

## Percent's Cheat Sheet

Percent is a ratio out of 100.

$$\text{Example 1: } 43 \text{ out of } 100 = \frac{43}{100} = 0.43 \text{ or } 43\%$$

$$\text{Example 2: } 7 \text{ out of } 100 = \frac{7}{100} = 0.07 \text{ or } 7\%$$

Writing a percent as a decimal:

1. Divide percent by 100

$$\text{Example 1: } 68\% = 68 \div 100 = 0.68$$

$$\text{Example 2: } 162\% = 162 \div 100 = 1.62$$

Writing a decimal as a percent:

1. Multiply decimal by 100

$$\text{Example: } 0.41 = 0.41 \times 100 = 41\%$$

Writing a percent as a fraction:

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

$$\text{Example 1: } 76\% = \frac{76}{100} = \frac{19}{25}$$

divide both by 4

lowest terms

$$\text{Example 2: } 15.5\% = \frac{15.5}{100} = \frac{155}{1000} = \frac{31}{200}$$

Multiply by 10 to get rid of decimal

Divide by 5 to bring to the lowest terms

$$\text{Example 3: } 33\frac{1}{3}\% = \frac{33\frac{1}{3}}{100} = \frac{\frac{100}{3}}{100} = \frac{100}{3} \div 100 = \frac{100}{3} \div \frac{100}{1} = \frac{100}{3} \times \frac{1}{100} = \frac{100}{300} = \frac{1}{3}$$

Writing fractions as a percent:

1. Divide top number by bottom number.
2. Multiply by 100

$$\text{Example: } \frac{5}{8} = 5 \div 8 = 0.625 \times 100 = 62.5\%$$

OR

1. Write as a proportion

$$\text{Example: } \frac{5}{8} = \frac{P}{100} \longrightarrow 8 \times P = 5 \times 100 \longrightarrow \frac{8P}{8} = \frac{500}{8} \longrightarrow P = 62.5$$

## Percent Equation

$$\frac{\text{Part}}{\text{Whole}} = \frac{\%}{100}$$

1. Fill in what you know and identify unknown
2. Multiply
3. Divide

Example: Part = 15, whole = 60

$$\frac{15}{60} = \frac{P}{100} \longrightarrow 15 \times 100 = 60 \times P \longrightarrow \frac{1500}{60} = \frac{60P}{60} \longrightarrow P = 25$$

## Simple Interest

$$I = p \times r \times t$$

p = principle  
r = rate (% as decimal)  
t = time (years)

Example 1: Principle = \$4200

Rate = 4%

Time = 3 and a half years

$$I = 4200 \times 0.04 \times 3.5$$

$$I = \$588$$

Total amount due = Principle amount + interest

$$= \$4200 + \$588$$

$$= \$4788.00$$

Example 2: Principal = \$3800

Rate = 6.5%

Time = 7 months

$$I = p \times r \times t$$

$$= 3800 \times 6.5\% \times \frac{7}{12} \quad \swarrow \text{divide}$$

$$= 3800 \times 0.065 \times 0.5833333$$

$$= \$144.08$$

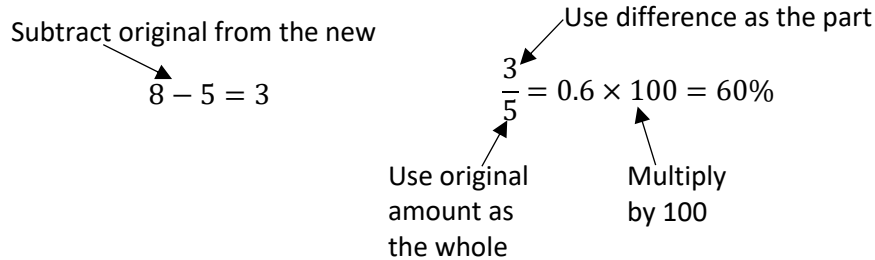
## Finding Percent of Increase or Decrease

\*use percent equation\*

Increase:

1. Subtract (new-original)
2. Use difference as the part
3. Use the original amount as the whole
4. Multiply by 100

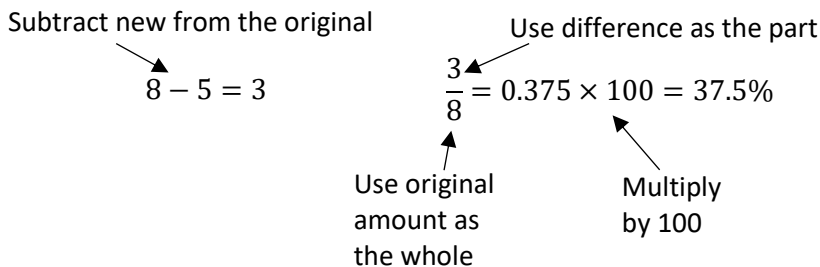
Example: You had 5 eggs but now have 8 eggs. What is your percent increase?



Decrease:

1. Subtract (original - new)
2. Use difference as the part
3. Use the original amount as the whole
4. Multiply by 100

Example: You had 8 eggs but now have 5 eggs. What is your percent decrease?



## Finding Sale Price

\*use percent equation\*

1. Sale price is part
2. Original price is whole
3. Multiply by 100
4. % of sale is percent

Example: An item is on sale for \$4.99, original price is \$5.50, find the sale percent

$$\frac{4.99}{5.50} = \frac{P}{100} \longrightarrow \frac{4.99}{5.50} = 0.907 \times 100 = 90.7\% \longleftarrow \text{Sale price is 90.7\% of the original price}$$
$$100 - 90.7 = 9.3\% \longleftarrow$$

If you subtract from 100, this gives you the actual discount as a percentage. In this case, the item is on sale for 9.3% off.

### Finding Rate of Commission or Commission Amount

\*use percent equation\*

1. Part is amount of commission
2. Whole is total sale price
3. Percent is rate of commission

Example: A salesperson earns \$750 for selling \$5000 worth of furniture. What is the rate of commission?

$$\frac{750}{5000} = \frac{P}{100} \longrightarrow 750 \times 100 = 5000P \longrightarrow \frac{75,000}{5000} = \frac{5000P}{5000} \longrightarrow P = 15\%$$