

What is an Algorithm?

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A **standard algorithm** is a step-by-step way to solve a problem. Here we are going to focus on what a standard algorithm is for basic multi-digit math, although there are many, many algorithms to solve all kinds of different problems.

First, let's take it out of math and put it to use for something simple, like baking a cake. Baking a cake is not really an algorithm, but it is a step-by-step system to solve a problem: not having cake. That's a pretty big problem! There are certain steps that you need to follow to have your cake come out of the oven just right, just like there are steps to solve math problems. So the step-by-step way to bake a cake is: get your ingredients, mix your ingredients in the right order and by measuring them carefully, put the cake mix into a pan, then bake it for a set amount of time, let it cool, then frost it, pretty simple.

But what happens if you do the steps out of order? If you put your ingredients in the bowl to mix them, then try to measure them, you might not get the right amount in the mix. If you bake all the ingredients before you mix them, they won't come together properly, and they would be really hot when you tried to put them in the bowl to mix. Following each step in the process is really important if you want your cake to come out right. It is exactly the same for a standard algorithm in math.

The nice thing about the standard algorithms for addition, subtraction, multiplication, and division is that you are basically doing the same step over and over with each place value column in the problem.

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