

SENSITIVITY

BEING IN TOUCH WITH OUR SURROUNDINGS

17

There is so much that happens around us all the time. When you sit in class, your friends nearby keep shifting and moving. You, too, cannot keep still. The teacher may be explaining something but, at the same time, students talk among themselves and make a lot of noise. Your friend may tickle you from behind, or aim a paper rocket at you. Sometimes you feel thirsty and sometimes itchy. A fly may settle on your nose. Birds sing outside the classroom.

Are you aware of all that is happening around you? Obviously, you are. You listen to the teacher, you swat the fly. When tickled, you control your laughter. Or, sometimes, you just cannot stop yourself from laughing.

You respond in one way or another because you are aware of all that is happening around you. This quality of being aware of your surroundings and responding to them is known as sensitivity.

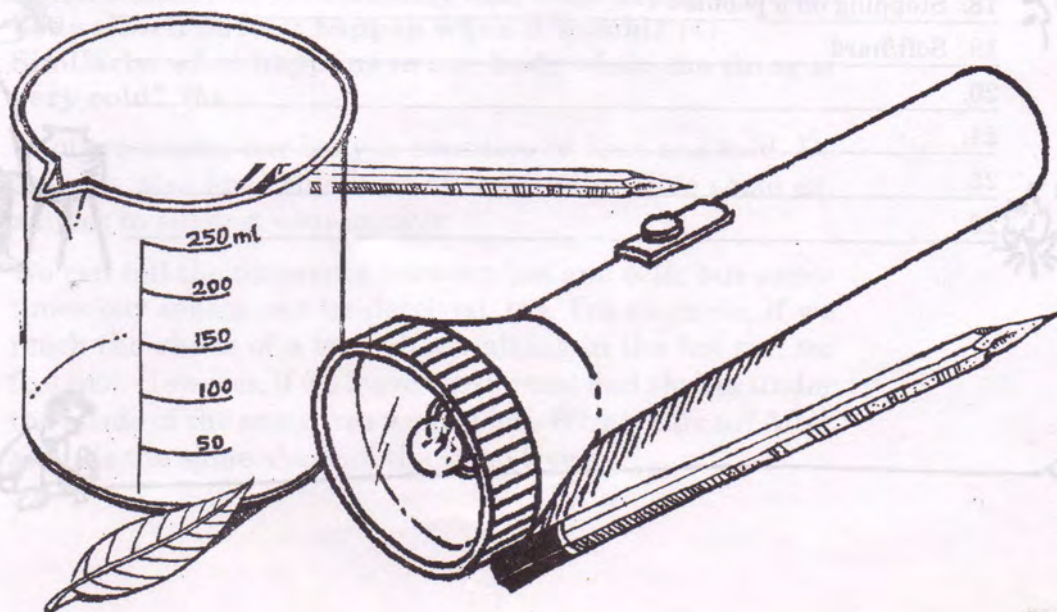
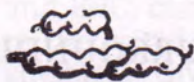


TABLE 1



No.	What is happening?	Are you aware of it?	Which organs inform you?
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|-----|----------------------------|-------|-------|
| 1. | A fly settles on your body | _____ | _____ |
| 2. | The wind is blowing | _____ | _____ |
| 3. | You are pricked by a thorn | _____ | _____ |
| 4. | Heat/cold | _____ | _____ |
| 5. | Dry/wet | _____ | _____ |
| 6. | Mosquito bite | _____ | _____ |
| 7. | Dark/light | _____ | _____ |
| 8. | How far is an object? | _____ | _____ |
| 9. | Colour | _____ | _____ |
| 10. | Friend's voice | _____ | _____ |
| 11. | Scent of flowers | _____ | _____ |
| 12. | Direction of sound | _____ | _____ |
| 13. | Round or cuboid object | _____ | _____ |
| 14. | Smooth/rough | _____ | _____ |
| 15. | Thirst | _____ | _____ |
| 16. | Hunger | _____ | _____ |
| 17. | Taste | _____ | _____ |
| 18. | Stepping on a pebble | _____ | _____ |
| 19. | Soft/hard | _____ | _____ |
| 20. | | _____ | _____ |
| 21. | | _____ | _____ |
| 22. | | _____ | _____ |
| 23. | | _____ | _____ |

When you step on a thorn you move your foot away immediately. Does a stone react in the same way? If a fly sits on a stone or a table, do they react in any way? Does a chair get tickled?

Does the stone, table or chair possess this quality called sensitivity?

In this chapter we will try to understand how we become aware of so many things around us. First of all, let us look at the kinds of things we become aware of and which organs help us to do so. Table 1 contains several examples of things that happen around us.

Copy the table in your exercise book and fill in the columns after discussing with your friends. (1)

If you are not sure about an entry, do not fill it in. If there is something not included in the table which you would like to add, please do so.

Look at Table 1 after you have completed it and make a list of the organs that keep you informed about your surroundings. (2).

We call these organs the sense organs. Let us study these sense organs in some detail.

Our skin tell us what is hot or cold.

What are the things we become aware of by touch? (3)

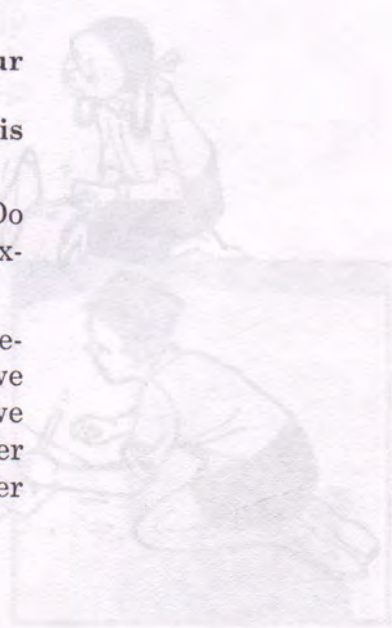
If hot water falls on our body, or if ice is placed on the palm of our hands, we are able to tell without looking whether the object is hot or cold.

When something is extremely hot, what happens to our body which doesn't happen when it is cold? (4)

Similarly, what happens to our body when the thing is very cold? (5)

In other words, our body is sensitive to heat and cold. Do animals also have this kind of sensitivity? Give some examples to support your answer.

We can tell the difference between hot and cold, but sometimes our senses can be deceived, too. For example, if we reach the shade of a tree after walking in the hot sun we feel cool. However, if we leave a cool room and shelter under the shade of the same tree we feel hot. Why is this so? After all, it is the same shade of the same tree.



CONFUSION BETWEEN HOT AND COLD

EXPERIMENT 1

Take three beakers or glasses. Fill one with hot water, one with lukewarm water and one with cold water. Dip a forefinger into the beaker with hot water and the other forefinger into the beaker with cold water.

After about half a minute, put both your forefingers in the beaker with lukewarm water.

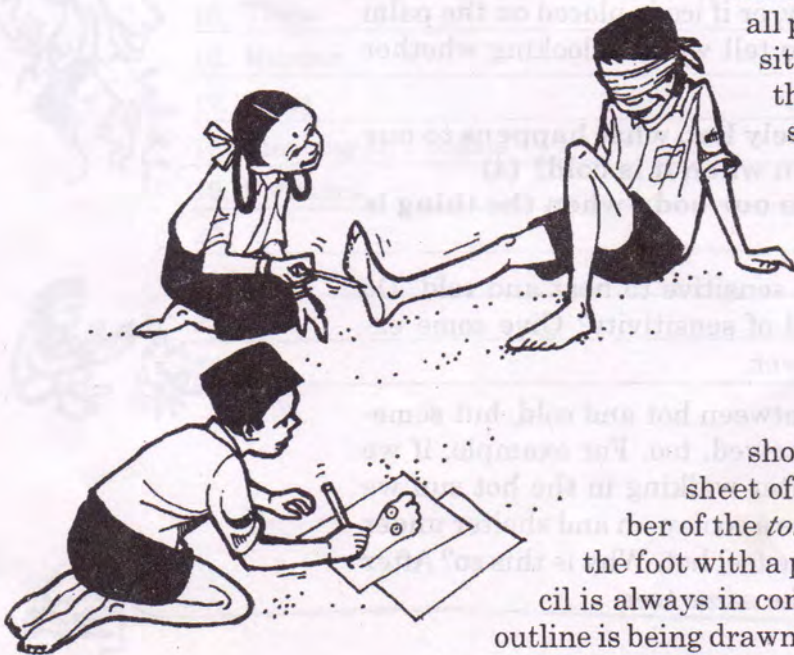


Write down in your own words what you experience. (6)

Discuss in the class why this happens.

OUR SKIN AND THE SENSATION OF TOUCH

If an insect crawls on your back you at once know something is crawling on your back. In the same way, if something touches the sole of your foot, you move your foot away immediately. But is the skin on all parts of the body equally sensitive to touch? Do all parts of the palm of your hand or the soles of your feet feel the sense of touch equally? Let us perform an experiment to try and find out.



TOUCH

EXPERIMENT 2

One student in each *toli* should place her/his foot on a sheet of white paper. Another member of the *toli* should trace the outline of the foot with a pencil. Ensure that the pencil is always in contact with the foot while the outline is being drawn. The student whose foot has been outlined should now be blindfolded with a piece of cloth. S(he) should stretch her/his leg so that the sole of

the foot is clearly visible. Another member of the *toli* should take a leaf with a pointed tip and use it to touch different parts of the sole.

Touch each part of the foot and observe carefully. While performing the experiment, remember that equal pressure should be applied each time you touch the sole of the foot.

If the blindfolded student can feel the touch (s)he should indicate this by saying yes. The point where the pressure is felt should be ticked (✓) on the drawing of the foot. If the student does not feel the pressure at a certain point, this point should be indicated on the drawing with a (x) mark.

After the experiment, look at the drawing of the sole of the foot in which the ticks and crosses have been marked and say whether pressure is felt equally every where on the sole? (7)

Where is pressure felt more acutely and where is pressure not felt at all? (8)

Can you explain why this is so? (9)

BLIND PEOPLE READ WITH THEIR FINGERS

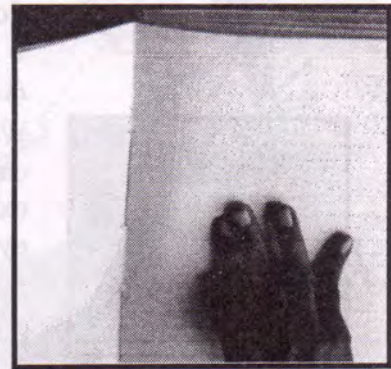
Many of you may be aware that there are books printed for blind people. They do not read the books with their eyes but with their fingers. The letters (alphabets) in these books are made by using raised dots on the surface of the paper. Each letter is formed by a different pattern of raised dots. This form of writing is called Braille. The blind person moves her/his fingers across the paper and reads the book by recognising the letters formed by the raised pattern of dots. You may think it isn't easy to recognise letters quickly in this way, but you will be surprised by the speed with which blind persons identify letters and read such texts. The sensitivity of their fingers is greatly increased in the absence of vision.

What else do we learn by touching?

In the game *ankh-micholi* you had tried to identify leaves with your eyes closed. Do you remember the attributes of leaves that you were able to recognise by touch?

It is through touch that we are able to tell the difference between dry and wet, smooth and rough, soft and hard etc.

Sometimes a person may lose sensitivity in a part of her/his skin. This means (s)he is not able to feel heat, cold, touch, the prick of a thorn or anything else on that por-



tion of skin. If this happens, a doctor should be consulted immediately. It is possible that (s)he may have contracted a serious disease.

TASTE

We have paid a lot of attention to the miracle of touch. However, touch is not everything. For example, even if we cover our body with sugar syrup, we cannot taste its sweetness. It is impossible to experience taste without the help of our tongue.

TASTE CAN DECEIVE

Can you be deceived by your sense of taste, too? Is it possible to tell what you are eating merely by tasting it with your tongue? If you close your nose while eating, by pinching your nostrils with your fingers, you will probably not be able to identify what you are eating. "What does taste have to do with the nose?" you may well ask.

Let us try and find the answer to that question through an experiment.

EAT WITH YOUR NOSE CLOSED

EXPERIMENT 3

Blindfold yourself. Your teacher will now give you something to eat. You must close your nostrils tightly with your fingers before eating what is given to you. Keep your nose closed, and try to enjoy the taste of what you are eating.

Can you identify what you are eating? If yes, write down its name. (10)

Remove your fingers from your nose. Can you now say what you are eating? (11)

Could there be some relationship between taste and smell? (12)

When you have a cold and your nose is blocked, why does everything you eat seem to taste different? (13)

A LOOK AT OUR EYES

We see with our eyes, but have you ever examined your eyes carefully? Let us do some experiments with our eyes. These experiments will help us learn some new things about our eyes. First, look carefully at the eyes of all the children in your group.

Are you able to see the iris of your friends' eyes? (14)



We will now perform an experiment to find out the effect of light on the iris. We will need a torch for this.

LIGHT ON THE EYES

EXPERIMENT 4

Look at the irises of the eyes of one of the members of your *toli* and observe carefully how big they are. Now shine the torch on the iris of one eye.

Did the size of the iris change when light fell on it? If yes, what was the change? (15)

Is the iris sensitive to light? (16)

We know that we see with our eyes, but is there a difference between seeing with one eye and seeing with both eyes? In order to understand this difference, let us perform the following experiment.



EXPERIMENT 5

Ask a friend to hold a pencil approximately 30-45 cm away from you. You should also hold another pencil close to your eyes. Now close one of your eyes and try to make the tip of the pencil in your hand come in contact with the tip of the pencil (s)he is holding in front of you.

Are you able to align the points of both pencils? (17)

Now repeat this experiment with both eyes open.

Is it easier to align the points now? (18)

A HOLE IN YOUR PALM

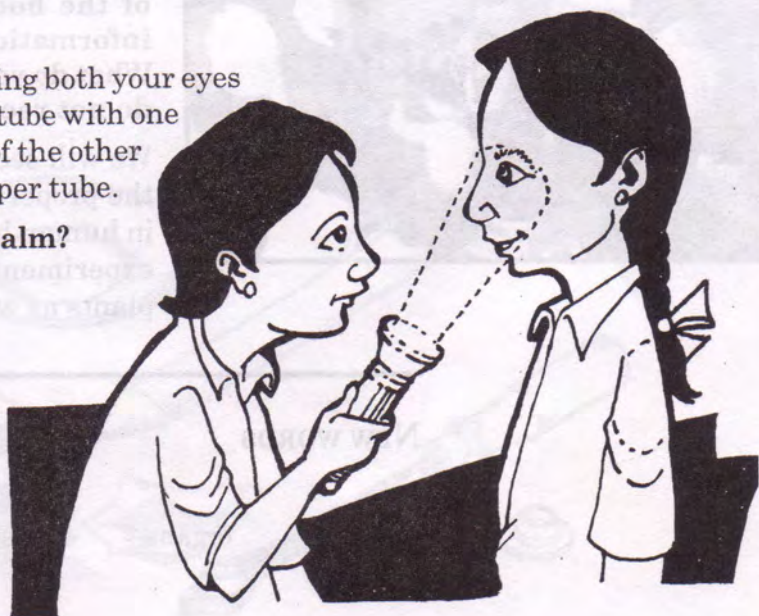
EXPERIMENT 6

Roll a paper into a tube. Keeping both your eyes open, look through this paper tube with one eye. Keep your palm in front of the other eye and rest it against the paper tube.

Do you see a hole in your palm? (19)

LISTEN! LISTEN!

You generally shut your ears with your hands if there is a lot of noise around you. But if there is a pleasant sound, your head turns in the direction



of the sound. Similarly, the moment anyone calls out to you, you know where the sound came from. But is your estimate always correct? Let us do an interesting experiment to find out. The whole class should perform the experiment together. You can have a lot of fun, but the condition is that every one should keep absolutely quiet.

EXPERIMENT 7



Let a student sit blindfolded in the centre of the classroom. Let four students stand a little distance around her/him on all four sides - one exactly behind, one exactly in front, one to the left and one to the right. Each of them should clap in turn. Then they should each clap again, but not in the same order, and the blindfolded student should indicate with her/his hand the direction from which (s)he thinks the sound came.

Let your teacher indicate which of the four students should clap.

After each of the four students has clapped three to four times, answer the following questions.

Did the blindfolded student indicate correctly the direction from which the sound came? (20)
If (s)he was not able to indicate correctly each time, which were the directions where (s)he made errors? (21)



In this chapter we did some experiments related to sensitivity of our body.

Think carefully and name the organs of the body that help us to receive information about our surroundings? What do you think could happen if you do not receive this information? (22)

We will see in another chapter whether the property of sensitivity is found only in human beings. We will perform some experiments to test the sensitivity of plants as well.

NEW WORDS

sensory

organs

braille