** or if you **cannot tell**.

Tick one box for each conclusion.



|   | True                     | False                    | Cannot tell              |
|---|--------------------------|--------------------------|--------------------------|
| Fewest radish seeds germinated by day 7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| No mustard seeds germinated on day 1    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| All the cress seeds germinated by day 7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

[2 marks]

End of assessment