

# Fractions, Decimals, and Percents

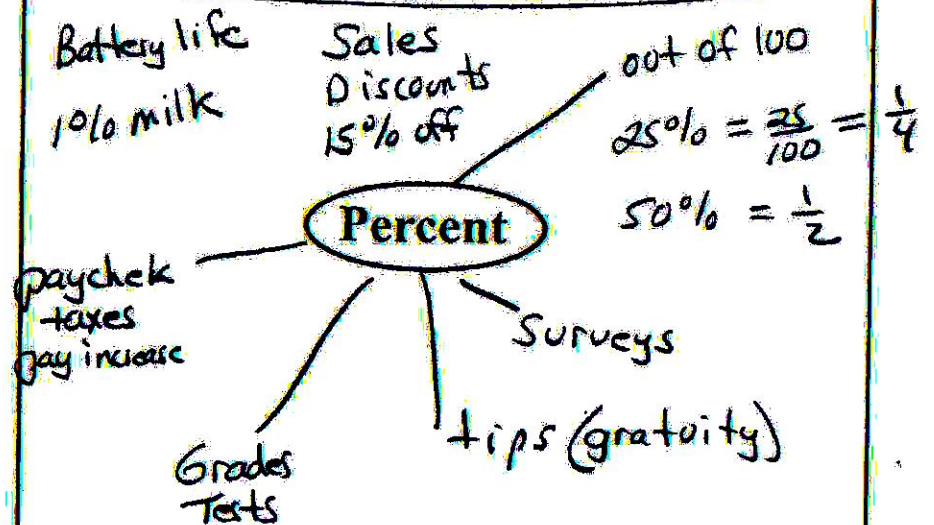
## Notes - Math 7

### Intro to Chapter 2

A **percent** is a ratio that compares a number to 100.

**Ex:** 12 out of 24 students are boys  
or  
50% of the students are boys

Where is percent used in real life situations?



What **percent** fraction relationships do we need to have MEMORIZED?

$\frac{1}{2} = 50\%$	$\frac{1}{5} = 20\%$	$\frac{1}{6} = 16\frac{2}{3}\%$	$\frac{1}{8} = 12.5\%$
$\frac{1}{3} = 33.\bar{3}\%$ $33\frac{1}{3}\%$	$\frac{2}{5} = 40\%$	$\frac{2}{6} = \frac{1}{3} = 33\frac{1}{3}\%$	$\frac{2}{8} = \frac{1}{4} = 25\%$
$\frac{2}{3} = 66.\bar{6}\%$ $66\frac{2}{3}\%$	$\frac{3}{5} = 60\%$	$\frac{3}{6} = \frac{1}{2} = 50\%$	$\frac{3}{8} = 37.5\%$
$\frac{1}{4} = 25\%$	$\frac{4}{5} = 80\%$	$\frac{4}{6} = \frac{2}{3} = 66\frac{2}{3}\%$	$\frac{4}{8} = \frac{1}{2} = 50\%$
$\frac{2}{4} = \frac{1}{2} = 50\%$	$\frac{5}{6} = 83\frac{1}{3}\%$	$\frac{5}{8} = 62.5\%$	$\frac{5}{10} = \frac{1}{2} = 50\%$
$\frac{3}{4} = 75\%$		$\frac{6}{8} = \frac{3}{4} = 75\%$	$\frac{6}{10} = 60\%$
		$\frac{7}{8} = 87.5\%$	$\frac{7}{10} = 70\%$
			$\frac{8}{10} = 80\%$
			$\frac{9}{10} = 90\%$

$\frac{1}{9} = 11.\bar{1}\%$	$11\frac{1}{9}\%$	$\frac{1}{10} = 10\%$
$\frac{2}{9} = 22.\bar{2}\%$		$\frac{2}{10} = 20\%$
$\frac{3}{9} = \frac{1}{3} = 33.\bar{3}\%$		$\frac{3}{10} = 30\%$
$\frac{4}{9} = 44.\bar{4}\%$		$\frac{4}{10} = 40\%$
$\frac{5}{9} = 55.\bar{5}\%$		$\frac{5}{10} = 50\%$
$\frac{6}{9} = \frac{2}{3} = 66.\bar{6}\%$		$\frac{6}{10} = 60\%$
$\frac{7}{9} = 77.\bar{7}\%$		$\frac{7}{10} = 70\%$
$\frac{8}{9} = 88.\bar{8}\%$		$\frac{8}{10} = 80\%$
		$\frac{9}{10} = 90\%$

1 = 100%

D → P

To write a decimal as a percent:

- \* Read decimal without using word "point"  
(Percent is number out of 100)

$.37 \rightarrow \frac{37}{100} \rightarrow 37\%$

- \* Make sure decimal has at least two decimal places.  $.6 \rightarrow .60 \rightarrow \frac{60}{100} \rightarrow 60\%$

$.06 \rightarrow \frac{6}{100} \rightarrow 6\%$

- \* Multiply by 100 and attach the % sign  
(move decimal point two places right)

$.125 \rightarrow 12.5\%$

→ Percent

<b>Examples:</b> $0.35 = 35\%$	$0.009 = 0.9\%$
$0.9 = 90\%$ $.90$	$0.025 = 2.5\%$
$1.35 = 135\%$ $100\% \quad 35\%$	$0.09 = 9\%$ $\frac{9}{100}$

To write a percent as a decimal:

- \* Read the % sign as "hundredths"

$52\% \rightarrow \frac{52}{100} \rightarrow .52$

- \* divide by 100 and remove the percent symbol

$52\% \rightarrow .52$

% → Decimal

<b>Examples:</b> $19\% = .19$	$1\% = .01$ $1.5\% = .015$
$5\% = .05$ $\frac{5}{100} \rightarrow 0.05$	$27\% = .27$
$450\% = 4.5$	$0.3\% = .003$

$.5 = 50\%$

To write a percent as a fraction, express the ratio as a fraction with a denominator of 100. Then simplify if possible.

Examples:

$$45\% = \frac{45}{100} = \frac{9}{20}$$

$$140\% = \frac{140}{100} = \frac{7}{5}$$

$$0.4\% = \frac{.4}{100} = \frac{4}{1000} = \frac{1}{250}$$

$$8.5\% = \frac{8.5}{100} = \frac{85}{1000} = \frac{17}{200}$$

More Examples:

$$83\frac{1}{3}\% = \frac{83\frac{1}{3}}{100} = \frac{83\frac{1}{3} \div 100}{100 \div 100} = \frac{83\frac{1}{3} \cdot \frac{1}{100}}{1} = \frac{83\frac{1}{3}}{100} = \frac{250}{3} \cdot \frac{1}{100} = \frac{250}{300} = \frac{5}{6}$$

$$4\frac{7}{12}\% = \frac{4\frac{7}{12}}{100} = \frac{4\frac{7}{12} \div 100}{100 \div 100} = \frac{4\frac{7}{12} \cdot \frac{1}{100}}{1} = \frac{4\frac{7}{12}}{100} = \frac{11}{12} \cdot \frac{1}{100} = \frac{11}{1200} = \frac{11}{240}$$

To write a fraction as a percent, write an equivalent fraction with a denominator of 100.

Ask yourself:

- \* Is it one I have memorized?
- \* Can I easily write it with a denominator of 100?
- \* Is it one I can simplify and then use other strategies?
- \* Can I write it as a decimal first? (may mean long ÷)

Write these fractions as percents

$$\frac{37}{100} = 37\%$$

$$\frac{7 \times 5}{20 \times 5} = \frac{35}{100} = 35\%$$

$$\frac{37 \times 2}{50 \times 2} = \frac{74}{100} = 74\%$$

$$\frac{7}{8} = 87.5\%$$

$$8 \overline{) 7.000}$$

$$\underline{64} \phantom{00}$$

$$60 \phantom{00}$$

$$\underline{56} \phantom{00}$$

$$40$$