

Homi Bhabha Curriculum for Primary Science  
Pilot Version

# SMALL SCIENCE

• Workbook  
• Class V

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Small Science  
**WorkBook**  
Class V  
Pilot Edition 2003

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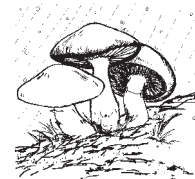
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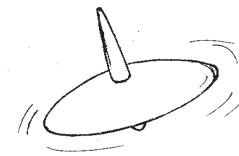
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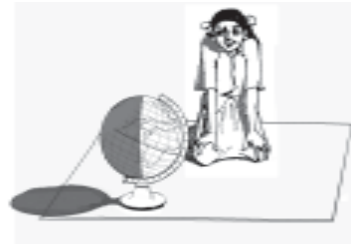
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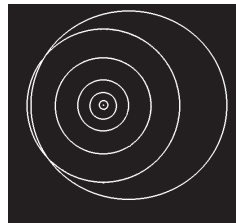
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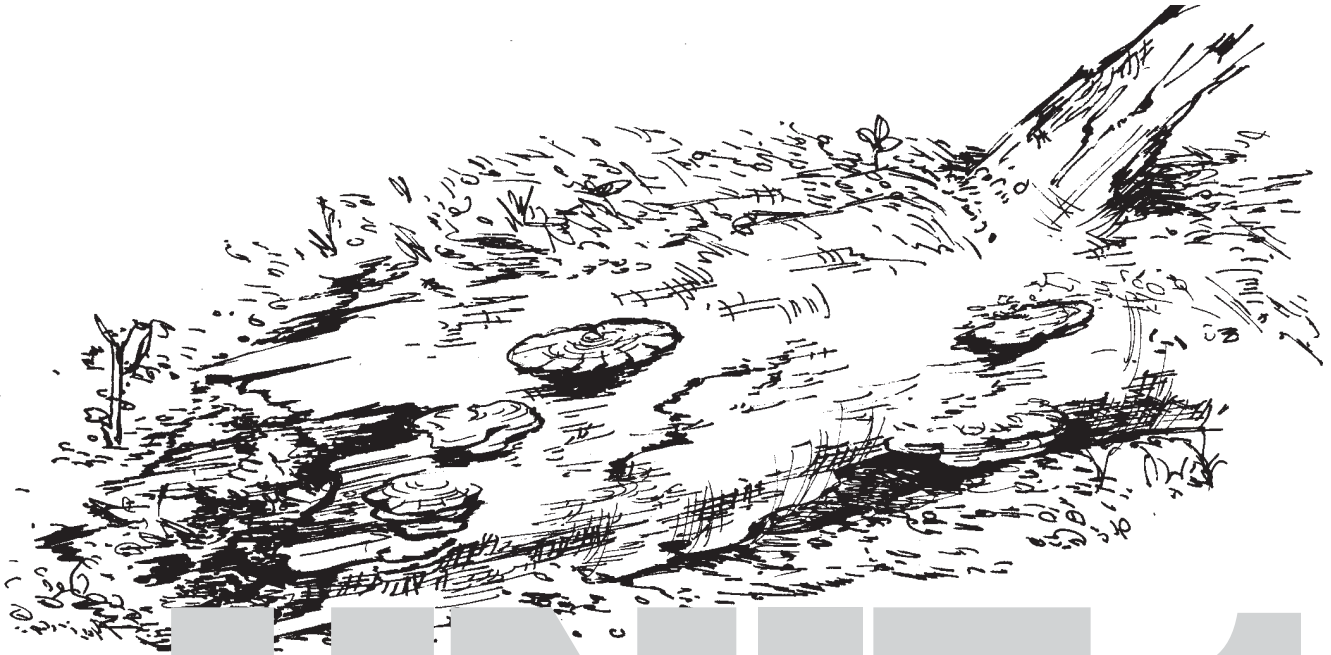
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# UNIT 1

THE WEB OF LIFE

Chapter 1  
Chapter 2

Living together  
soil

# Assessment Sheet: Unit 1

Category	Score	Comments
Observation		..... .....
Understanding		..... .....
Oral Language (Talking)		..... .....
Written Language (Writing)		..... .....
Design and engineering Skills		..... .....
Mathematical Skills		..... .....

**Enthusiasm in doing activities**  
.....  
.....

**Patience and concentration**  
.....  
.....

**Independent thinking**  
.....  
.....

**Co-operation with other students**  
.....  
.....

**Completion of home assignments**  
.....  
.....



**Animals and their food**

**1. What animals eat**

a. Make a list of all living things, parts of living things and homes of animals you find in your plot. Look for birds, birds' nests, different kinds of worms, ants, ants' nests, spiders, spider webs and anything that is caught in them, etc. Be sure to look inside flowers, under leaves, and in cracks in the bark.

If you find living things whose names you don't know, write a short description of them. How big (or small) were they? Draw them.

Observe carefully where you saw the animals - both large animals and small ones like tiny insects and worms. Make a guess - what do they eat? In the list circle these animals, like this: small red ant

What I found	Where I found it	My guess of what it eats (only if it is an animal)	What it eats
.....	.....	.....	.....
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Use this place for your drawings and description.

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**b.** Describe the shape of your plot. How big is it? Measure the length of the boundary and write it in your description.

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.....








Draw a map of your plot. Mark the lengths of the boundaries on it.

Draw the map to scale - decide how many cms on the map show one meter on the ground. In the map, show where the trees and bushes were.

Some symbols are shown below.

Make up some symbols of your own if you need them. Next to each symbol on your map, write the name of the bush/tree. Write the names of the animals where you found them.

**My plot:**

- anthill 
- grass 
- bird 
- nest 
- bush 
- tree 
- water 

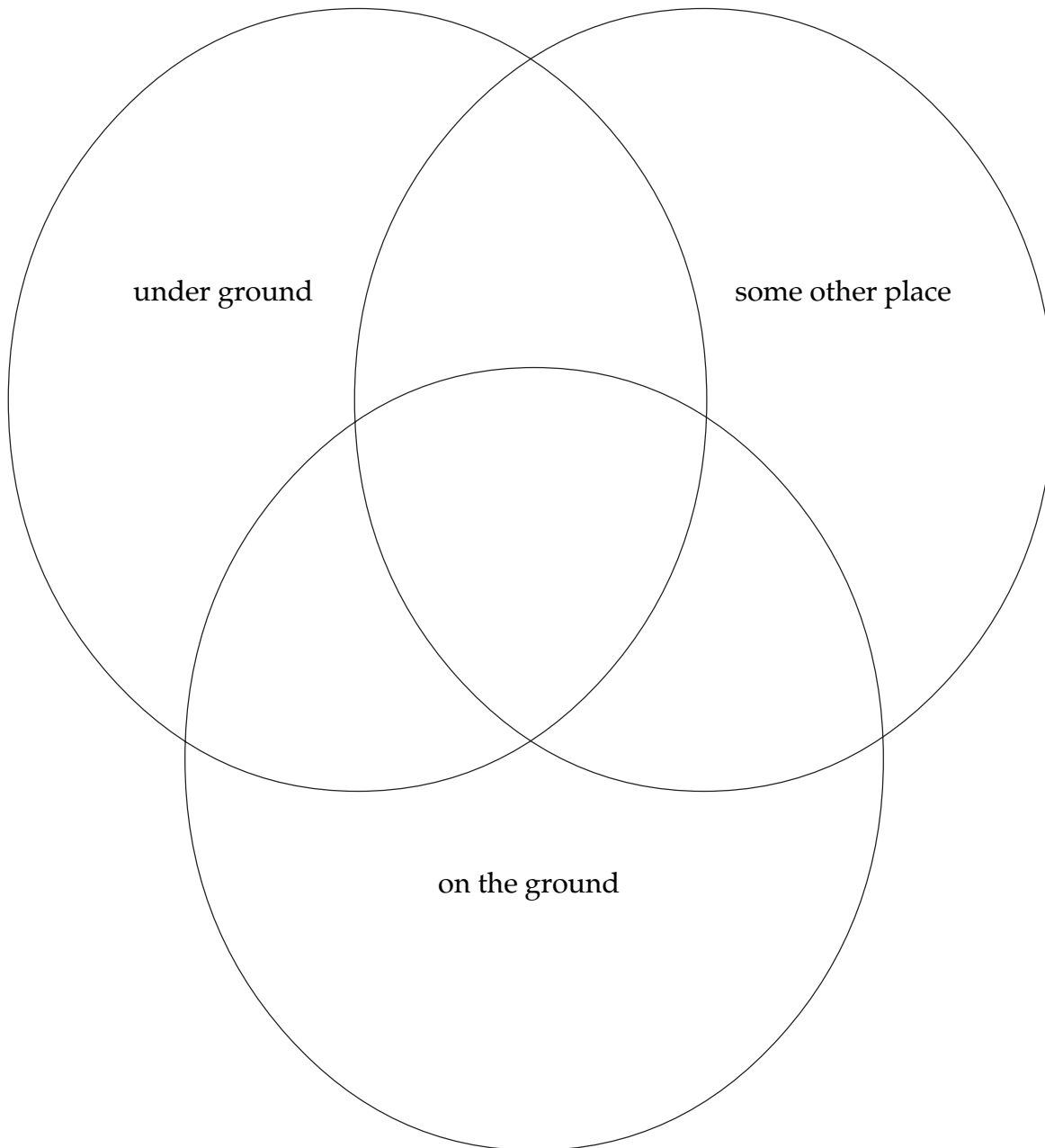
c. Here is a list of some living things. Where is each one found most often - under the ground, on the ground, or in some other place? Mark the correct column with a ✓ for each one.

If you mark the column 'in some other place', write in **which** place you find that living thing.

living thing	under the ground	on the ground	in some other place
Ant-lion			
human being			
elephant			
wall spider			
frog			
oyster			
fish			
rabbit			
bee			
flea			
sparrow			
dungbeetle			
earthworm			
root bacteria			
rat			
crab			
red ant			
bat			
monkey			
water hyacinth			

How many living things have a mark in more than one column?.....

Now write the names of these in the correct places in this diagram.



**Think! Think!**

Where would you put a mango tree in this diagram?

.....

## Living things depend on each other.

### 2. Every animal depends on other living things for its food.

a. Select an animal from your list and write here some things it eats

Animal: .....

Eats:..... , ..... , ..... , ..... , ..... , .....

Now all the animals which eat the animal you selected.

It is eaten by:..... , ..... , ..... , ..... , .....

b. Food chain:

Draw arrows between the following living things, showing which eats the other.

The arrow should always point from the plant or animal that is eaten (food) to the animal that eats it. Here are two examples.

A cow eats grass

grass ———> cow

An owl eats a mouse, a mouse eats rice

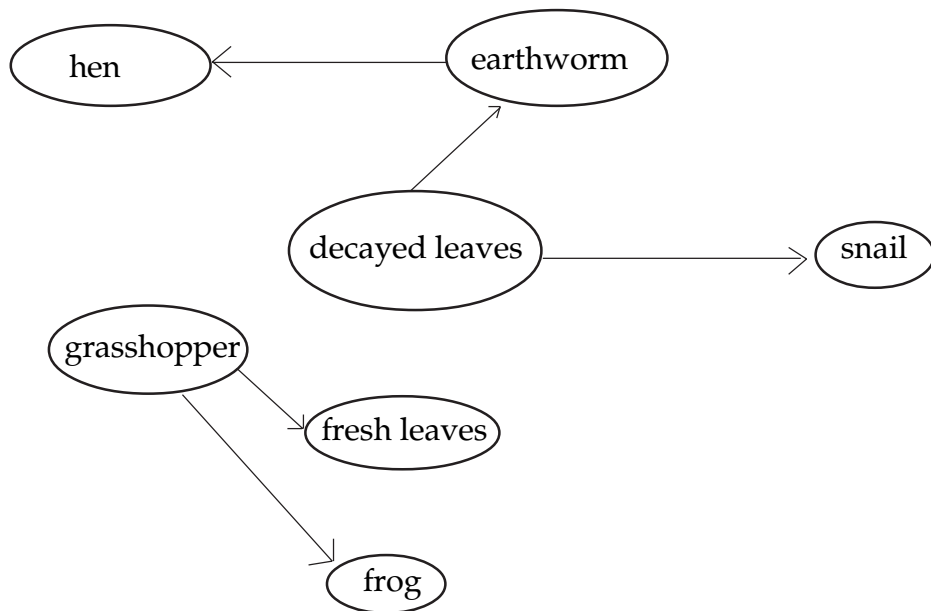
owl <— mouse <— rice

bulbul	earthworm	decaying leaves
mynah	caterpillar	fresh leaves
wheat	mouse	snake
snake	frog	fly
mosquito	frog	stork
seagull	bombil fish	prawns

c. Make a web:

On the next page, there's a part of a web showing some living things, showing who eats whom.

Add more living things to this to make a larger web by asking questions like these: Who else eats a grasshopper? What else does a frog eat?



d. Now weave (!) a story about 5 of the living things in your web. Imagine that they can talk to each other.

.....  
.....  
.....  
.....  
.....  
.....

**3. Animals depend on other animals and plants for many things, not just food.**

a Pick one animal from your list, and write down some other living things it needs.

What does it need them for? Think of where it lives, whether it builds its home, and with what.

For example,

A spider needs branches (to support its web)

needs insects (as food)

..... (living thing you chose)

needs.....(.....)

needs.....(.....)

needs.....(.....)

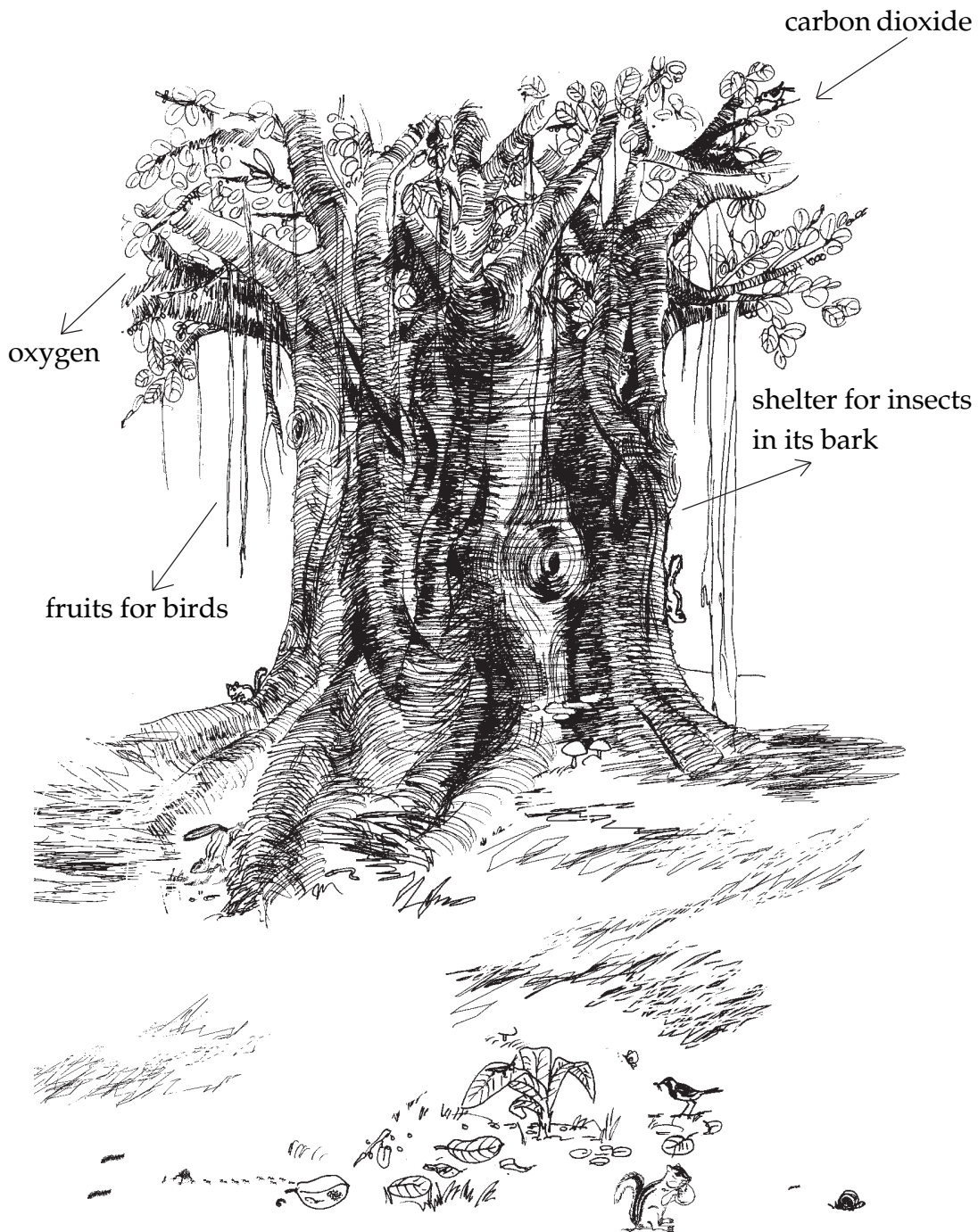
needs.....(.....)

b. Look at the picture of a banyan tree on the next page. It shows

i) some things the tree uses from its surroundings and the living things in the surroundings.

ii) some things that the tree gives to its surroundings and the living things in the surroundings.

Add as many things as you can to this picture. Remember - the arrows have to point in the correct direction!



**Think! Think!**

How did the banyan seed which grew into this tree get planted here?

.....



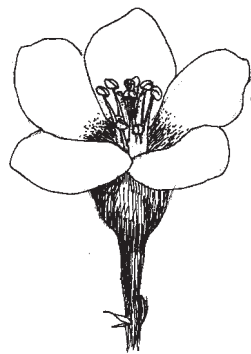
c. Now draw similar arrows for an ant.



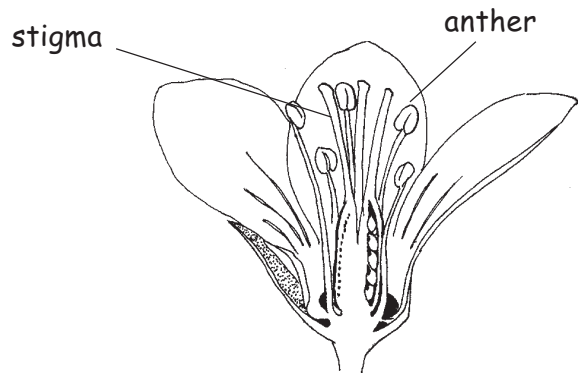
Animals need plants. Do plants need animals?

4. Pollination.

b. i) In the flowers of Oxalis and pea, can the pollen reach the stigma on their own, without the help of any animal?



(magnified)



oxalis flower



pea flower

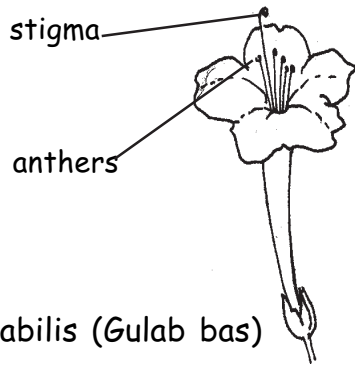
inside these petals



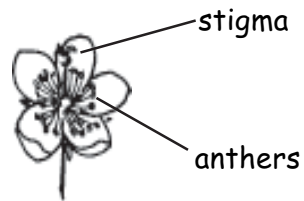
stigma

anther

ii) In the *Mirabilis* and *Talinum* flower can the pollen fall on the stigma of the flower? How?



*Mirabilis* (*Gulab bas*)



*Talinum* (*Ceylon basali*)

If not, how can the pollen reach the stigma?

.....

c. Find any flower that has only a few petals and draw it; show where the anthers, ovary and stigma are.

Does your flower have both the male and the female parts?.....

d. Which animals, other than bees, pollinate flowers?

some animals I saw feeding from flowers -.....

## 5. Dispersal of seeds

How can they travel from the plant to other places where they can grow?

Draw the seeds which clung to you. In your drawing show which part of the seed got stuck to you or your cloths.

### Think! Think!

Plants and animals die, parts of plants like leaves and branches fall off.

What happens to all these dead plant and animal parts?

.....

## Exercises

### Interesting questions

1. In the following, fill in the blanks. One is filled out for you.

More snakes -> fewer rats -> more grain.

More ..... -> fewer rats -> less plague.

More ..... -> fewer mosquito larvae -> less malaria.

More snakes -> fewer frogs —> more.....

More bulbuls -> fewer..... -> more grain.

Less bees -> less pollination -> fewer .....

More people -> more..... -> less trees.

Less trees -> fewer bulbuls -> more..... -> less.....

Add similar lines of your own:

.....

.....  
.....  
.....

2. Suppose two flowers are very far apart. How can pollen from one flower reach the stigma of the other? Can this happen without the help of insects? How?

.....  
.....  
.....  
.....

3. What would happen to leaves if snails and earthworms did not eat them?

.....

4. Name some animals which

a) drink blood of other animals

.....

b) eat grain

.....

c) eat dead animals

.....

d) eat wood

.....

e) eat insects

.....

f) eat decaying leaves

.....

5. Now what would happen if you used insecticides to kill off all insects? If you burned all dead leaves?

.....

.....

.....

6. What did people eat before they started farming?

.....  
.....  
.....

7. Do all fruits grow from flowers?

.....

8. Do all flowers grow into fruit?

.....

9. What would happen if the pollen from the karela falls on the stigma of a papaya flower?

.....  
.....

10. Which of these vegetables are fruits, and which ones are not? How do you know?

*Bhindi*, tomato, potato, brinjal, ginger, beet-root, chilli, *palak*, green peas, radish

.....  
.....

**Observe and draw**

Flowers of as many fruits as you can, like those of Ber, *papaya*, mango, neem, tamarind, drumstick, tomato, *bhindi*. Next to your drawing write the colour and size of the flower.

**Act it out**

Pretend to be any animal of your choice. Describe it, then act like it.

- a) How does this animal move?
- b) Does it make any sound you can hear?
- c) Does it build its home? Where, and with what?
- d) How does it eat?
- e) Does it hunt other animals? How?
- f) Is it hunted by any animal? How does it try to escape?

**Ask and find out**

Are there places near your school or house that had less animals and plants than they do now? How did this happen?

Are there places that have **more** animals and plants now than they had before? How did this happen?

**My poem on my favourite living thing.**

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**Show and tell**

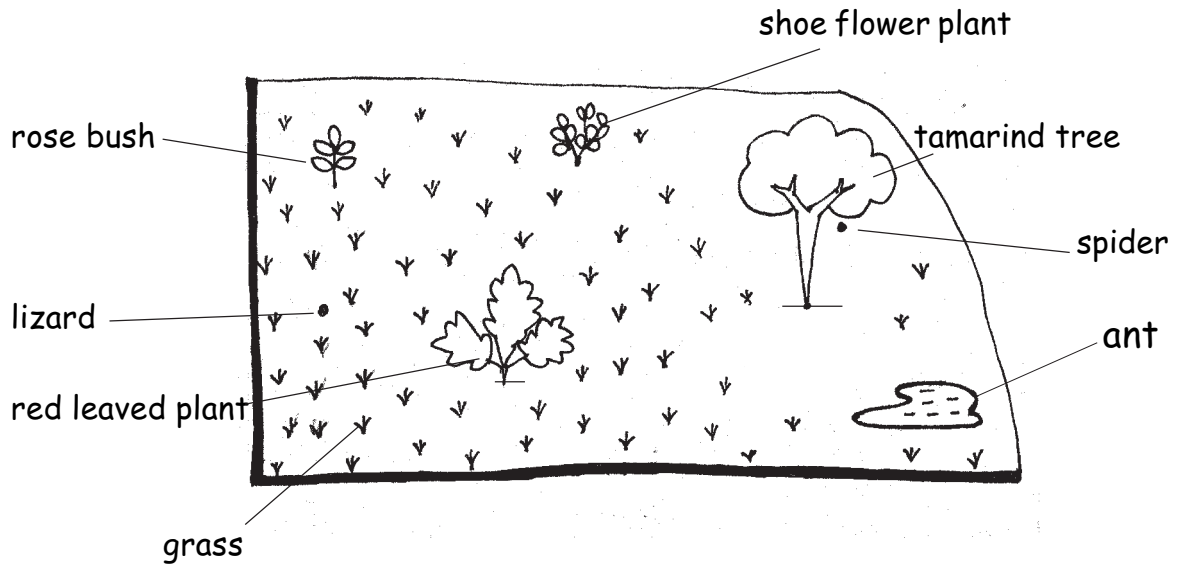
Bring to class and show any baby fruit with part of the flower still attached. You may find such tender vegetables in the market (or garden or field).

What I brought

.....

**Figure it out**

1. This is a map of Apu's plot.



1 cm on this map shows 1 m on the ground.

a) Give your answers in meters for the questions below:

How far is the plant with big leaves from the tamarind tree? You can measure from the base of the tree to the base of the plant. ....

How far is the lizard from the ant? .....

How high from the ground is the spider on the tamarind tree? .....

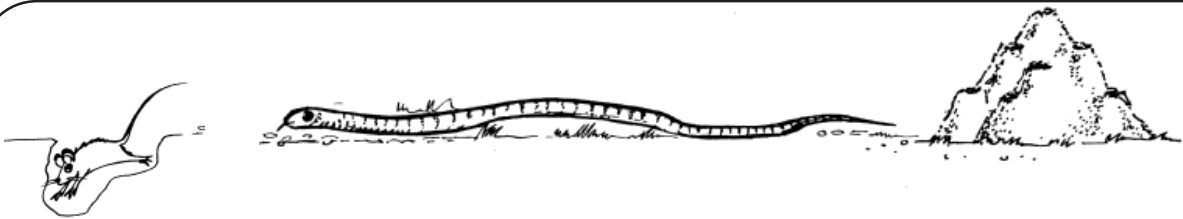
b) There is a banyan tree 30 m from the shoe-flower plant.

Can you show this on the map? If not, what can you change about the map so that you can show the tree on it?

.....  
 .....

2. A rat's tale

Read the story first , then answer the questions.

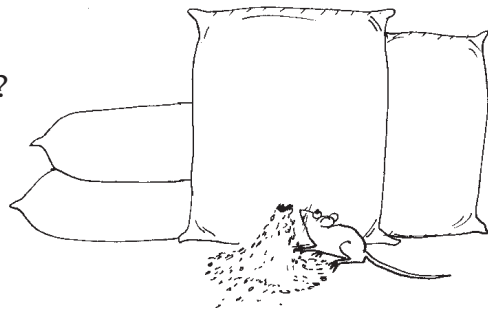


A rat snake lived in an anthill on the edge of a rice field. It ate the rats which came to the field and the godown near by. One day the snake was very hungry and chased a rat that came near the godown. But the rat was very clever - she ran fast and escaped into the godown. There she could eat all the rice she wanted.

Q If, like other rats, she eats about 50 g of rice a day, how much rice does she eat in 30 days?  
She eats \_\_\_\_\_ g in 30 days.

Now write your answer in kg.  
(Remember 1000 g = 1 kg)

She eats \_\_\_\_\_ kg in 30 days.



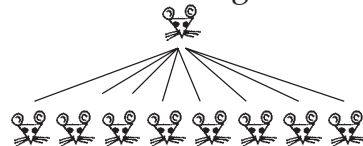
One day she gave birth to eight babies. The rat and her babies grew up without fear as the snake was dead. Some people, who didn't know that ratsnakes are not poisonous, had killed the snake. Very soon the rat's babies will grow up and start eating rice.

Q What is their food until they grow up? \_\_\_\_\_



The eight babies are all grown up now. All of them eat the rice in the godown.

Q How many rats are there in this family now? \_\_\_\_\_

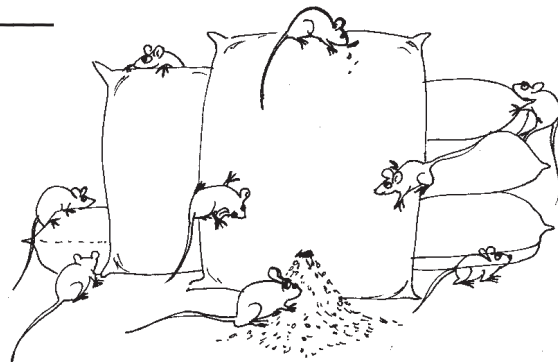


Q Can you see them all among the sacks? \_\_\_\_\_

Remember, in 30 days each rat eats 1.5 kgs of rice

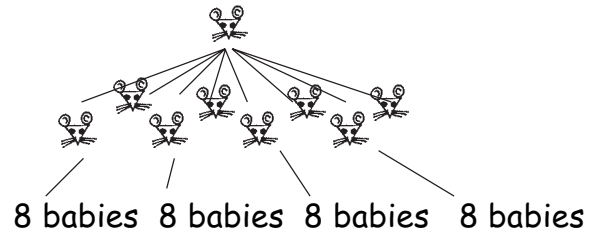
Q In this time how much rice does our rat family eat? \_\_\_\_\_

If the snake had eaten the first rat, we would have saved all this grain!!





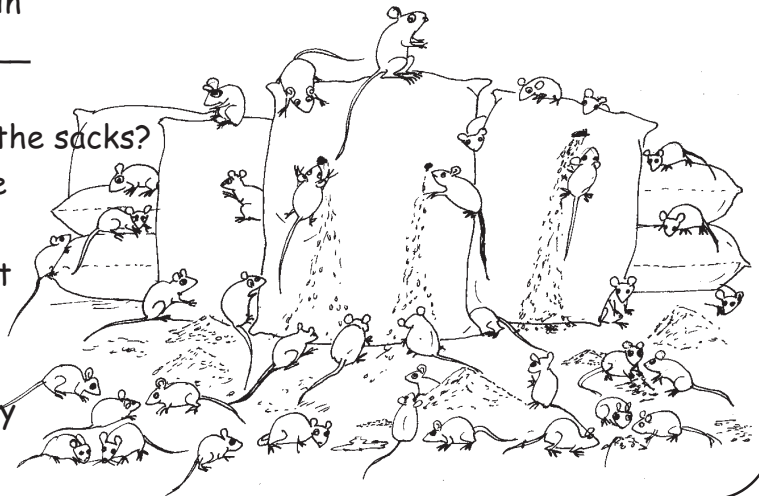
Our first rat has now become a grandmother! Four of her babies have babies of their own - eight each !



Q How many grandchildren does our first rat have now? \_\_\_\_\_

Q Figure out how many rats are in the whole family now. \_\_\_\_\_

Q Do you see all of them among the sacks? Are any rats hiding behind the sacks? How many? \_\_\_\_\_ Remember, in 30 days each rat eats 1.5 kg



Q How much rice does this family eat? \_\_\_\_\_ kg

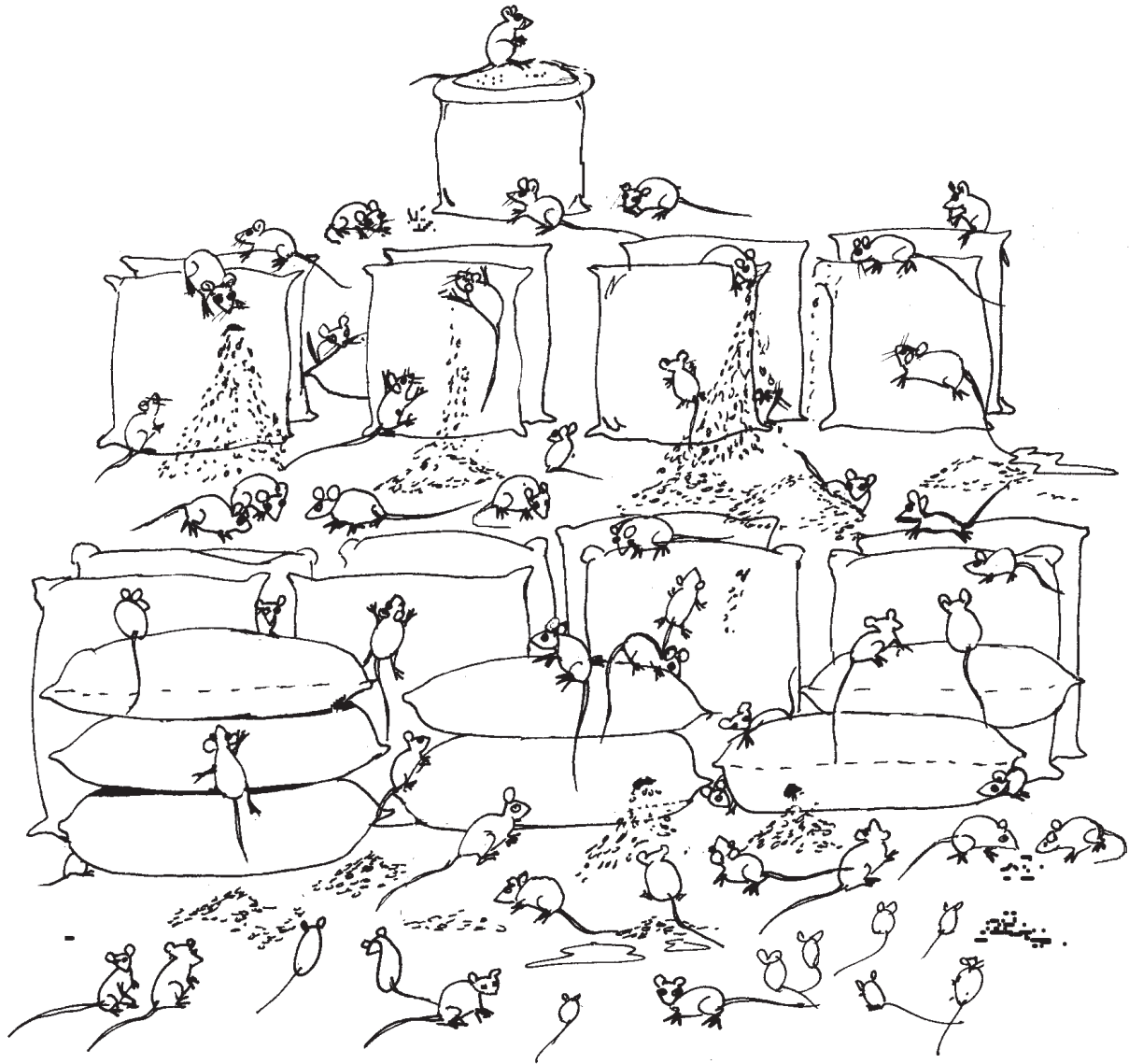
Rats eat not only rice, but any grain they can find.

Q How much grain does your family eat in a month?

Rice \_\_\_\_\_ kg.  
 Wheat \_\_\_\_\_ kg  
 (Any other food grain)  
 \_\_\_\_\_ kg  
 \_\_\_\_\_ kg  
 \_\_\_\_\_ kg  
 All together \_\_\_\_\_ kg



Q Is this more or less than what our rat family ate up? \_\_\_\_\_ Of course, the godown has many other rats too.



Rats have babies many times a year (and many babies each time!).

A snake eats many rats in a year.

Think of all the grain we save because of snakes and other animals which eat rats.

Rats spread dangerous diseases like plague - the fewer the rats the better!

Did you know- many people kill snakes because they are afraid of them , even snakes which are not poisonous?

Some people kill snakes to sell their skins (even though this is against the law); snake skins are used to make purses and belts. Every year 50,000 snakes are killed for this in India.

**Play this game**

Ask your friend to choose one of the animals from this list:

Owl, eagle, crow, sparrow, cat, squirrel, mosquito, fly, spider, cobra, lizard, butterfly, frog, fish, cow, horse, sunbird, earthworm, moth.

Your friend will not tell you his or her choice right now.

Ask questions which have 'yes' or 'no' answers to find out what your friend chose.

Q1 .....

Ans .....(yes or no)

So the animal can be one of these - .....

Q2 .....

Ans \_\_\_\_ (yes or no)

So the animal can be one of these - .....

Keep asking questions till you guess what your friend chose. Each time, write down the question, the answer and the list of animals.

Q3. ....

Ans .....

So the animal can be one of these - .....

Q4 .....

Ans .....

So the animal can be one of these - .....

Q5 .....

Ans .....

So the animal can be one of these - .....

**Ask a question**

about any living thing around you. Think of how you would find the answer.

.....  
.....