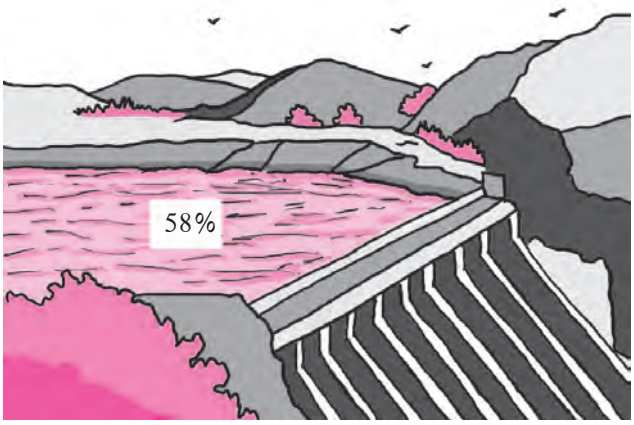
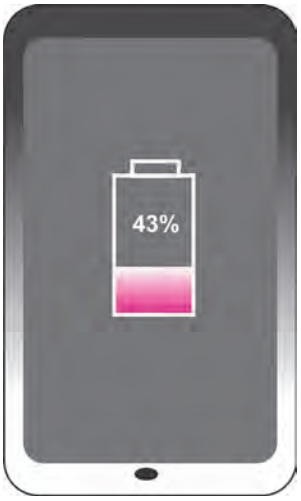
# 12 Percentage

YUCPLR

## Let's discuss.

Use water carefully.
Water in the dam 58% of the capacity




**Raju :** Dada, I can see this sign % after 58 in the picture above. And it's there also after 43 in the other picture. What does it show?

**Dada :** That is the sign for percentage. The word cent means hundred. We read 58% as '58 percent'.

**Raju :** Then, what does percentage mean?

**Dada :** In the first picture, there is 58% water in the dam. It means that if the dam holds 100 units of water when full, then right now it is holding 58 of the same units of water. If the mobile phone has 100 units of charge when it is fully charged, then at this moment 43 units of charge are still left. A percentage is a comparison made with a total which is taken to be 100 parts.

**Raju :** If there is 50% water in the dam, can we say that the dam is half full?

**Dada:** Yes, 50% is 50 parts of water out of 100, and half of 100 is 50.

58% is 58 units out of 100 units. We can write this as the fraction $\frac{58}{100}$.

It means that $\frac{58}{100}$ parts out of the full capacity of the dam are filled with water.

### (1) Percentage in the Form of a Fraction

50% means 50 parts of a total of 100. So, 50 out of 100 or $\frac{50}{100} = \frac{1}{2}$ part.

In other words, 50% is half of the whole.

25% means 25 parts out of 100. And $\frac{25}{100} = \frac{1}{4}$ part of the whole (or total).

35% means 35 parts out of 100. And $\frac{35}{100} = \frac{7}{20}$ part of the whole.

## (2) A Fraction in the Form of a Percentage

$\frac{3}{4} = \frac{3\times25}{4\times25} = \frac{75}{100}$ $\frac{3}{4}$ part of the total is $\frac{75}{100}$ or 75%.

$\frac{2}{5} = \frac{2\times20}{5\times20} = \frac{40}{100}$ $\frac{2}{5}$ part of the total is $\frac{40}{100}$ or 40%.

**Now I know –**

**Equivalent fractions can be used to make the denominator 100.**

**Example :** Last year Giripremi group planted 75 trees. Of these, 48 trees flourished. The Karmavir group planted 50 trees, of which, 35 flourished. Which group was more successful in conserving the trees they had planted?

The number of trees each group started with is different. Hence, we have to compare the surviving trees in each group to the number of trees planted by them. For this comparison, it would be useful to find out for each group, the percentage of their trees that survived. To do that, let us find the ratio of the number of surviving trees to the total trees planted.

Suppose the surviving trees of the the Giripremi group are A%.

Suppose the surviving trees of the the Karmavir group are B%.

The Giripremi's ratio of the surviving trees to planted trees is $\frac{A}{100}$ and also $\frac{48}{75}$. Therefore, $\frac{A}{100} = \frac{48}{75}$. In the same way, we can also find the ratio of surviving trees to planted trees for the Karmavir group.

Let us write the same ratio in two forms, obtain equations and solve them.

$$\frac{A}{100} = \frac{48}{75}$$

$$\frac{A}{100} \times 100 = \frac{48}{75} \times 100$$

$$A = 64$$

$$\frac{B}{100} = \frac{35}{50}$$

$$\frac{B}{100} \times 100 = \frac{35}{50} \times 100$$

$$B = 70$$

$\therefore$ The Karmavir group was more successful in conserving the trees they had planted.

**Example :** In Khatav taluka, it was decided to make 200 ponds in Warudgaon and 300 ponds in Jakhangaon. Of these, 120 ponds in Warudgaon were completed at the end of May, while in Jakhangaon work was complete on 165 ponds. In which village was a greater proportion of the work completed?

To find the answer, we shall find the percentage of work completed in each village and then make a comparison.

Let the number of ponds completed in Warudgaon be A% and in Jakhangaon, B%. We shall find the ratio of the number of ponds completed to the number of ponds planned in each case. We then write those ratios in two forms, obtain equations and solve them.

$$\frac{A}{100} = \frac{120}{200}$$

$$\frac{A}{100} \times 100 = \frac{120}{200} \times 100$$

$$A = 60$$

$$\frac{B}{100} = \frac{165}{300}$$

$$\frac{B}{100} \times 100 = \frac{165}{300} \times 100$$

$$B = 55$$

$\therefore$ A greater proportion of the work was completed in Warudgaon.

**Example :** For summative evaluation in a certain school, 720 of the 1200 children were awarded A grade in Maths. What is the percentage of students getting A grade?

Suppose the students getting A grade are A%.

Let us write in two forms, the ratio of the number of students getting A grade to the total number of students, obtain an equation and solve it.

$$\frac{A}{100} = \frac{720}{1200}$$

$$\therefore \quad \frac{A}{100} \times 100 = \frac{720}{1200} \times 100$$

$$\therefore \quad A = 60$$

$\therefore$ 60% students got A grade.

**Example :** A certain Organization adopted 18% of the 400 schools in a district. How many schools did it adopt ?

Let us write in two forms, the ratio of the number of schools adopted to the total number of schools in the district, obtain an equation and solve it.

Here, 18% means 18 schools adopted out of a total of 100.

Total number of schools is 400.

Suppose the number of schools adopted is A.

$$\frac{A}{400} = \frac{18}{100}$$

$$\therefore \quad \frac{A}{400} \times 400 = \frac{18}{100} \times 400$$

$$\therefore \quad A = 72$$

$\therefore$ The number of schools adopted is 72.

## Practice Set 30

✸ Solve the following.

(1) Shabana scored 736 marks out of 800 in her exams. What was the percentage she scored?

(2) There are 500 students in the school in Dahihanda village. If 350 of them can swim, what percent of them can swim and what percent cannot?

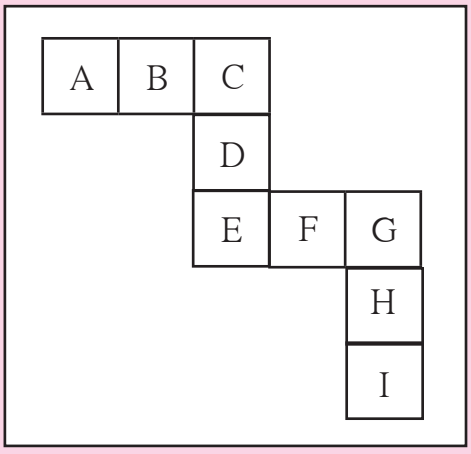
(3) If Prakash sowed jowar on 75% of the 19500 sq m of his land, on how many sq m did he actually plant jowar?

(4) Soham received 40 messages on his birthday. Of these, 90% were birthday greetings. How many other messages did he get besides the greetings?

(5) Of the 5675 people in a village 5448 are literate. What is the percentage of literacy in the village?

(6) In the elections, 1080 of the 1200 women in Jambhulgaon cast their vote, while 1360 of the 1700 in Wadgaon cast theirs. In which village did a greater proportion of women cast their votes?

**Maths is fun!**




There are 9 squares in the figure above. The letters A B C D E F G H I are written in the squares. Give each of the letters a unique number from 1 to 9 so that every letter has a different number.
Besides, A + B + C = C + D + E = E + F + G = G + H + I should also be true.