



STATE COUNCIL OF EDUCATIONAL RESEARCH & TRAINING

TELANGANA, HYDERABAD.

ACADEMIC YEAR-2020-21

Class: IX

LEVEL - 2

Subject: Physical Science

Name of the lesson: MOTION. Topic: Relative Motion WORKSHEET: 9

KEY CONCEPTS

- Relativity
- Relative Motion.

LEARNING OUTCOMES

Students can,

1. Explain the concept of relative in their own words
2. Give examples for concept of relative
3. Give reasons why motion is relative

❖ WHAT IS RELATIVE

In general 'Comparable' is scientifically known as 'Relative'.

Left-Right, Large-Small, Top-Bottom, Thick-Thin, Day-Night, etc. which are used in many situations in our daily life, are relative concepts only.

Can you tell whether the circle A given in Figure -1 is smaller or larger?

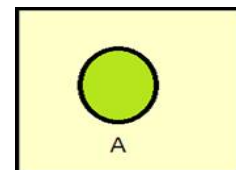


Figure-1

If you think circle A is smaller, then look at Figure- 2 and see whether your guess is correct or not?

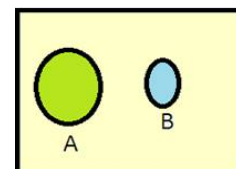


Figure-2

Now you can correctly answer that circle A is bigger.

Take a look at Figure 3 in a different context

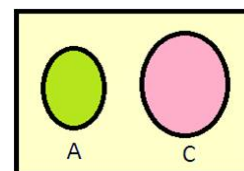


Figure-3

You will notice that the circle A is smaller in this figure.

If you carefully examine these three figures, you have different views about the same circle A. .What is the reason?

In Fig. 2 you compared circle A to circle B. So circle A seemed to be bigger. But in figure-3, circle A is found to be smaller compared to circle C

In both cases the circle A has been compared to the circle B and C separately. So you are able to give an exact answer. But you could not say whether circle A is big or small in Figure 1. It means that' the perception we make for one thing depends on what we are comparing' with.

- **Relative concepts are concepts that we can formulate only by comparing them with another**

Similarly, you may have noticed that the door which is on your right is to the left of your teacher sitting in front of you, and the window which is to the right of your teacher is on your left. Therefore right and left are also relative concepts.



- Think how day and night are relative concepts

What is motion? We will now learn how motion is a relative concept.

In previous classes we have learnt that if a body is moving then it is said to be in the state of motion. Then what do we say about the state of a body which is not moving? We say it is in the state of rest.

How do we decide if a body is in motion or is at rest? Let's consider a few situations.

- Is the Earth in motion or at rest?

You know that similar to other planets in the solar system our earth also revolves around the sun. Then why you are not experiencing this motion of earth? Because along with earth you are also in motion hence with respect to you earth appears to be at rest.



In a moving train, is the person sitting next to you in motion or at rest? Since the train is moving he appears to be at rest. But is this a correct conclusion? Let's see...

In your class your friend sitting next to you appears to be at rest whereas a student running in the playground appears to be in motion. Because with respect to you the distance between you and your friend is not changing but the distance between you and the student running is changing with time. Based on this change you were able to decide whether your friend or the student is in state of motion or is in state of rest.

Therefore to decide if a body is in motion or is at rest you will consider the change in distance between you and the body. Therefore in the above example you can say that with respect to you the person sitting next to you in a moving train is at rest, whereas the trees and mountains seen through the window are at motion.

- Think? Whether the moving train and people inside the train are in motion, with respect to the person outside?

ASSESSMENT

1. When do you say that a body is in motion?
2. Describe a situation where you can say that motion is relative.
3. With respect to you, what is the state of atmosphere of earth? Why?
4. Is it correct to say "With respect to a passenger travelling in a bus, the passenger travelling in another bus in the same direction with the same speed is at rest"?
5. If you tell your friend that he can reach your house if he walks 1km to his right can he reach your house? Why?
