

Plants and how they grow

→ Teacher Guidance

Activity 4: How fast does a root grow?

In this activity, seeds are grown in Petri dishes so children can make direct observations of the roots as they grow. The activity requires measurements over a number of days. The conversion of the results to growth rate makes links with numeracy skills.

For details of the technique, see page 8 (Germinating seeds in Petri dishes). The Pupil Sheet (page 10) can be used to help the children see how to set up the seeds on the filter paper in the Petri dish. A Word file is provided on the SAPS website for you to download and amend to suit your class.

The activity

You need to arrange the seeds along a line about one-third from the 'top' of the Petri dish (when standing vertically). The diagram given in Figure 7 on page 9 can be used as a template for the acetate grid.

An outline of what the children do is given on the Pupil Sheet (on page 10). Results can be written in the table given on page 27. The Pupil Sheet on page 27 gives guidance as to how they can record and evaluate their results. Alternatively, you may wish to give the children the opportunity to enter data on a simple spreadsheet and use ICT skills to draw graphs. A digital camera may also offer a useful way of providing a visual record of the results.

A number of activities can be developed from this investigation. Here are some ideas:

1. Draw a line graph, using either the number of squares or the actual length in mm. Then extend their line to day 10, to read off their estimated length on that day (Question 2 on the Pupil Sheet).
2. Measure the growth of the shoot as well as that of the root. Then ask the question as to why they think the root grows faster than the shoot (at least at first).
3. 'Can you make a root of a plant move through a maze?' – see *Primary OSMOSIS* **22** (February 2002).

Curriculum links

National Curriculum (Sc2)	KS2: 3c
QCA guidelines – Scheme of work	Unit 3B
Scottish ISE 5-14 framework/attainment targets	LT-D2.4

How fast does a root grow?

How many squares does the root of the seed grow in one day?
The length it grows in a given time is called the growth rate.

- Choose one seed from those growing on the grid in the Petri dish.
- Each day measure the length of its root.
- Use the table below to help you calculate the growth rate of the root.

Day	Number of squares the root has grown down	Each square is 2 mm. So the length of the root in mm is
1		
2		
3		
4		
5		
6		

To work out the growth rate, you need to find two numbers. Follow the steps below.

1. For how many days did your seed grow? _____ days
2. At the end of your investigations, what was the length of the root? _____ mm

Now work out the average length the root grew each day.

My root grew _____

Your answer is the growth rate over 6 days.

Look carefully at your results and then answer these questions.

1. Did your root grow the same length each day? _____
2. If the growth rate stays the same, how long would the root be on day 10? _____