

PROPORTIONAL REASONING – 1

Case Studies – Standard VIII

Case Study 1: The School Garden

The students of Class 8 decided to develop a small vegetable garden in their school. As part of their activity, they planted saplings in rows. They noticed that 6 students could plant 48 saplings in one hour when everyone worked at the same rate. Their teacher asked them to use proportional reasoning to plan the next day's activity.

- (a) How many saplings can one student plant in one hour?
- (b) How many saplings can 10 students plant in one hour?
- (c) How many students are needed to plant 120 saplings in one hour?
- (d) Is the number of students directly proportional to the number of saplings planted? Give a reason.

Case Study 2: A Journey to the Science Museum

The students of Class 8 were excited about their educational trip to a science museum. The museum was 180 km away from their school. Their bus travelled at a constant speed and took 4 hours to cover the distance. The teacher asked the students to calculate the travelling time for different distances.

- (a) What distance does the bus cover in 1 hour?
- (b) How much time will the bus take to cover 270 km at the same speed?
- (c) How far will the bus travel in 6 hours at the same speed?
- (d) If the speed of the bus increases, what happens to the time taken to cover the same distance? What type of proportion is involved?

Case Study 3: Preparing Food for the Annual Day

The school was preparing for its Annual Day celebration. The canteen team had to prepare food for a large number of students and teachers. The cook observed that 5 kg of rice was sufficient to serve 40 students, provided the same quantity of rice was served to each person.

As more students were expected to attend, the cook asked Class 8 students to help him calculate the required quantity of rice.

- (a) How much rice is required for one student?
- (b) How much rice will be required for 72 students?
- (c) How many students can be served using 15 kg of rice?
- (d) If the number of students is doubled, what happens to the quantity of rice required? Explain.

Case Study 4: The School Map

For a Social Science project, the students of Class 8 prepared a large map of their district. To make the map easy to read, they decided to use a fixed scale: 1 cm on the map represents 4 km in actual distance.

While working on the map, the students had to find the map distances for several roads and towns.

- (a) What actual distance is represented by 6 cm on the map?
- (b) How many centimetres on the map represent 36 km?
- (c) A road is actually 50 km long. What should be its length on the map?
- (d) A student represents 20 km by 10 cm. Has the same scale been maintained? Justify your answer.