

## Percentages

<b>Converting a decimal to a percent</b>		<b>Converting a percent to a decimal</b>	
<p>0.375</p> <p><math>0.375 \times 100 = 37.5\%</math></p>	<p>Multiply the decimal by 100 (just move decimal point two places to right) and add % symbol</p>	<p>25%</p> <p><math>25 \div 100 = 0.25</math></p>	<p>Divide the decimal by 100 (just move decimal point two places to the left), add 0's if necessary</p> <p><i>Remember we assume that there is a decimal point to the right of any whole number</i></p>
<b>Convert Fraction to percent</b>		<b>Convert a percent to a fraction</b>	
<p><math>\frac{3}{4}</math></p> <p><math>\frac{3}{4} = 0.75</math></p> <p>75%</p>	<p>Convert fraction to a decimal by dividing</p> <p>Convert decimal to percent as example above</p>	<p>12.5%</p> <p><math>\frac{12.5}{100}</math></p> <p><math>12.5 \rightarrow 125</math></p> <p><math>100 \rightarrow 1000</math></p> <p><math>\frac{125}{1000} = \frac{1}{8}</math></p>	<p>Drop the % symbol and write the number over 100</p> <p>Convert numerator to whole number by moving decimal point to right</p> <p>Add zeros to the denominator equal to number of places decimal point was moved above</p> <p>Simplify fraction</p>
Example 1	Example 2	Example 3	% Increase/Decrease
<p>What is 45% of 200?</p> <p><math>x = 45\%</math> of 200</p> <p><math>x = 0.45 \times 200</math></p> <p><math>= 90</math></p>	<p>90 is 45% of what number?</p> <p><math>90 = 45\%</math> of <math>x</math></p> <p><math>90 = 0.45x</math></p> <p><math>x = 90 \div 0.45</math></p> <p><math>= 200</math></p>	<p>90 is what percent of 200?</p> <p><math>90 = x\%</math> of 200</p> <p><math>90 = \frac{x}{100}(200)</math></p> <p><math>90 = \frac{200}{100}x</math></p> <p><math>90 = 2x</math></p> <p><math>x = 45</math></p>	<p>To increase a number by <math>k\%</math>, multiply it by <math>(1 + k\%)</math>.</p> <p>To decrease a number by <math>k\%</math>, multiply it by <math>(1 - k\%)</math></p>

<b>Example 4</b>	<b>Example 5</b>	<b>Example 6</b>	<b>Example 7</b>
What is the value of a \$1600 investment after a 25% increase?	What is the value of a \$2000 investment if it loses 25%?	If 25 students took an exam and 4 of them failed, what percent of them passed?	What is 10% of 20% of 30%?
$\$1600(1 + 25\%)$	$\$2000(1 - 25\%)$	$25 - 4 = 21$ passed	$0.10 \times 0.20 \times 0.30$
$\$1600(1 + 0.25)$	$\$2000(1 - 0.25)$	$21 \div 25 = 0.84$	$= .006 = 0.6\%$
$\$1600(1.25) = \$2000$	$\$2000(0.75) = \$1500$	$0.84 = 84\%$ passed	