GROWTH

During the chapter 'seeds and their germination' in class 6, you saw embryo of different seeds. You also discovered that when a seed gets both water and air it germinates.

After eating mangos, jamuns, sitafal, orange, and other fruits we throw away their seeds. You might have seen these seeds sprouting after one or two showers in the monsoon. Slowly the embryo grows into a small plant then into a tree bearing flowers and fruits. Great changes occur in the size, shape and weight of the seedling during this process.

You might have seen a newborn calf growing big in the same manner. You must also have noticed that a calf develops quite fast and becomes a full grown milch cow. Likewise, a little baby grows until in some 20 years she becomes a full grown person. During this process of growth her height and weight increase manifold.

Can a pebble also grow like this? (1)

Which characteristic of living beings is apparent from this distinction between rocks and seeds? (2)

What is development?

Does a sprout change only in length and weight ? (3)

If a sprout changes only in length and weight, would it become a plant having stem, branches, leaves, fruits and other parts? (4)

Make a list of 5 parts that you find in a fully developed plant but not in an embryo 1 or 2 days old. (5)

Can a 2 or 3 month old baby speak or run like an adult? (6)

Have you ever seen a 2 or 3 month old baby having a moustache? (7).

Write at least 5 differences in the body parts and behaviour between a 2-3 month old baby and an adult. (8)

Similarly, look at a calf and a 3 or 4 year old cow and make a list of the differences you find between them. (9)

You have just seen that size is not the only thing that changes when something grows. New parts also form. Along with increase in age, the living being's behaviour also slowly changes, and some new processes also emerge.

The changes that accompany the growth of any plant or animal is called **development**.

Our discussion of development will also be continued in another chapter. In this chapter we shall talk about growth in size.

Experiment -1

Comparison of growth

Fill two clay pots (*kulhad*) with soil from a garden or a farm. Get some seeds of *chana, moong, sem* or some other dicot seed. Select two good seeds of the same kind and plant one in each pot, at a depth of about 1 cm. Water both the pots and let them stand in a place where they get some light. Take care that they are not disturbed for the duration of the experiment, and water them regularly. If your plants dry up, the experiment will be ruined. After 3 or 4 days the sprouts will appear.

The day a sprout comes out will be called day 1 for that plant. Note this date in your note book for each plant. The following days will be called day 2, day 3 and so on.

On the day a sprout appears (day 1) start measuring its height from the surface of the soil. Fix a convenient time to make your measurements. For the first 10 days (from day 1 to day 10), measure the heights everyday, and thereafter measure them every other day at the chosen time. Write down all your measurements of the heights in table 1 as shown.

Write down all observations of hight according to table-1. (10)

Plant growth

Date seeds were planted:

Date sprouts emerged from the soil:

Plant Number 1......................... (day 1)

Plant Number 2......................... (day 1)

Table-1

Days	Height (cm)	
	plant no. 1	plant no. 2
1.		
2.		
3.		
..		
..		
10		
12		
14		
..		
20		

If a plant is not growing straight, you may have to use a string to measure its height. However, if the plant grows straight, you can measure it simply with a scale.

Make a graph to show the relation between the heights of the plants and the day of growth as shown in figure 2. (11)
Do the heights of both the plants increase at the same rate? (12)
If not, what is the difference? (13)

The seeds of both the plants were planted at the same time.

Even so, why are there differences in their growth? Think about it and write your answer. (14)
What did you learn about diversity among living beings on the basis of this experiment? (15)

Look carefully at your graph. Do plants always grow with a constant rate or does the rate change?

In order to answer this question, calculate the growth for every 4 day period from the data in Table 1 and write it down in table 2. (16)
Compare the seed's growth for the period from the day 0 to day 4 with its growth for each of the following periods: day 4 to day 8, day 8 to day 12 etc. (17)
Does the plant always grow at the same rate? (18)
For which 4-day period did the height of the plant increse the fastest? And for which 4 days was the growth slowest? (19)
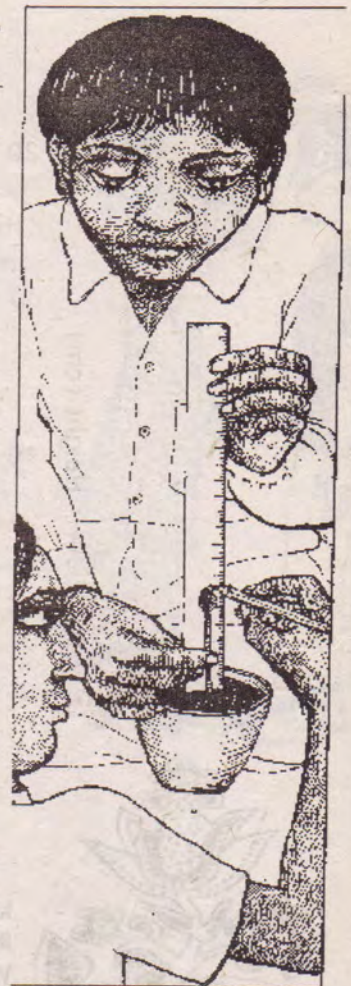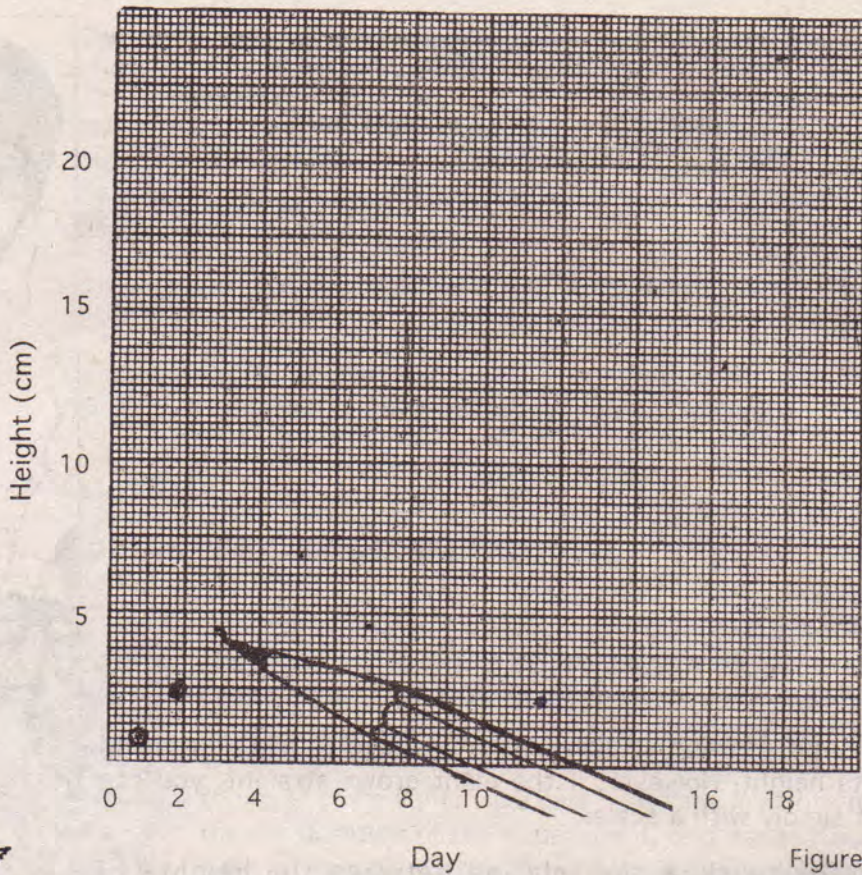Looking at your graph can you conclude whether a plant

Figure-1

Figure-2

keeps on growing in height or does the growth almost stop after some time? (20)

What would happen if a living being never stops growing? (21)

Growth of the plants during every four day period

Table-2

days	Difference in height	
	Plant No.1	Plant No. 2
0 to 4		
4 to 8		
8 to 12		
12 to 16		
16 to 20		

Example :

Growth from day 4 to day 8

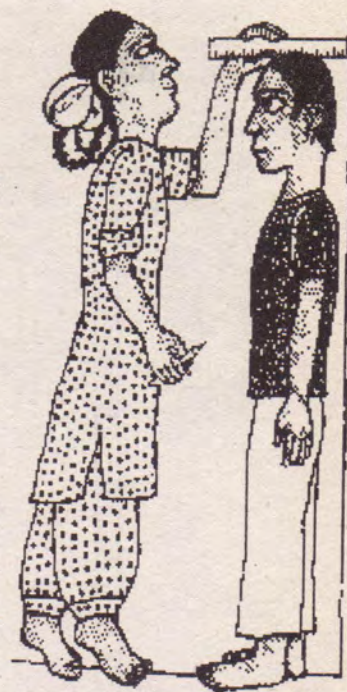= (height on day 8) - (height on day 4)

For most plants, animals and people you can see that just after birth (or germination for plants) the growth is very slow for some time, then it's very fast for a while, and then it gets slower and slower till it finally stops.

Some thing special to do

Make table 3 in your note book and fill in the names of all the students in your class. Add their birthdays and heights to the table.
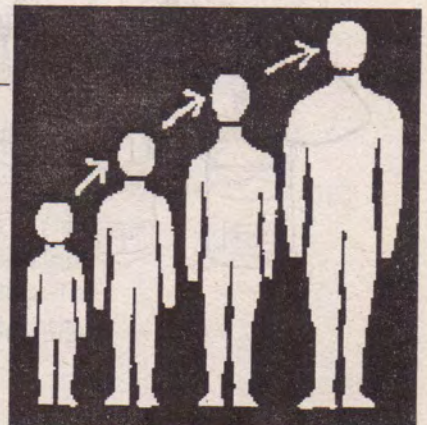
Table-3

No.	Name	Date of Birth		Height (in cm)
		Month	Year	
1.				
2.				
3.				
4.				
-				
15.				
16.				
17.				
-				
-				
39.				
40.				

Do all the students born in the same year as you, have heights the same as your's? (22)

Do all the students born in the same year and the same month as you, have heights the same as your's? (23)

What can you conclude from this? Explain with reasons. (24)

NEW WORDS

growth   development