

What We Are Learning

Understanding Percents

Vocabulary

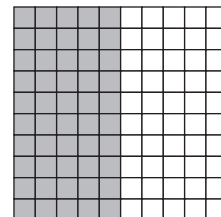
These are the math words we are learning:

percent a ratio of a number to 100

Dear Family,

The student will be learning about equivalent relationships among percents, decimals, and fractions. He or she will learn how to write a percent as a decimal and as a fraction, and vice versa. A percent is a ratio of a number to 100 and is written using the % symbol.

Since a percent represents a part of a whole, it can be modeled much like a fraction or decimal. 50% or 50 out of 100 squares are shaded in the grid.



Percents can be written as fractions or decimals. Likewise, both fractions and decimals can be written as percents.

$$50\% = \frac{50}{100} = 0.50$$

Percent Fraction Decimal

Write 35% as a fraction in simplest form.

$$\begin{aligned} 35\% &= \frac{35}{100} \\ &= \frac{7}{20} \end{aligned}$$

Write the percent as a fraction with a denominator of 100.

Write the fraction in simplest form.

Write $\frac{5}{8}$ as a percent.

$$\frac{5}{8} = 5 \div 8 = 0.625$$

Use division to write the fraction as a decimal.

$$0.625 = 62.5\%$$

Write the decimal as a percent.

As the student masters the relationship between a decimal and a percent, he or she will recognize that a decimal can be changed to a percent by moving the decimal point two places to the right and adding the percent sign. For example, $0.1 = 0.10 = 10\%$.

The student will also learn to estimate with percents by using equivalent fractions and simple percents. Learning to estimate percents can help the student determine whether an answer is reasonable.

Use a fraction to estimate 27% of 57.

$$27\% \text{ of } 57 \approx \frac{1}{4} \text{ of } 57 \quad 27\% \text{ is about } 25\%, \text{ and } 25\% = \frac{1}{4}.$$

$$\approx \frac{1}{4} \cdot 60 \quad \text{Change 57 to a compatible number.}$$

$$\approx 15 \quad \text{Multiply.}$$

27% of 57 is about 15.

As the student's understanding increases, he or she will begin to use proportions and decimal equivalents to find the percent of a number.

Find 23% of 60.

$$\frac{23}{100} = \frac{n}{60}$$

Write a proportion.

$$23 \cdot 60 = 100 \cdot n$$

Set the cross products equal.

$$1,380 = 100n$$

Multiply.

$$\frac{1,380}{100} = \frac{100n}{100}$$

Divide each side by 100 to isolate the variable.

$$13.80 = n$$

13.80 is 23% of 60.

The student will also be learning how to solve problems containing percents by using either proportions or equations.

18 is what percent of 60?

$$\frac{n}{100} = \frac{18}{60}$$

Write a proportion.

$$n \cdot 60 = 100 \cdot 18$$

Set the cross products equal.

$$60n = 1,800$$

Multiply.

$$\frac{60n}{60} = \frac{1,800}{60}$$

Divide each side by 60 to isolate the variable.

$$n = 30$$

18 is 30% of 60.

72 is 20% of what number?

$$72 = 20\% \cdot n$$

Write an equation.

$$72 = 0.2 \cdot n$$

Write 20% as a decimal.

$$\frac{72}{0.2} = \frac{0.2 \cdot n}{0.2}$$

Divide each side by 0.2 to isolate the variable.

$$360 = n$$

72 is 20% of 360.

Work through some of the practice problems with the student. Your involvement will propel his or her interest in mathematics.

Sincerely,

What We Are Learning

Applying Percents

Vocabulary

These are the math words we are learning:

interest the amount that is collected or paid for the use of money

percent of change the amount a number increases or decreases

percent of decrease the amount of change a number goes down

percent of increase the amount of change a number goes up

principal the amount of money deposited or borrowed

simple interest money paid only on the principal

Dear Family,

The student will learn to calculate the percent of change, which is the amount—stated as a percent—that a number increases or decreases. You can find the percent of change by using the following formula.

$$\text{percent of change} = \frac{\text{amount of change}}{\text{original amount}}$$

Find the percent of change if 24 is decreased to 20.

$$24 - 20 = 4$$

Find the amount of change.

$$\text{percent of change} = \frac{4}{24}$$

Substitute values into formula.

$$\approx 0.166\bar{6}$$

Divide.

$$\approx 16.7\%$$

Write the decimal as a percent.

The percent of decrease is about 16.7%.

Find the percent of change if 75 is increased to 120.

$$120 - 75 = 45$$

Find the amount of change.

$$\text{percent of change} = \frac{45}{75}$$

Substitute values into formula.

$$= 0.60$$

Divide.

$$= 60\%$$

Write the decimal as a percent.

The percent of increase is 60%.

The student will also be introduced to some real-world percent applications, such as finding the amount of mark-up or discount, and finding sale price.

Food to Go buys microwave popcorn from a food supplier for \$0.25 per package and sells each package at an 80% increase in price. What is the mark-up on the popcorn?

Think: 80% of \$0.25 is what number?

$$80\% \cdot 0.25 = n$$

Write an equation.

$$0.80 \cdot 0.25 = n$$

Write the percent as a decimal.

$$0.20 = n$$

Multiply.

The amount of mark-up on the popcorn is \$0.20.

Tires-4-All is having a 35% off sale on all tires. The average tire regularly sells for \$51.99. Find the amount of the discount and the sale price of one tire.

Find the amount of discount.

$$35\% \cdot 51.99 = n$$

Write an equation.

$$0.35 \cdot 51.99 = n$$

Write the percent as a decimal.

$$18.1965 = n$$

Multiply.

$$\$18.20 \approx n$$

Round to the nearest cent.

The discount is about \$18.20.

Find the sale price.

$$\$51.99 - \$18.20 = \$33.79$$

Subtract the discount from the regular price.

The sale price is about \$33.79.

The student will apply what has been taught about percents in order to solve problems involving simple interest. To do this, he or she will learn the following formula:

$$I = P \cdot r \cdot t$$

Interest = Principal \cdot rate \cdot time

If $P = \$450$, $r = 8.5\%$, and $t = 3$ years, find the simple interest.

$$I = P \cdot r \cdot t$$

Use the simple interest formula.

$$I = 450 \cdot 0.085 \cdot 3$$

Substitute. Use 0.085 for 8.5%.

$$I = 114.75$$

Multiply.

The simple interest is \$114.75.

Continued assurance to the student that what is being taught is important will make a noticeable difference in his or her learning.

Sincerely,