

Decimals, Fractions and Percentages

Decimals, Fractions and Percentages are just different ways of showing the same value:



A Half can be written...

As a fraction:	$\frac{1}{2}$
As a decimal:	0.5
As a percentage:	50%



A Quarter can be written...

As a fraction:	$\frac{1}{4}$
As a decimal:	0.25
As a percentage:	25%

Example Values

Here is a table of commonly occurring values shown in Percent, Decimal and Fraction form:

Percent	Decimal	Fraction
1%	0.01	$\frac{1}{100}$
5%	0.05	$\frac{1}{20}$
10%	0.1	$\frac{1}{10}$
12½%	0.125	$\frac{1}{8}$
20%	0.2	$\frac{1}{5}$
25%	0.25	$\frac{1}{4}$
33⅓%	0.333...	$\frac{1}{3}$
50%	0.5	$\frac{1}{2}$
75%	0.75	$\frac{3}{4}$
80%	0.8	$\frac{4}{5}$
90%	0.9	$\frac{9}{10}$
99%	0.99	$\frac{99}{100}$
100%	1	
125%	1.25	$\frac{5}{4}$
150%	1.5	$\frac{3}{2}$

Conversions

From Percent to Decimal

To [convert from percent to decimal](#): divide by 100, and remove the "%" sign.

The easiest way to divide by 100 is to **move the decimal point 2 places to the left**. So:

From Percent

75%

0.75



To Decimal

0.75

move the decimal point **2 places to the left**, and remove the "%" sign.

From Decimal to Percent

To [convert from decimal to percent](#): multiply by 100, and add a "%" sign.

The easiest way to multiply by 100 is to **move the decimal point 2 places to the right**. So:

From Decimal

0.125

12.5



To Percent

12.5%

move the decimal point **2 places to the right**, and add the "%" sign.

From Fraction to Decimal

The easiest way to [convert a fraction to a decimal](#) is to divide the top number by the bottom number (divide the numerator by the denominator in mathematical language)

Example: Convert $\frac{2}{5}$ to a decimal

Divide 2 by 5: $2 \div 5 = 0.4$

Answer: $\frac{2}{5} = 0.4$

From Decimal to Fraction

To [convert a decimal to a fraction](#) needs a little more work.

Example: To convert 0.75 to a fraction

Steps

First, write down the decimal "over" the number 1

Then multiply top and bottom by 10 for every number after the decimal point (10 for 1 number, 100 for 2 numbers, etc)

(This makes it a correctly formed fraction)

Then [Simplify](#) the fraction

Example

$$0.75 / 1$$

$$0.75 \times 100 / 1 \times 100$$

$$= \frac{75}{100} \\ \frac{3}{4}$$

From Fraction to Percentage

The easiest way to [convert a fraction to a percentage](#) is to divide the top number by the bottom number. then multiply the result by 100, and add the "%" sign.

Example: Convert $\frac{3}{8}$ to a percentage

First divide 3 by 8: $3 \div 8 = 0.375$,

Then multiply by 100: $0.375 \times 100 = 37.5$

Add the "%" sign: 37.5%

Answer: $\frac{3}{8} = 37.5\%$

From Percentage to Fraction

To [convert a percentage to a fraction](#), first convert to a decimal (divide by 100), then use the steps for converting decimal to fractions (like above).

Example: To convert 80% to a fraction

Steps

Convert 80% to a decimal (=80/100):

Example

0.8

Write down the decimal "over" the number 1

$$0.8 / 1$$

Then multiply top and bottom by 10 for every number after the decimal point (10 for 1 number, 100 for 2 numbers, etc)

$$0.8 \times 10 / 1 \times 10$$

(This makes it a correctly formed fraction)

$$= 8 / 10$$

Then [Simplify](#) the fraction

$$4 / 5$$