Study.com

# Estimating Sums, Differences & Products of Decimals

After watching this video lesson, you will be able to estimate any decimal number to help you simplify your math problems. See how easy it is to estimate your answer when you are trying to find the sum, difference, or product.

Jenny is shopping for her family today. She only has $50 to spend. She is shopping for her mom, dad, and brother. Since she has only so much to spend, the quickest way to figure out her total is by estimating her prices. Why? Because her prices are in decimal form.

**Decimal numbers** are numbers that have a decimal point in them. What kinds of numbers do you normally see when you see prices in stores? Decimal numbers! For example, how much is a candy bar usually? I find them for about $0.59 or even $1.69, depending on the store and what kind of candy bar I am looking for. Look at the numbers, though, and what do you see in both? Why, they both have a decimal point. If we take away the dollar sign, we are then looking at decimal numbers.

Now, if you had several of these numbers to work with, you could go ahead and add them as is to get the most accurate answer. But, if you just wanted to know roughly what your total will be, then estimating your decimals will get you that answer much quicker. If Jenny was buying her mom a necklace that costs $16.99 and her dad a nice pen for $12.99 and her brother a board game for $15.99, she could easily find her rough total if she estimated her prices to the nearest whole dollar.

Remember that when you round, you choose a place value to round to. It could be to the nearest whole number, one decimal place, two decimal places, and so on. Once you have chosen your place value, you then look at the digit to the right. If this digit is 5 or greater, then you round your place value digit up by 1. If it is less than 5, then you keep your place value digit. For example, 16.99 rounds up to 17 because we are rounding to the nearest whole number. The digit we are rounding is 6. So we look at the digit to the right, which is a 9. This is 5 or greater, so we round our digit, our 6, up by 1.

Rounding the other items that Jenny is getting, we get 13 for 12.99 and 16 for 15.99. Looking at our rounded numbers and our decimal numbers, you can see which is quicker to add. We can easily add 17 + 13 + 16. This equals 46. This means that Jenny's total cost will be around $46. This is under $50 so Jenny can rest assured that she can afford to buy these three gifts.

Let's look at a few examples that you might encounter on math tests and such now. The problem you are working on will usually specify to what place value you should estimate to.

## Sum

*Estimate 1.12 + 3.58 to the first decimal space.*

What we see here is an addition problem with decimals. The problem wants us to estimate to the first decimal space. This is the digit directly after the decimal point. So rounding our numbers to the first decimal space, we get 1.1 + 3.6.

We didn't round up for the first number because the digit directly to the right of the first decimal space is less than 5. We rounded our second number up because the digit directly to the right of the first decimal space is 5 or greater. Now, adding 1.1 + 3.6, we get 4.7 and we are done!

## Difference

*Estimate 9.8 - 4.3 to the nearest whole number.*

This problem wants us to round to the nearest whole number. This is also a subtraction problem. Doing so, we get 10 - 4. Calculating this, we get an answer of 6 and we are done!

## Product

*Estimate 4.48 * 1.9 to the nearest whole number.*

This is a multiplication or product problem involving decimals. It wants us to round to the nearest whole number. Rounding to the nearest whole number, we get 4 * 2 as our new problem. Multiplying this out, we get an answer of 8 and we are done!

As you can see, estimating our problems leads to easier to solve problems. Sometimes, we even end up with a problem that we can easily do in our heads.

## Lesson Summary

Let's review. **Decimal numbers** are numbers that have a decimal point in them. Many times, when we have an addition, subtraction, or multiplication problem involving decimal numbers, it is easier to estimate the answer. To estimate such a problem involves picking a place value to round to. Then, we use our rounded numbers to finish the problem with. Many times, the problem

will specify to what place value to round to.

## Learning Outcome

When you are finished, you should be able to:

- Identify a decimal number
- Recall the rules for rounding numbers
- Solve a decimal problem using estimation