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# Percent and Rates per 100

Unit 1 Lesson 6

Math 6

### Students will be able to:

Define percent.

Express quantities as percent.

Write percent as fractions.

Write percent as decimals.

Find the percentage of a number.

# Percent and Rates per 100

## Key Vocabulary:

Percent

Rates per 100

Decimal

Fraction

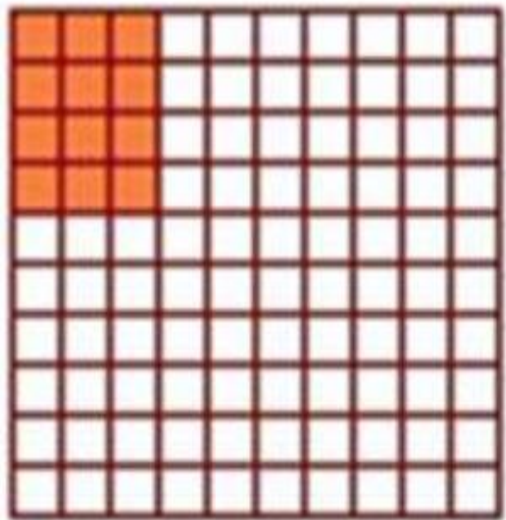
Ratio

# Percent and Rates per 100

**Percent** is defined in many ways, below are some of them:

- It is a number expressed as a fraction of 100
- It means parts per 100
- It is a ratio that tells us "out of 100."
- It is a ratio where the second is 100.

# Percent and Rates per 100



The figure tells us that:

- there are "12 parts per 100"
- a ratio of 12 out of 100
- a ratio expressed as 12:100

## Percent and Rates per 100

The percent symbol “%” is used as an easy way to write a fraction with a common denominator of 100.

So instead of writing “12 out 100”, we can write it as 12%.



**Percent is a Rate per 100!**

### Percent can be expressed in many ways...

- As a fraction:  $\frac{12}{100}$
- As a ratio: 12:100
- As a decimal: 0.12
- Using the percent symbol: 12%

### Sample Problem 1:

Express the following quantities as percent.

a. 18 out of 100

Solution: 18%

b. 35 out of 100

Solution: 35%



# Writing Percent as Fractions Over 100

Expressing percent as a fraction is very easy! Remember that percent means "part of the whole".

So 30% expressed as a fraction over 100 is

$$\frac{30}{100} \cdot$$

## Sample Problem 2:

Write the following as fractions over 100.

a. 25%

Solution:  $\frac{25}{100}$

b. 67%

Solution:  $\frac{67}{100}$

# Writing Percent to a Decimal (to the hundredths place)

There are a number of ways to express percent to decimals.

### A. Dividing by 100

Step 1: Express the given percent as a fraction of 100.

Step 2: Divide the resulting fraction.

**Example: Express 46% in decimal.**

$$\text{Step 1: } \frac{46}{100}$$

$$\text{Step 2: } 0.46$$

$$46\% = 0.46$$

### B. Move the Decimal

One of the easiest ways to convert a percent to a decimal is by simply moving it two places to the left!

**Example: Express 35% in decimal.**

$$35\% = 0.\underbrace{3}\underbrace{5}$$

### C. Multiplying the Given Percent by 0.01

**Example: Express 24% in decimal.**

$$24\% \times 0.01 = 0.24$$

## Sample Problem 3:

Express the given percent into decimal (to the nearest hundredths).

a. 33%

Solution: 0.33

b. 51%

Solution: 0.51

c. 75.6873%

Solution: 0.76

### Finding the Percent of a Given Number

To find the percent of a given number follow the steps below:

Step 1: Change the given percent to decimal.

Step 2: Multiply the quantities.



## Percent and Rates per 100

Example: What is 20% of 70?

Step 1:  $20\% = 0.20$

Step 2:  $(0.20)(70) = 14$

20% of 70 is 14

**Sample Problem 4:**

What is 15% of 20

Solution:  $(0.15)(20) = 3$