

Percents as Rates per 100

Grade 6 math · Lesson · Standards: 6.RP.A.3c

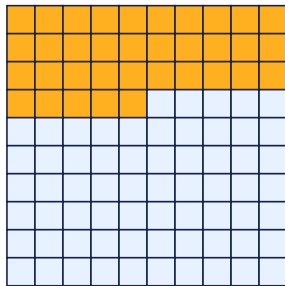
Quick answer: A percent is a rate per 100, so 35% means 35 out of 100, or 0.35. To find a percent of a quantity, multiply by the decimal. To find the whole from a part, divide the part by the percent. Bar models and fraction-decimal conversions check each answer.

Standards: 6.RP.A.3c · **Level:** Grade 6

What does percent mean?

Percent

A **percent** is a rate per 100. The symbol % means “out of 100,” so $35\% = \frac{35}{100} = 0.35$.



35 out of 100 squares: $35\% = 0.35$.

How do you convert percents, fractions and decimals?

Divide by 100 to go from a percent to a decimal. Multiply by 100 to go back. To write a percent as a fraction, put it over 100 and simplify.

Percent	Fraction	Decimal
25%	$\frac{1}{4}$	0.25
60%	$\frac{3}{5}$	0.6
8%	$\frac{2}{25}$	0.08
125%	$\frac{5}{4}$	1.25

Percents appear in everyday life: a 15% tip on a restaurant bill, a 40% discount on a jacket, or a school survey in which 35% of students chose one option. Each situation compares a part with a whole of 100 equal pieces, so one skill covers them all. Keep the part, the percent and the whole straight: any one of them can be the unknown, and the bar model helps you decide which operation to use.

How do you find a percent of a quantity?

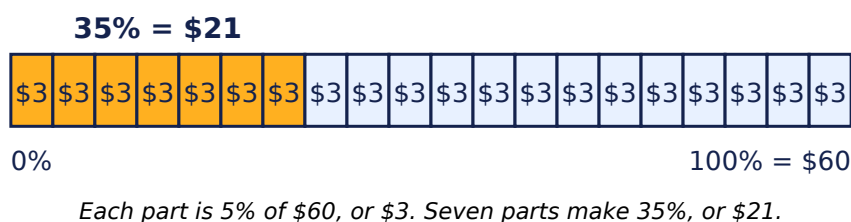
Method

1. Write the percent as a decimal.
2. Multiply the decimal by the whole.
3. Check with a bar model or by estimating.

Worked example

A jacket costs \$60. How much is 35% of \$60?

$0.35 \times 60 = 21$, so the answer is **\$21**.

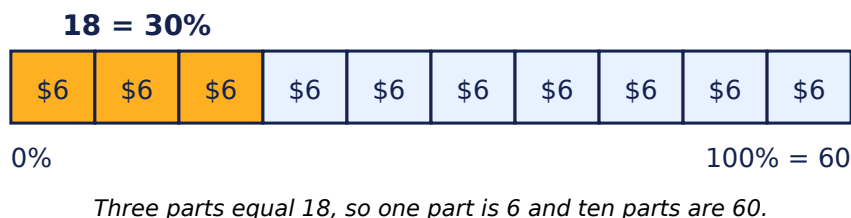


How do you find the whole when you know the part?

Part, percent, whole

part = percent $\times$ whole, so **whole = part $\div$ percent**.

$$18 = 30\% \times \text{whole, so whole} = 18 \div 0.30 = 60$$



A bar model gives the same answer: 30% is 3 tenths, so one tenth is $18 \div 3 = 6$, and the whole is $10 \times 6 = 60$.

Common mistake

Writing 7% as 0.7 instead of 0.07 makes the answer ten times too large. Move the decimal point two places left.

Mathbot's tip

Estimate first: 10% is one tenth and 50% is half. If your answer for 35% of \$60 is not between \$6 and \$30, recheck it.

Key points to remember

- Percent means per 100: $35\% = 35/100 = 0.35$.
- To convert a percent to a decimal, divide by 100.
- Percent of a quantity = decimal $\times$ whole.
- Whole = part $\div$ percent.
- A percent over 100 means more than the original amount.

Percents as Rates per 100: frequently asked questions

What does percent mean?

Percent means per 100. A score of 35% is 35 out of every 100, which equals the fraction $35/100$ and the decimal 0.35.

How do you find a percent of a number?

Change the percent to a decimal and multiply. For 35% of \$60, calculate $0.35 \times 60 = 21$.

How do you find the whole when you know the part and the percent?

Divide the part by the percent written as a decimal. If 18 is 30% of a number, the number is $18 \div 0.30 = 60$.

Can a percent be greater than 100?

Yes. A percent over 100 means more than the original amount. For example, 130% of \$2,400 is \$3,120.

How do you turn a fraction into a percent?

Divide the numerator by the denominator and multiply by 100. For $3/4$, $3 \div 4 = 0.75$, which is 75%.