

GCSE Transition Assessment

Part B: Working scientifically

Time allowed: **20 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.
- You may use a calculator.

Information

- The assessment is 20 minutes long.
- The maximum mark for this assessment is 25.
- The marks available for each question are shown in brackets [].

Total marks :

/25

1. A student investigated how air temperature affected the growth of lettuce plants.
They placed trays of compost in areas with different air temperatures.
They planted ten lettuce plants in each tray.
They recorded the average growth of the plants after 7 days.

1.a Give the independent and dependent variables in this investigation.

Independent variable:

Dependent variable:

[2]

1.b At the start of the investigation, one of the plants is 28.4 cm tall.

What is the height of this plant in millimetres?

..... mm

[1]

1.c The student's results are shown in the table.

Temperature (°C)	Mean growth after 7 days (cm)
10	1.0
15	2.6
20	4.3
25	5.5
30	3.1

At which temperature did the lettuce plants grow most?

Tick **one** box.

10°C 15°C 20°C 25°C 30°C

[1]

/ 4

2. A student investigated the wildlife in a park.

They counted the number of individuals of **all** the different bird species in four different areas.

Area	Number of individuals			
	Blackbird	Woodpigeon	Robin	Sparrow
A	23	5	2	0
B	4	?	0	2
C	0	11	0	0
D	8	25	3	1
Totals	35	48	5	3

2.a Calculate the number of woodpigeons in area B.

..... [1]

2.b Look at the student's data in the table above.

Which of the following conclusions can you draw from the data?

Tick **one** box.

There are fewer robins than sparrows in the park

Area C contains the fewest different bird species

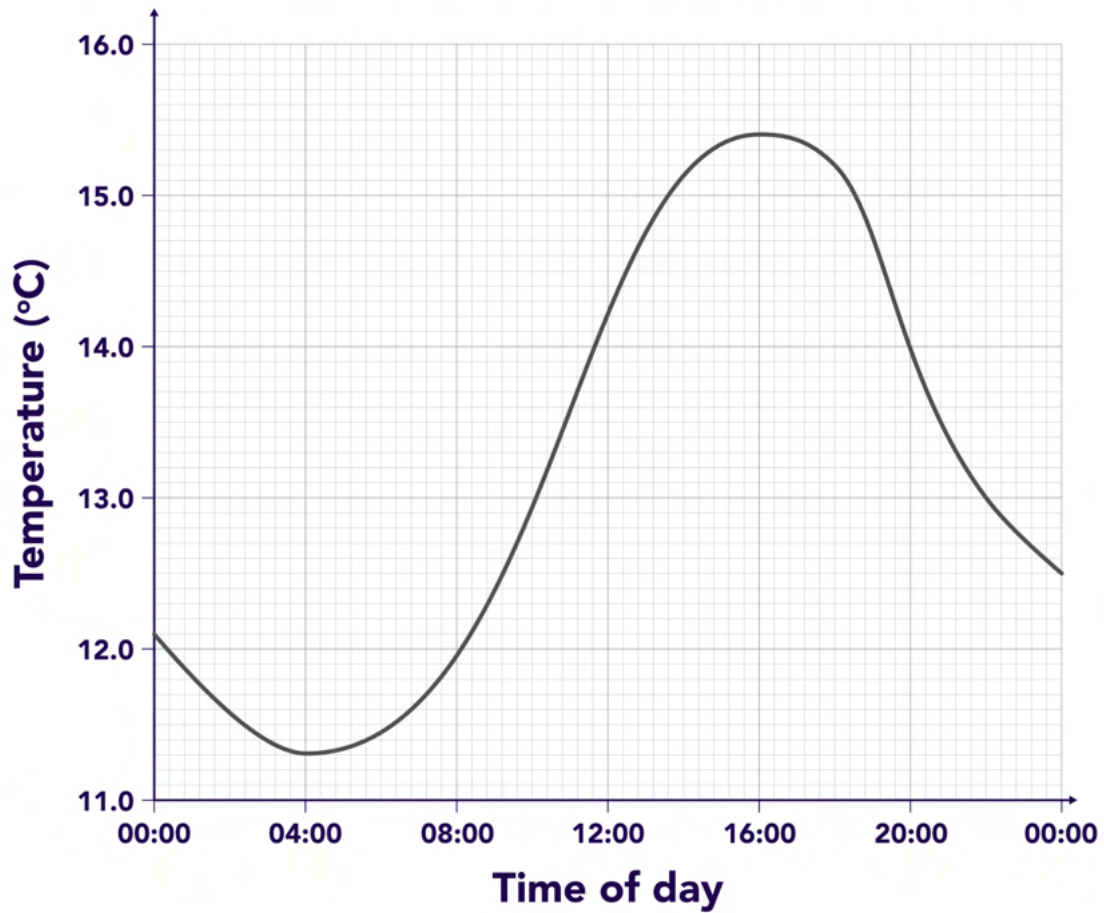
There are more woodpigeons in the park than any other animal species

Area A contains at least four different species

[1]

2.c

The student measured the temperature of the water in a pond in the park. The graph shows the water temperature over a 24-hour period.



What was the maximum temperature of the pond water?

..... °C

[1]

/ 3

Questions continue on next page

3. A student plans to use boiling point data to help decide whether a water sample is pure.

This is their method:

Step 1: Measure out a 50 cm³ sample of tap water into a beaker.

Step 2: Place the beaker over a Bunsen burner.

Step 3: Heat the water until the water boils and the temperature stays constant.

Step 4: Record this temperature as the boiling point.

3.a What is the main risk as the student heats the water?

.....

.....

.....

[1]

3.b Name a piece of equipment they could use in step 3 to record the temperature of the water.

.....

[1]

3.c The student repeated the experiment four times.
The table shows their results.

Test	Temperature (°C)
1	99.8
2	100.1
3	100.0
4	99.7

What was the mean boiling point of the sample?

..... °C

[2]

3.d The student's results are both accurate and precise.

Draw **one** line from each term to the feature of the student's results that demonstrates this.

Term

Feature of the results

Accurate

They are close to the actual boiling point of water

They are taken by the same student

Precise

They are written to at least one decimal place

They are close to each other

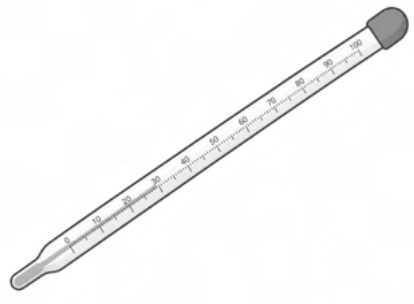
[2]

16

4. A student applied different masses to a spring to measure how much the spring extended by.

4.a Which of these pieces of equipment should they use to measure mass?

Tick **one** box.



[1]

4.b The student uses slotted masses with a mass of 50 g.

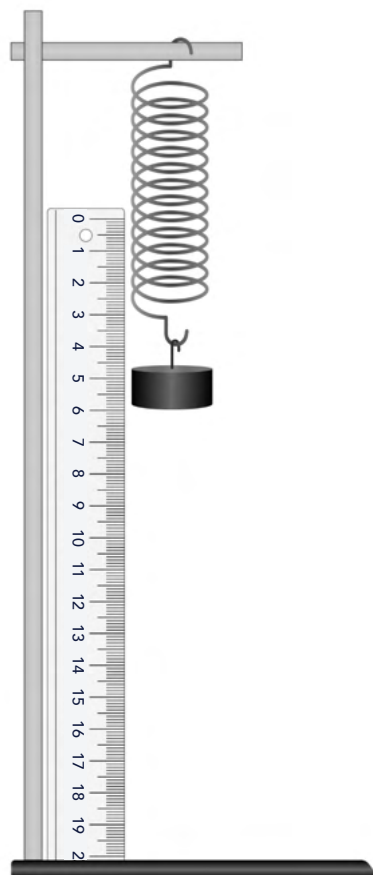
What is 50 g in kg?

..... kg

[1]

4.c

The diagram shows the student's equipment for measuring how mass affects the spring's extension.



Give **one** safety precaution the student should have taken during this investigation.

.....

.....

.....

[1]

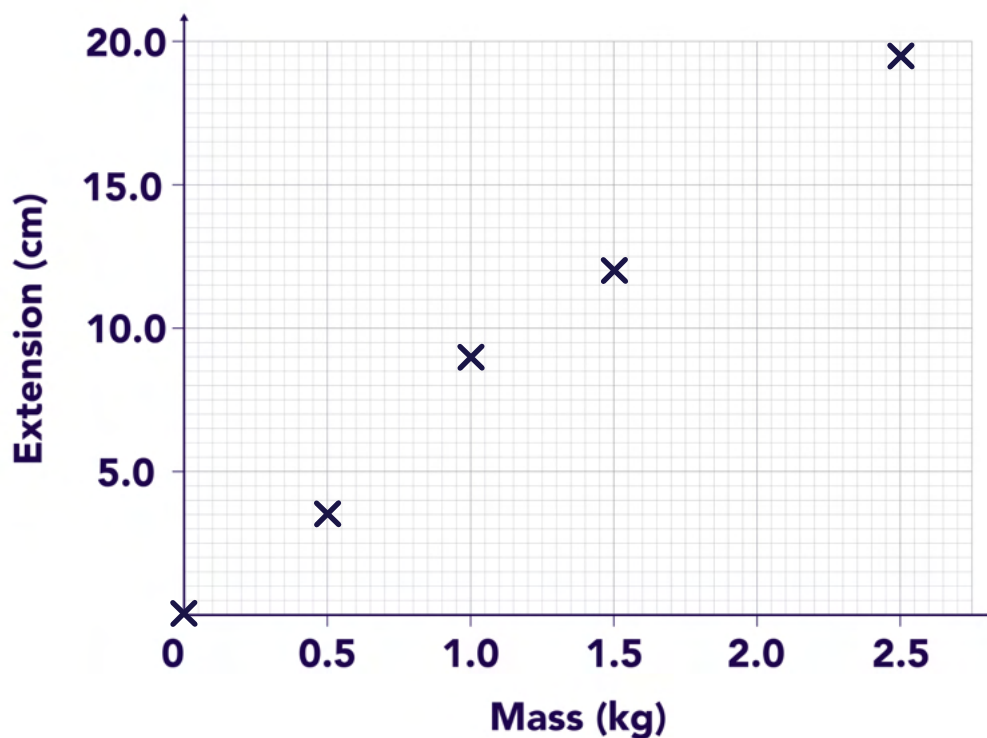
4.d

The table shows the student's results.

Mass (kg)	Extension (cm)
0.0	0.0
0.5	3.5
1.0	9.0
1.5	12.0
2.0	16.5
2.5	19.5

Some of their results have been plotted on the graph shown.

Complete the graph by plotting the missing data from the table. Draw a line of best fit.



[2]

4.e

Write a conclusion to describe how mass affects the extension of the spring.

.....

.....

.....

[1]

4.f The student used the mass applied to the spring to calculate the force applied.

What is the standard unit of force?

.....

[1]

17

5. A student monitors the change in pH when different indigestion tablets react with hydrochloric acid.

This is their method:

Step 1: Measure 25 cm³ of hydrochloric acid into a beaker.

Step 2: Add one indigestion tablet to the acid and stir gently.

Step 3: Measure the pH of the solution once the reaction has finished.

Step 4: Repeat the experiment using a different indigestion tablet.

5.a What is the independent variable in this investigation?

.....

.....

[1]

5.b Give **two** control variables in this investigation.

.....

.....

.....

[2]

5.c Name a piece of equipment the student could use to measure the volume of hydrochloric acid in step 1.

.....

[1]

5.d Here are the student's results.

Indigestion tablet	Final pH
A	5.6
B	6.2
C	7.0
D	6.4

Which type of graph would be most appropriate to show this data?

Tick **one** box.

Bar graph

Pie chart

Line graph

Scatter graph

[1]

/ 5

End of questions