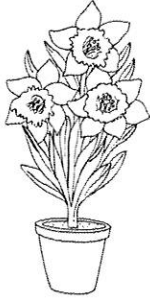


## HELP

- 1** The diagrams show Carly's plant. Carly has been ill and spent a week in bed, just after she bought the plant from the florist.

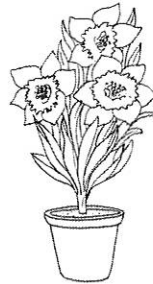
Plant on  
day 1



Plant after  
7 days



Plant after  
8 days

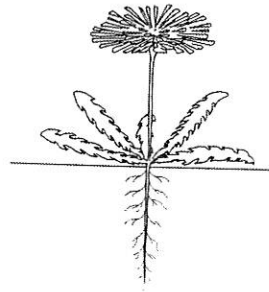


- a** Copy and complete the sentences below.
- i** After one week the soil in Carly's plant pot had ... .
  - ii** We know that Carly watered her plant on the seventh day because ... .
  - iii** To keep her plant from drooping again Carly must ... .
  - iv** Carly should add fertiliser to the plant pot because ... .
  - v** When Carly pulls on the stem of the plant it comes out of the pot with all the soil attached because ... .
- b**
- i** What process uses the water that Carly adds to the soil?
  - ii** Where in the plant does this process happen?
  - iii** How does the water get from the roots to this place?

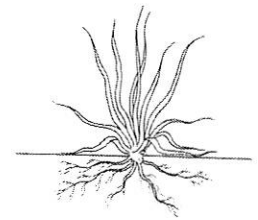
## CORE

**2** Dandelions have a single 'tap' root that goes down a very long way into the soil. Couch grass has a mass of fine roots that spread out just under the surface of the soil.

dandelion



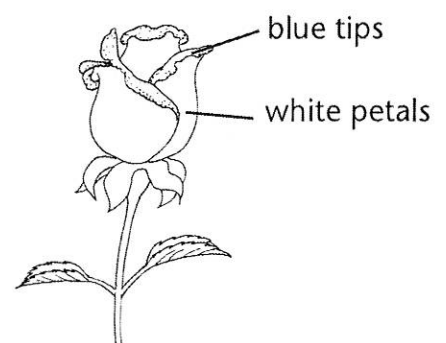
couch grass



- a i** What is the disadvantage of a single tap root?
- ii** What is the advantage of a root that goes a long way down into the soil?
- b i** What is the advantage of having a mass of spreading roots?
- ii** What is the disadvantage of roots that are all close to the soil surface?
- c** Both types of roots have tiny root hairs.
- i** Describe what a root hair cell is like.
- ii** Explain how root hair cells improve the uptake of water by the plant.
- d i** What important substances, other than water, are also absorbed by roots?
- ii** Explain how the roots are able to absorb these substances.

## EXTENSION

**3** The diagram shows a white rose that has been specially treated by the grower. Normal white roses do not have coloured tips to their petals. After it was cut for sale, the rose was placed into a container of blue dye for a while. Then it was taken out and put back into fresh water.



- a i** Explain how the blue colour has reached the tips of the petals.
- ii** Why is the blue colour only in the tips of each petal and not all over the whole of each petal?
- iii** What should the grower do if she wants the petals to have red tips instead of blue tips?
- b** The petals in the rose need sugars but cannot make it.
- i** Why can't the petals make sugars?
- ii** How do sugars get to the petals?
- c** Give a reason why all cells need water, other than for photosynthesis.