



Percent = Per + cent means out of 1 hundred.

Teacher – Sahil, look at the figure and tell me how many squares are there in the figure ?

Sahil – There are total 100 squares in the figure.

Teacher – Radhika, how many yellow squares are there in the figure ?

Radhika – Only one square is yellow.

Teacher – What part is the yellow square of the total squares ?

Radhika – The yellow square is $\frac{1}{100}$ or hundredth part of the total Squares.

Teacher – Madan, how much part is the red square of the total squares in the figure ?

Madan – Five squares are red in the figure. Hence, red squares are $\frac{5}{100}$ or five hundredth part of the total squares.

Teacher – Very good! Do you know it is written as 5%. Here the meaning of symbol '%' is percent.

Let's see –

In figure 'A' out of 100 squares 15 squares are blue.

Hence, blue parts of the total parts = 15 out of 100

$$= \frac{15}{100} \text{ or } 15 \%$$

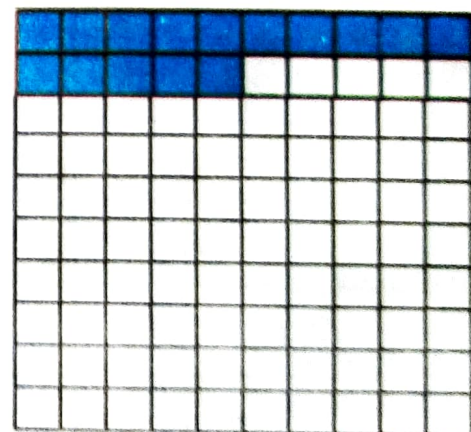
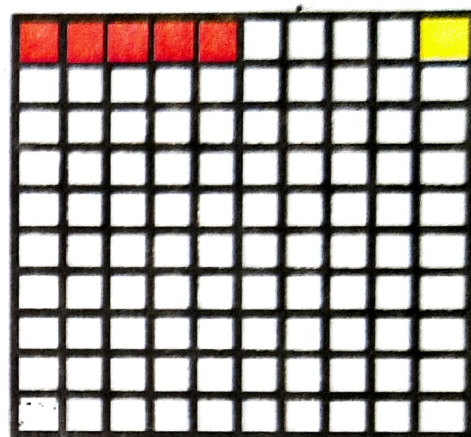


Figure A



In figure 'B' out of 100 squares, 24 squares are green.

Hence, green parts of the total parts = 24 out of 100

$$= \frac{24}{100} \text{ or } 24 \%$$

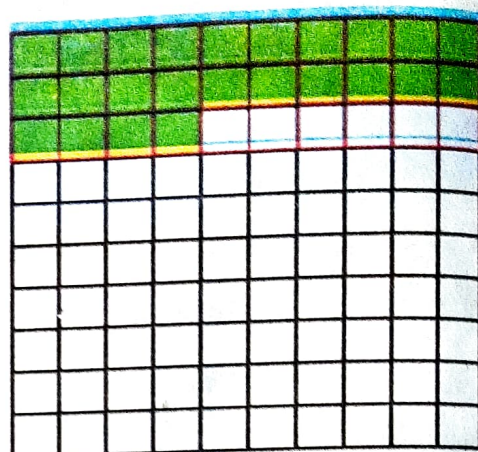


Figure B

Let's learn it this way too –

$$1 \text{ out of } 100 = \frac{1}{100} \text{ or } 1 \%$$

$$8 \text{ out of } 100 = \frac{8}{100} \text{ or } 8 \%$$

$$25 \text{ out of } 100 = \frac{25}{100} \text{ or } 25 \%$$

$$50 \text{ out of } 100 = \frac{50}{100} \text{ or } 50 \%$$

$$100 \text{ out of } 100 = \frac{100}{100} \text{ or } 100 \%$$

We have seen that –

Percent is a part which is taken out of each 100. Hence, percent is such a fraction in which the denominator is 100 and numerator is the part taken from 100.



Do it yourself-

Fill in the blanks –

20 out of 100	$\frac{20}{100}$	20 %	20 Percent
26 out of 100	.....	.....	26 Percent
.....out of .....	.....	35 %	.....
..... out of .....	.....	.....	18 Percent
63 out of 100	.....	.....	.....
75 out of	$\frac{75}{100}$	.....	.....



Converting Percent into Fraction

To convert any percent into fraction, the numerical value of the percent is divided by 100. For example— $4\% = \frac{4}{100} = \frac{1}{25}$

$$25\% = \frac{25}{100} = \frac{1}{4}$$



Do it yourself-

Convert into Fraction -

- 5%
- 18%
- 75%
- 50%

Converting any Fraction into Percent

To convert any fraction into percent, its denominator should be 100. For this, the numerator and the denominator of the fraction is multiplied by 100. In place of 100 of denominator we put the symbol of percent (%).

For example— The percentage of the fraction $\frac{1}{4}$ will be $\frac{1}{4} \times \frac{100}{100}$ (multiply numerator and denominator by 100)

$$= \frac{1}{\cancel{4}} \times \frac{25}{\cancel{100}} = \frac{25}{100} = 25\%$$

Means $\frac{1}{4} = 25\%$

Hence, equivalent percent of the fraction is 25%



Do it yourself-

Convert into percent —

- $\frac{1}{10}$
- $\frac{3}{4}$
- $\frac{1}{25}$
- $\frac{7}{5}$

Know this too-

To convert the fraction $\frac{1}{4}$ into percentage.

$\frac{1}{4} \times \frac{25}{25}$ to convert denominator into 100, multiply numerator and denominator by 25

$$= \frac{25}{100} = 25\%$$



Converting Percent into Decimal

To convert a percent into decimal the numerical value of percent is divided by 100.

For example—

$$\begin{aligned}\text{Decimal of } 24\% &= \frac{24}{100} \\ &= 0.24\end{aligned}$$



Do it yourself-

Convert into Decimal —

● 28%

● 52%

● 5%

● 220%

Converting Decimal into Percent

To convert decimal into percent, multiply the given decimal number by 100 and put percent symbol (%)

For example — percent of 0.4 = $0.4 \times 100 = 40\%$



Do it yourself-

Express each of the following in percent —

● 0.25

● 0.83

● 0.09

● 2.50

To find the percentage of any amount

We know that percentage is such a fraction whose numerator is the numerical value of the percentage and the denominator is 100. Therefore, to find the percentage of any amount, we divide that amount by 100 and then multiply it with the numerical value of the percentage.

For example - we have to find the 15% of 500.

$$15\% \text{ of } 500 = 500 \times \frac{15}{100} = 75$$



Let's understand this way too— 15% means 15 in 100

$$\text{Therefore, in 1 will be} = \frac{15}{100}$$

$$\begin{aligned}\text{Therefore, in 500 will be} &= \frac{15}{100} \times 500 \\ &= 75\end{aligned}$$

$$\text{Hence, 15\% of 500} = 75$$



Do it yourself-

Fill in the blanks —

- 38% of 600 = -----
- 18% of ₹ 2000 = ----- ₹
- 20% of 3 kg = ----- g
- 5% of 2 hours = ----- minute

To write an amount in the form of percentage of another amount

Let's understand—

What percent of 5 is 3 ?

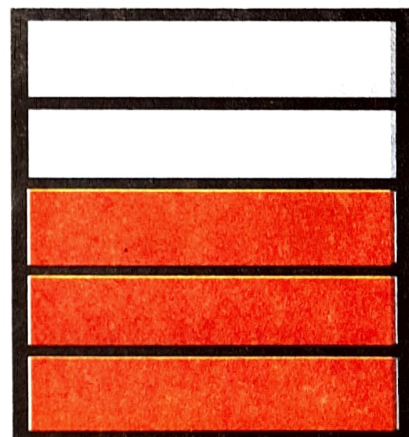
3 is to be written as percent of 5.

$$\text{parts in 5} = 3$$

$$\text{parts in 1} = \frac{3}{5}$$

$$\begin{aligned}\text{parts in 100} &= \frac{3}{5} \times 100 \\ &= 60\end{aligned}$$

$$\text{Hence 3 parts in 5} = 60\%$$



Since, percentage is always calculated in 100. Therefore, we find out the total parts from 100.



Word problems

Example 1 : In half-yearly exams, Golu obtained 24 marks out of 30 in Maths. What percentage of marks did he get ?

Solution :

$$\begin{aligned}\text{Marks obtained by Golu out of 30} &= 24 \\ \text{Marks obtained by Golu out of 1} &= \frac{24}{30} \\ \text{Marks obtained by Golu out of 100} &= \frac{24}{30} \times 100 \\ &= 80\%\end{aligned}$$

Hence, Golu obtained 80% marks in Maths.

Example 2 : There are 40 students in a class. Out of which 35% are girls. Find the number of girls and boys.

Solution : Out of 40 students, 35% are girls.

$$\begin{aligned}\text{Therefore, the number of girls} &= 35\% \text{ of } 40 \\ &= 40 \times \frac{35}{100} \\ &= 14\end{aligned}$$

$$\begin{aligned}\text{Number of boys} &= \text{Total number of students} - \text{Total number of girls} \\ &= 40 - 14 \\ &= 26\end{aligned}$$

Hence, there are total 14 girls and 26 boys in the class.

We have learnt

- Each fraction is such a form of division where numerator is divided by denominator.
- Decimal is such a fraction where denominator is 10 or a multiple of 10.
- Percentage is such a fraction whose denominator is 100.
- To convert the given number into percentage.
- To find the difference between fraction and percentage.



Exercise



1. Convert the following percent into fractions –
(a) 35% (b) 28% (c) 12.5% (d) $7\frac{1}{2}\%$
2. Convert the following fractions into percent –
(a) $\frac{1}{8}$ (b) $\frac{1}{12}$ (c) $\frac{3}{25}$ (d) $\frac{21}{50}$
3. Convert the following percentage into decimal –
(a) 42% (b) 35.6% (c) 4.9% (d) 11.8%
4. Convert the following decimal into percent –
(a) 0.342 (b) 0.68 (c) 0.77 (d) 0.315
5. Solve –
(a) 15% of 3L 500ml (b) 20% of 3 hours 40 minutes
(c) 3% of 35 metre (d) 21% of ₹ 40
6. In a school, 24 out of 35 children are present in a class.
What is the percentage of students present in the class?
7. The population of a village is 3600. Among which 48% are females and 52% are males. Find the population of females and males.
8. In a school, students made models for science exhibition. Among them 20% of students are differently abled. If total number of participants are 15, how many differently abled students participated ?

