Introduction to Percents

Percents, like fractions and decimals, are ways of writing numbers that are not necessarily whole numbers.

Percent means “parts of 100”, so they can always be written as fraction with 100 in the denominator.

Writing percents as a fraction

To write percents as a fraction, multiply the percent by $\frac{1}{100}$

$$13\% = 13 \cdot \frac{1}{100} = \frac{13}{1} \cdot \frac{1}{100} = \frac{13}{100}$$

$$120\% = 120 \cdot \frac{1}{100} = \frac{120}{1} \cdot \frac{1}{100} = \frac{120}{100} = \frac{6}{5} = 1\frac{1}{5}$$

$$16\frac{2}{3}\% = 16\frac{2}{3} \cdot \frac{1}{100} = \frac{50}{3} \cdot \frac{1}{100} = \frac{50}{300} = \frac{1}{6}$$

Sometimes it helps to change mixed numbers to improper fractions for the calculation

Writing percents as decimals

To write a percent as a decimal, multiply the percent by 0.01 (move decimal point two places to the right)

5% = 5 * 0.001 = 0.05
215% = 215 * 0.001 = 2.15

Writing fractions or decimals as percents

To write fractions or decimals as percents, multiply the fraction or percent by 100%

Change3/8 to a percent

$$\frac{3}{8} \cdot 100\% = \frac{3}{8} \cdot \frac{100}{1}\% = \frac{300}{8}\% = 37.5\%$$

Change 0.48 as a percent

0.48 * 100% = 48%

Table of Common Fractions and Their Percentage Equivalents

$^1/_2$ = 50%			

$^{1}/_{3}$ = 33 $^{1}/_{3}$%	$^{2}/_{3}$ = 66 $^{2}/_{3}$%		
$^{1}/_{4}$ = 25%	$^{3}/_{4}$ = 75%		
$^{1}/_{5}$ = 20%	$^{2}/_{5}$ = 40%	$^{3}/_{5}$ = 60%	$^{4}/_{5}$ = 80%
$^{1}/_{6}$ = 16 $^{2}/_{3}$%	$^{5}/_{6}$ = 83 $^{1}/_{3}$%		
$^{1}/_{7}$ = 14 $^{2}/_{7}$%	$^{2}/_{7}$ = 28 $^{4}/_{7}$%	$^{3}/_{7}$ = 42 $^{6}/_{7}$%	$^{4}/_{7}$ = 57 $^{1}/_{7}$%
		$^{5}/_{7}$ = 71 $^{3}/_{7}$%	$^{6}/_{7}$ = 85 $^{5}/_{7}$%
$^{1}/_{8}$ = 12 $^{1}/_{2}$%	$^{3}/_{8}$ = 37 $^{1}/_{2}$%	$^{5}/_{8}$ = 62 $^{1}/_{2}$%	$^{7}/_{8}$ = 87 $^{1}/_{2}$%
$^{1}/_{9}$ = 11 $^{1}/_{9}$%	$^{2}/_{9}$ = 22 $^{2}/_{9}$%	$^{4}/_{9}$ = 44 $^{4}/_{9}$%	$^{5}/_{9}$ = 55 $^{5}/_{9}$%
		$^{7}/_{9}$ = 77 $^{7}/_{9}$%	$^{8}/_{9}$ = 88 $^{8}/_{9}$%
$^{1}/_{10}$ = 10%	$^{3}/_{10}$ = 30%	$^{7}/_{10}$ = 70%	$^{9}/_{10}$ = 90%
$^{1}/_{12}$ = 8 $^{1}/_{3}$%			

Table of Common Fractions and Their Decimal Equivalents or Approximations

$^{1}/_{2}$ = 0.5			
$^{1}/_{3}$ = 0.3333...	$^{2}/_{3}$ = 0.6666...		
$^{1}/_{4}$ = 0.25	$^{3}/_{4}$ = 0.75		
$^{1}/_{5}$ = 0.2	$^{2}/_{5}$ = 0.4	$^{3}/_{5}$ = 0.6	$^{4}/_{5}$ = 0.8
$^{1}/_{6}$ = 0.1666...	$^{5}/_{6}$ = 0.8333...		
$^{1}/_{7}$ = 0.142857142857...		$^{2}/_{7}$ = 0.285714285714...	
$^{3}/_{7}$ = 0.428571428571...		$^{4}/_{7}$ = 0.571428571428...	
$^{5}/_{7}$ = 0.714285714285...		$^{6}/_{7}$ = 0.8571428571428...	
$^{1}/_{8}$ = 0.125	$^{3}/_{8}$ = 0.375	$^{5}/_{8}$ = 0.625	$^{7}/_{8}$ = 0.875
$^{1}/_{9}$ = 0.111...	$^{2}/_{9}$ = 0.222...	$^{4}/_{9}$ = 0.444...	$^{5}/_{9}$ = 0.555...
		$^{7}/_{9}$ = 0.777...	$^{8}/_{9}$ = 0.888...
$^{1}/_{10}$ = 0.1	$^{3}/_{10}$ = 0.3	$^{7}/_{10}$ = 0.7	$^{9}/_{10}$ = 0.9
$^{1}/_{12}$ = 0.08333...			