1.10: Solving Simple Equations

Learning Objectives

- Use proper order of operations while solving simple equations with variables

Let's quickly review some math concepts that will help you avoid simple errors in your work.

Order of Operations

Remember, when you solve an equation it's important to do each operation in the following order:

1. Simplify inside parentheses and brackets.
2. Simplify the exponent.
3. Multiply and divide from left to right.
4. Add and subtract from left to right.

In this course you will not use exponents, but you will need to remember the order of the other steps. So, in solving the following equation, you multiply first, then add:

Try It

These next two questions allow you to get as much practice as you need, as you can click the link at the top of each question ("Try another version of this question") to get a new question. Practice until you feel comfortable doing the questions and then move on.

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Try It

These next two problems are a little harder. See if you can do them. Remember to apply the order of operations: simplify inside parentheses first; then multiply and divide left to right; finally add and subtract left to right.

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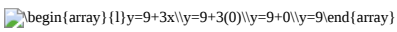
Lines

In this course the most common equation you will see is  . This is the equation for a line. We will revisit this equation later in this module when we review graphs. For now, let's practice solving this common equation using different variables.

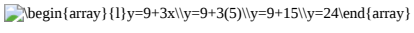
Understanding Variables

To a mathematician or an economist, a **variable** is the name given to a quantity that can assume a range of values. In other words, the value of a variable can change or vary. In an equation it's represented by a letter or a symbol. Because economic models often consider cause and effect, variables are important. You will often be asked to consider a range of options that result from different variables. Below is a very simple example:

In order to understand the range of options, we might start with 0. What does *y* equal if ?

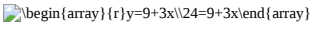


Now, let's look at the same formula with different information. What does y equal if  ?

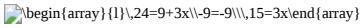


Working with Variables

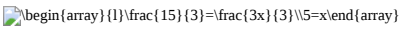
Remember that when you're trying to solve an equation with one or more variables, you need to isolate the variable. Let's walk through a simple example using the same equation from above. What if we want to solve the equation in a case where ?



First, subtract the same number from each side of the equation to simplify the equation without changing the fact that it's an equality. In this case, we want to subtract the number that will enable us to isolate x (x is on one side of the equal sign all by itself). We can do that by subtracting 9 from each side.



Now we can further simplify the equation by dividing both sides by 3.



Let's practice solving for x one more time. What does x equal if ?

Try It

These next two questions allow you to get as much practice as you need, as you can click the link at the top of each question ("Try another version of this question") to get a new question. Practice until you feel comfortable doing the questions and then move on.

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Glossary

[glossary-page][glossary-term]variable: [/glossary-term]
[glossary-definition]a quantity that can assume a range of values[/glossary-definition][/glossary-page]

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