

Department of Science

SCIENCE SAMPLE PAPER

General information

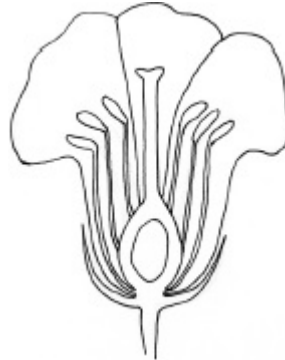
1. You do **not** need to answer in full sentences.
2. You can write in pencil or pen.
3. If you are unsure about a question, read it again carefully and look for clues in the question. If you are still unsure, move on to the next question and come back to this one at the end.
4. Please do not worry if you have not covered some of the topics and skills in your current school – this lets us see which areas you might need a bit of help with at the start of Year 7.

Q1.

Seed dispersal

- (a) The diagram shows a flower cut in half.

Put a **cross (X)** on the diagram to show where the seed develops.



1 mark

- (b) Class 6 has collected different types of seed.

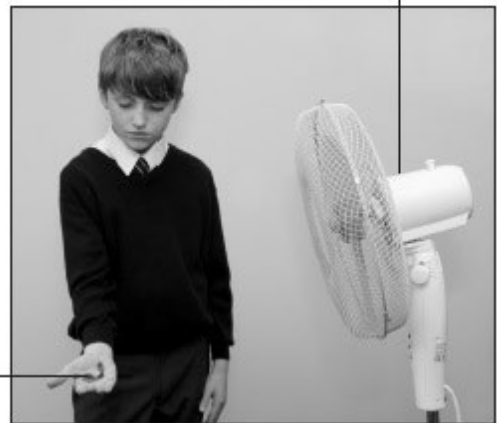
They blow the seeds with a fan.

This disperses the seeds.

They measure how far each seed travels.

seed

fan



What equipment can measure how far the seeds travel?



1 mark





- (c) The seeds can be blown by the children's mouths or with a fan.

Explain why the fan helps to make the test fair.



1 mark

(d) Here is a table of the children's results using a fan.

Plant	sycamore	apple	bulrush	oak
Seed				
Distance travelled (cm)	76	27	149	0

The sycamore seed and bulrush seed travel the furthest distances.

They fall slowly from the plant so the wind has more time to blow them away.

Tick **ONE** box to show which features of the seeds help them to fall slowly.



They are smooth and soft.

☐

They have a large area and are heavy.

☐

They have a large area and are light.

☐

They are flexible and soft.

☐

1 mark

(e) Name the force that **slows** the seeds as they fall.



_____ 1 mark

(f) The children dispersed the seeds with a fan.
The fan disperses seeds like the wind does in nature.

Name **ONE** other way seeds are dispersed in nature.



_____ 1 mark

Q2.

Sun, Earth and Moon

- (a) Yu Lin is using fruit to model the Sun, Earth and Moon.



Orange



Strawberry



Cherry



Melon



Pear



Lemon

Complete the table to show the best fruit for modelling the Sun, Earth and Moon. Think about the size and shape.



Object in space	Sun	Earth	Moon
Which fruit should be used for the model?			

1 mark

- (b) Yu Lin is in the playground on a sunny day.

- (i) Tick **ONE** box on the following page, to show when Yu Lin's shadow will be shortest.



before school: 8.30 – 9.00 am

☐

morning break: 10.30 – 10.45 am

☐

lunch break: 12.00 – 1.00 pm

☐

afternoon break: 2.30 – 2.45 pm

☐

after school: 3.30 – 3.45 pm

☐

1 mark

- (ii) Tick **ONE** box to show which movement in space causes Yu Lin's shadow to change length during the day.



the spin of
the Earth

☐

the Earth orbiting
the Sun

☐

the spin of the
Sun

☐

the Moon orbiting
the Earth

☐

1 mark

- (c) Complete the table below about the different movements in space.

Movement in space	Time movement takes
Earth orbits the Sun	365 days
Earth spins once on its axis
.....	28 days

2 marks

Q3. Flowing oil

- (a) Jay and Aashna want to find out how quickly cooking oil flows at different temperatures.

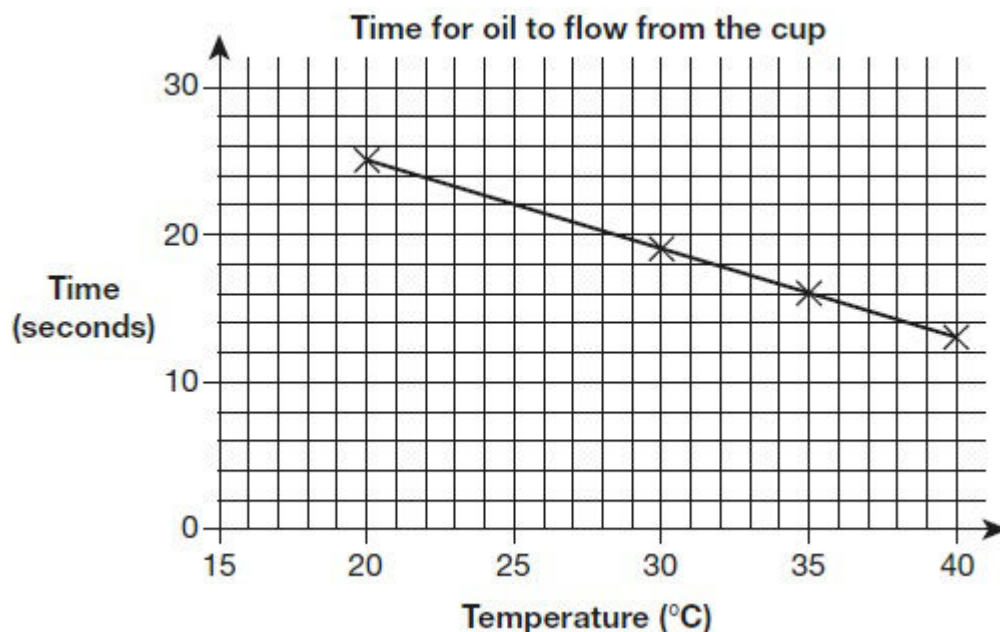
Jay has some oil at room temperature. He pours it into a cup with a hole in the bottom.

Aashna measures the time it takes for 20 ml of oil to drip out of the cup.



They repeat this with oil heated to 30°C, 35°C and 40°C.

They record their results on a graph.



Use the graph to estimate how long it would take for the oil heated to **25°C** to drip out of the cup.

_____ seconds

1 mark

- (b) As the oil becomes hotter, it flows more easily.

This changes the time it takes to drip out of the cup.

Use the graph. Describe how the **temperature** of the oil affects the **time** taken for the oil to drip out of the cup.

1 mark

- (c) Describe **ONE** thing that Jay and Aashna did to make their test fair.

1 mark

- (d) The teacher told Jay and Aashna to heat the oil by putting it in a bowl of hot water.



Give **ONE** reason why it could be dangerous to heat the oil over a flame.



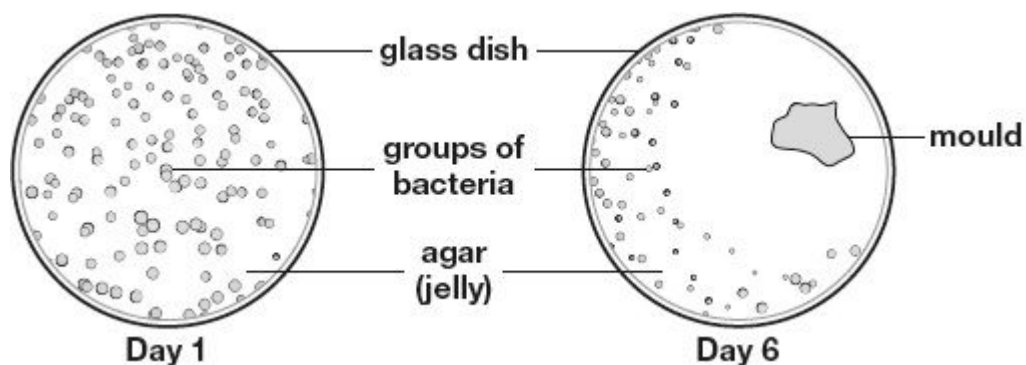
1 mark

Q4. Penicillin

- (a) In 1928 a scientist called Alexander Fleming grew micro-organisms called bacteria. Growth shows that bacteria are living things.

The bacteria grew on agar (jelly) in glass dishes.

After a few days Fleming saw mould growing in one of the glass dishes.



- (i) Sort the five things in the box below into **living** and **non-living** things. One has been done for you.

bacteria	glass dish	mould	agar (jelly)	human
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Living things	Non-living things
<i>bacteria</i>	

1 mark

- (ii) Growing is a life process.

Name **ONE** other life process.



1 mark

- (b) Bacteria can cause disease.

Fleming thought he could use the mould to help cure disease caused by bacteria.

Look at the pictures above for **Day 1** and **Day 6**.

Use the evidence in the pictures to explain why Fleming thought the mould could be used to cure disease.



1 mark

- (c) Fleming used the mould to make a medicine called penicillin.

It took over 10 years for penicillin to be first used by doctors.

Write **true** or **false** next to each statement to show why it took a long time for penicillin to be used as a medicine.



True or False?

The medicine had to be tested to make sure it was safe.

Scientists had to find a way of making lots of penicillin at a time.

It took 10 years for the mould to start growing.

Fleming needed to check that his ideas were correct.

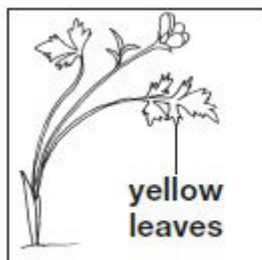
2 marks

Q5.

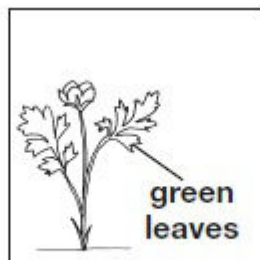
Plants on the school field

- (a) Some children are finding out about plants. They get three buttercup plants. They put each plant in a place with different conditions.

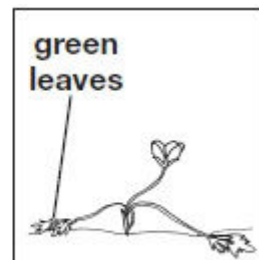
After two weeks, the buttercup plants look like this:



Place A



Place B



Place C

Write **A**, **B**, and **C** in the table below to match each place to the conditions found there.



Place	Conditions	
	Does the plant have light?	Does the plant have water?
	✓	✓
	✓	X
	X	✓

1 mark

- (b) There are differences between plants.
These differences help people sort plants into groups.

Write **true** or **false** next to each reason that explains why plants need to be sorted into groups.



Plants need to be sorted into groups...

True or False?

to stop plants becoming extinct.

to help people identify plants

to help plants reproduce.

1 mark

- (c) The children look at different plants on the school field.

They record the number of common plantain and buttercup plants in 1m² in different places.



Common plantain



Buttercup

The children think they see a pattern in the place that the plants grow.

The table shows their results.

How many children are playing in each place?	Number of plants (in 1m ²)	
	common plantains	buttercups
lots	12	0
some	4	3
few	1	9

Describe the relationship between **how many children** are playing in a place and the **number of common plantains** found there.



1 mark

- (d) The buttercup plant has a long thin stem.

The long thin stem of the buttercup plant stops it surviving in places where lots of children play. Explain why.



1 mar