

# Assessment tasks

## 6.1 Formal assessment

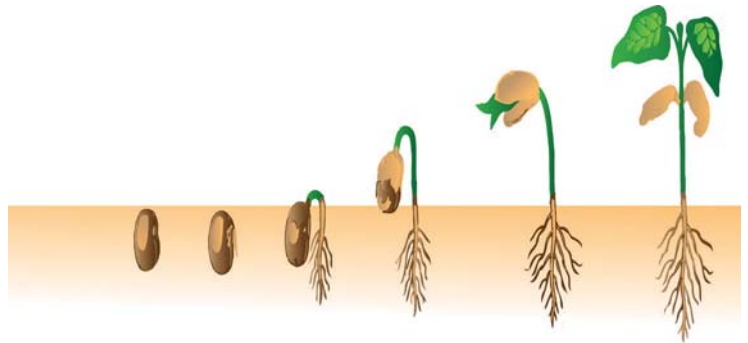


# Practical investigation

**Aim:** To investigate the germination of a bean seed.

## Requirements:

- A two litre plastic cooldrink bottle (preferably the kind with straight sides)
- A good pair of scissors
- Strong papertowels (the type you use in the kitchen)
- Soil
- Four bean seeds (any kind)
- A piece of string
- A ruler



## Method:

1. Cut off the top of the cooldrink bottle so it looks like a large glass.
2. Turn the bottle upside-down and make a few holes in the bottom so excess water can drain.
3. Dampen the paper towel slightly and fold it into a cylinder that fits on the inside of the bottle. The paper towel must be hollow and securely pushed against the side of the bottle.
4. Fill the space on the inside of the paper towel cylinder with garden soil. Do not wet the soil yet. Remember to place your bottle on a dish or saucer to catch the water that runs out below.
5. Push bean seeds in against the side of the bottle, so they are between the plastic container and the paper towel. The seeds must be easily visible. It is best to push the seeds about  $\frac{1}{3}$  of the way down, against the side of the bottle. Put four bean seeds evenly around the outside of the paper in the bottle, to ensure that at least one will grow properly.
6. Pour water in. The soil must be damp, but not too wet. You can pour a little water onto the soil every second day.
7. For fourteen days, you must monitor the development of the seeds and note any changes.
8. After two weeks you can replant the seedlings into a bowl with soil. You can observe the further development of the plant until it forms flowers and fruit.

## Observations:

1. Describe the changes in the first seven days.

Day	Description of changes
1	
2	
3	
4	
5	
6	
7	

2. Choose one of your seedlings and do the following:
- Take the piece of string and measure the length of the bean plant each day, from the time the first stem appears.
  - Measure the plant from the bottom end of the stem to the top end of the end bud.
  - Measure the length of the string on a ruler. Note it on the table.
  - Remember to give the table a descriptive heading.
  - Also remember to write the units only in the headings of the columns.



length of the plant

Day	Length (mm)	Day	Length (mm)
1		8	
2		9	
3		10	
4		11	
5		12	
6		13	
7		14	

3. Use the following set of axes and draw a line graph of the growth of the bean seed over fourteen days.

---



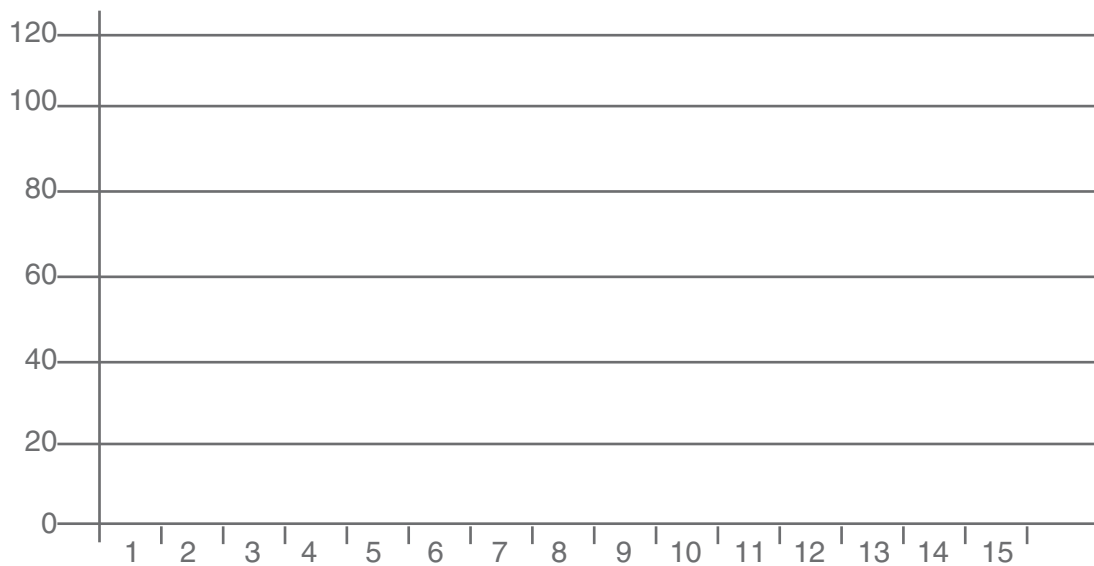
---



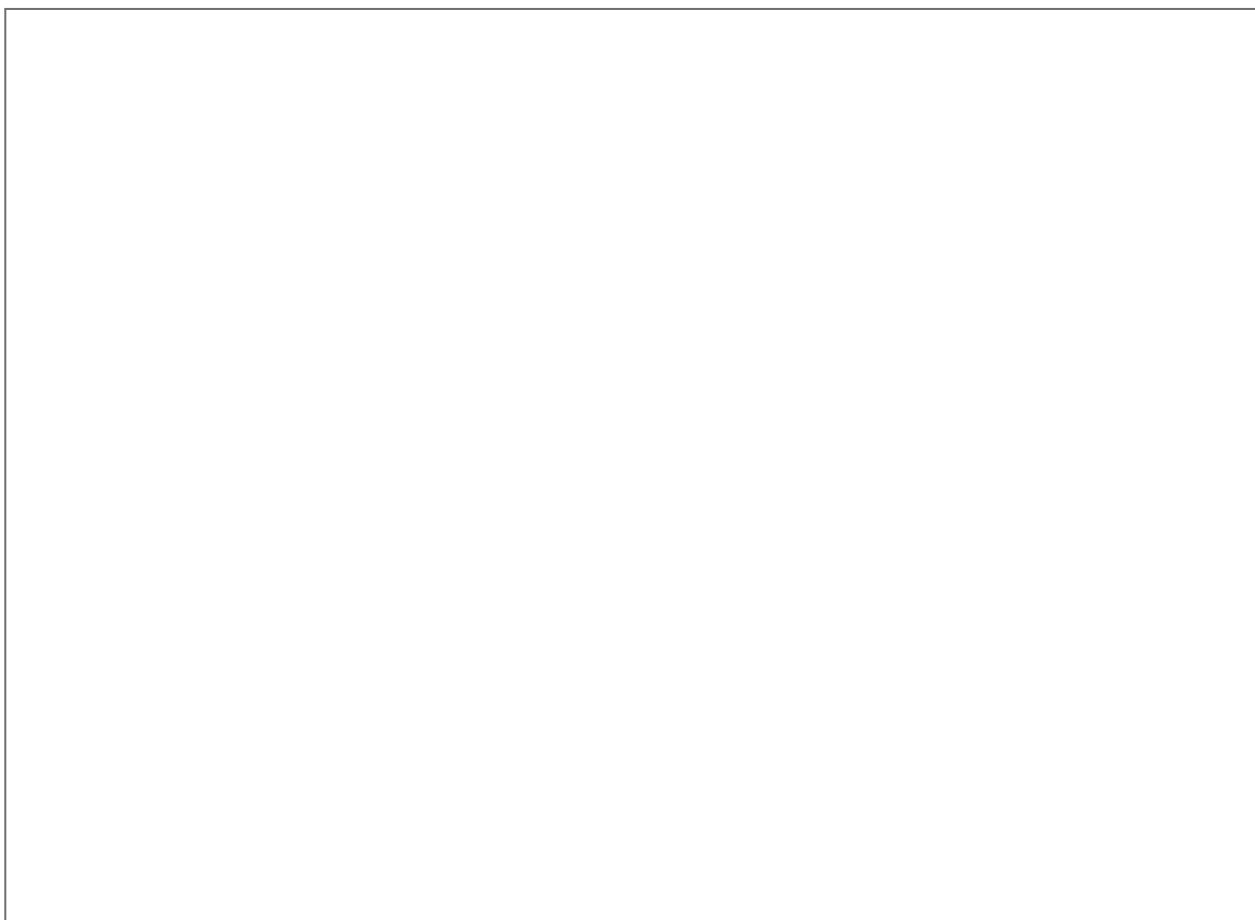
---



---



4. Draw a fully labelled sketch of the structure of the bean plant after fourteen days.



The sketch can be assessed according to the following rubric.

	<b>Actual mark</b>	<b>Possible mark</b>
Size of sketch		2/1/0
Proportion of sketch		2/1/0
No shading		1/0
Quality of lines		2/1/0
Heading		2/1/0
Detail		3/2/1/0
Label lines in pen		1/0
Labels in pen		1/0
Labels on the right		1/0
Label lines do not cross.		1/0
Label lines are parallel.		1/0
Correct labels		$6 \times \frac{1}{2} = 3$
<b>TOTAL:</b>		<b>20</b>