Problem with Percents? Self-Help Guide!

Understanding Percents Part 1 (Converting *from* Percents)

A percent is the number of parts per hundred. It is actually another way to represent a fraction or decimal.

Example #1: What is a percent?

n% means n parts out of 100 or $\frac{n}{100}$, read as n hundredths.

It may be necessary to convert a percent to a fraction or decimal. It is possible to convert the percent to a fraction first and then to a decimal *or* convert the percent to a decimal first and then to a fraction. Both methods are shown in the examples below.

Example #2: Convert 13% to a fraction and then to a decimal.

Percent to fraction: 13% means 13 parts out of 100 or the fraction $\frac{13}{100}$.

Fraction to decimal: Recall that the fraction bar is actually a division symbol.

$\frac{13}{100}$ means $13 \div 100 = 0.13$

(Dividing by 100 moves the decimal point two place values to the left.)

Example #3: Convert 28% to a fraction and then to a decimal.

Percent to fraction: 28% means 28 parts out of 100 or the fraction $\frac{28}{100}$.

Simplify by dividing by the GCF: $\frac{28}{100} \div \frac{4}{4} = \frac{7}{25}$

Fraction to decimal: Recall that the fraction bar is actually a division symbol:

$\frac{7}{25}$ means $7 \div 25 = 0.28$

If a calculator is not available, it is easier to convert the fraction to a decimal before simplifying the fraction:

$\frac{28}{100} = 28 \div 100 = 0.28$

(Dividing by 100 moves the decimal point two place values to the left.)

Problem with Percents? Self-Help Guide!

If the number is greater than 100%, then the corresponding fraction is greater than 1 which means that the numerator will be larger than the denominator. This improper fraction could be written as a mixed number. The corresponding decimal will also be greater than 1.

Example #4: Convert 115% to a fraction and then to a decimal.

Percent to fraction: 115% means 115 parts out of 100 or the fraction $\frac{115}{100}$.

Simplify by dividing by the GCF: $\frac{115}{100} \div \frac{5}{5} = \frac{23}{20}$ or $1\frac{23}{20}$

Fraction to decimal: Recall that the fraction bar is actually a division symbol.

$\frac{23}{20}$ means $23 \div 20 = 1.15$

If a calculator is not available, it is easier to convert the fraction to a decimal before simplifying the fraction:

$\frac{115}{100} = 115 \div 100 = 1.15$

(Dividing by 100 moves the decimal point two place values to the left.)

Example #5: Convert 1.2% to a fraction and then to a decimal.

Percent to fraction: 1.2% means 1.2 parts out of 100 or the fraction $\frac{1.2}{100}$.

Simplify this complex fraction by multiplying by a form of one to move the decimal point in the numerator, producing the whole number 12 (which eliminates the decimal in the numerator).

$$\frac{1.2}{100} \cdot \frac{10}{10} = \frac{12}{1000}$$

Continue simplifying by dividing by the GCF:

$$\frac{12}{1000} \div \frac{4}{4} = \frac{3}{250}$$

Fraction to decimal: Recall that the fraction bar is actually a division symbol.

$\frac{3}{250}$ means $3 \div 250 = 0.012$

If a calculator is not available, it is easier to convert the fraction to a decimal before simplifying the fraction:

$\frac{12}{1000} = 12 \div 1000 = 0.012$

(Dividing by 1000 moves the decimal point three place values to the left.)

Problem with Percents? Self-Help Guide!

To change a percent to a decimal before converting to a fraction, recall that the decimal point separates the numbers **greater than or equal to one whole (to the left of the decimal point)** from the numbers **less than one whole (to the right of the decimal point)**.

Recall place value:

1	2	3	4	.	5	6	7	8
Thousands	Hundreds	Tens	Ones		Tenths	Hundredths	Thousandths	Ten Thousandths

Example #6: Convert 23% to a decimal and then to a fraction.

Percent to decimal: Move the decimal point two place values to the left. Although there is no decimal point shown in 23%, it is understood that the decimal point is after the 3.

$$23.\% = 0.23$$

Decimal to fraction: 0.23 is read as "twenty-three hundredths." Using decimal place value (the place value will become the number in the denominator), write this decimal as a fraction $\frac{23}{100}$.

Example #7: Convert 8% to a decimal and then to a fraction.

Percent to decimal: Move the decimal point two place values to the left. Although there is no decimal point shown in 8%, it is understood that the decimal point is after the 8.

$$8.\% = 0.08$$

Decimal to fraction: 0.08 is read as "eight hundredths." Using decimal place value (the place value will become the number in the denominator), write this decimal as a fraction $\frac{8}{100}$.

Simplify by dividing by the GCF: $\frac{8}{100} \div \frac{4}{4} = \frac{2}{25}$

Problem with Percents? Self-Help Guide!

Example #8: Convert 148% to a decimal and then to a fraction.

Percent to decimal: Move the decimal point two place values to the left. Although there is no decimal point shown in 148%, it is understood that the decimal point is after the 8.

$$148.\% = 1.48$$

Decimal to fraction: 1.48 is read as "one and forty-eight hundredths." Using decimal place value (the place value will become the number in the denominator), write this decimal as a fraction $1\frac{48}{100}$ or $\frac{148}{100}$.

Simplify by dividing by the GCF: $\frac{148}{100} \div \frac{4}{4} = \frac{37}{25}$ or $1\frac{12}{25}$

Example #9: Convert 0.04% to a decimal and then to a fraction.

Percent to decimal: Move the decimal point two place values to the left, adding zeros as place holders when necessary:

$$0.04\% = 0.0004$$

Decimal to fraction: 0.0004 is read as "four ten-thousandths." Using decimal place value (the place value will become the number in the denominator), write this decimal as a fraction $\frac{4}{10{,}000}$.

Simplify by dividing by the GCF: $\frac{4}{10{,}000} \div \frac{4}{4} = \frac{1}{2500}$