

## HOW TO FIND PERCENTS

Percent is another method of describing parts of a whole. We can think of a percent as a part over the total number. We describe a percent as  $\frac{\text{part}}{\text{whole}}$ , where whole = 100.

**Example:** Out of 100 students (the total number of students and also the “whole”), 85 of them (the “part”) slept till noon the day after their finals ended.

From this word problem, we can set up the fraction

$$\frac{85 \text{ students}}{100 \text{ students}} \Rightarrow \frac{\text{part}}{\text{whole}} \Rightarrow \frac{85}{100} \Rightarrow 85 \% \text{ of the students slept till noon.}$$

Percents can be fractions or decimals when a conversion step is made. The following shows these steps:

### Percents & Fractions:

Percents means hundredths (1/100): So 75% converts to  $75 \times 1/100$  without the symbol (%). From this we see that when we have a percentage we can simply take the number, in this case 75, and put it over 100 making a fraction.

**Example:**  $4\% = 4/100$ ,  $2.5\% = 2.5/100$ ,  $3000\% = 3000/100$

In the same way we might want to convert from a fraction back to a percent. (This conversion is usually used when one needs a percent for an answer to a word problem). To do this conversion we simply do away with the denominator, usually a hundred, and add the percentage symbol (%).

**Example:**  $2/100 = 2\%$ ,  $600/100 = 600\%$ ,  $3.4/100 = 3.4\%$

### Percents & Decimals:

Since percent means hundreds (1/100) we can also look at a hundredth in decimal form (.01). So 75% also converts  $75 \times (.01) = .75$  without the symbol (%).

**Example:**  $4\% = 4 \times .01 = .04$ ,  $3000 \times .01 = 30$ ,  $2.5\% \times .01 = .025$

From this we see that when we have a percentage we can simply take the number, in this case 75, and multiply it by the number .01.

Note that  $75\% = 75/100 = .75$

Again, in the same way, we might want to convert from a decimal back to a percent. (This conversion is usually used when one needs a percent for an answer to a word problem). To do this conversion we take the number, sometimes a decimal and multiply it by 100%. To do this we multiply the number by 100 and add on a percentage symbol (%).

**Example:**  $.02 \times 100\% = 2\%$ ,  $3.4 \times 100\% = 340\%$   
 $600 \times 100\% = 60,000\%$   $.58 \times 100\% = 58\%$

