# Lesson #5

# Solving Percentage Problems

## The Key to Solving Percentage Problems:

- SO many students struggle with problems like "75 is what percent of 300?"
- The goal is to SIMPLIFY the problems and make them easy to solve
- We do this by ***CONVERTING*** the words into a mathematical equation
- Then the solution becomes simple

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## So What Are We Looking For?

The process is like a treasure hunt… We are looking for three key pieces of information:

- What?
- Is?
- Of?

If we can identify these values, the rest is simple…

Now we determine how to change the words into symbols:

1) What? is represented by the variable, usually **x**
2) Is? means = (equals)
3) Of? means we **multiply**

Before we begin one key note about **percentages**…

## Expressing Percentages as Decimals (and Vice Versa)

To convert a percentage to a decimal, we *divide it by 100:*

For example: 75% is equivalent to $\frac{75}{100} = .75$

143% is equivalent to $\frac{143}{100} = 1.43$

To change a decimal to a percent, we *multiply it by 100:*

For example: .634 is equivalent to $.634 * 100 = 63.4\%$

1.4 is equivalent to $1.4 * 100 = 140\%$

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## Using the Formulas:

**Sample Question:** What number is 60% of 75?

**Solution:** Identify the key pieces of information and match them up with their mathematical symbols:

What number is 60% of 75?

x = .60 * 75

**x = 45**

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**Sample Question:** 75 is what percent of 300?

**Solution:** Identify the key pieces of information and match them up with their mathematical symbols:

75 is what percent of 300?

75 = x * 300

75 = 300x

x = .25

We convert .25 to a percentage by multiplying by 100: **.25 * 100 = 25%**

**Sample Question:** 42 is 40% of what number?

**Solution:** Identify the key pieces of information and match them up with their mathematical symbols:

42 is 40% of what number?

42 = .40 * x

42 = .40x

**105 = x**