Study.com

Solving Problems Using Decimal Numbers

Problems involving decimal numbers might sound like a way to torture you, but learning how important these types of problems are in the real world is important. In this lesson, you will see a couple areas in life where you routinely encounter decimal number problems.

Decimal Number Problems

Problems using decimal numbers are important in daily life; believe it or not. They're not just a way to torture you and your brain. Keep watching the attached video, and you will see how you can apply your newfound skills to help you succeed as a student.

Problems where you will see **decimal numbers**, numbers that contain a decimal point, include word problems, as well as straightforward math problems that just show you two numbers with the operation they want you to perform. Don't worry about the word problems so much; I'm going to show you a way you can think about them to make them easier for you. Believe it or not, you might be doing these types of problems in your head already without even knowing it.

How to Solve Them

When you see a straightforward math problem such as 1.5 + 3.15 = ?, there are no questions about what needs to be done. What you see is what you do. But sometimes, it's hard to do the calculations because the numbers look confusing. When this is the case, think of areas in life where you see similar numbers and where you have succeeded in solving these types of problems. Then, take your success and apply it to your current problem.

For example, if you are good with money and know right away whether something adds up or not, you can think of decimals in terms of money. So, for the problem 1.5 + 3.15, you can think of it as $1.50 + $3.15. If dealing with money is easier for your brain to handle, then think of ways to turn your problem into a money problem you can solve. If another method works, use that method.

For word problems, the best way to solve these types of problems is to picture the problem in your mind and imagine the scene. What is going on and what are the important decimal numbers you need to work with? What operation is needed to solve the problem? What information is just extra fluff that you can ignore? Let's try solving a couple problems to see how this process plays out.

The Change Problem

Our first problem involves shopping. If you shop and pay for your own things, you might already be doing problems like this in your head. The problem we are given is this one:

'Sarah is shopping at the mall. She likes this one little shop, but today, the shop's computer system is down, and everything has to be done on paper. Sarah has a $20 bill on her, and she wants to buy this gift set that costs $18.97. Because the computers are down, the cashier has to figure out Sarah's change by hand. But Sarah, being careful of her money, has already figured out the change she is supposed to get. What is it?'

After reading this problem, I first ask myself, what is going on and what numbers do I need to concern myself with? I can picture the scene in my head, and I see that what I need to be concerned about is the $20 and the $18.97.

Now I ask myself, what operation needs to be performed to solve the problem? Sarah is looking for change, so my operation needs to be subtraction. What do I subtract from what? Sarah has $20, and she is going to spend $18.97, so I need to subtract $18.97 from $20. Everything else is just fluff that I can ignore now.

The problem's looking pretty good now. I know how to subtract decimals, so that's what I will do. Since I am subtracting a decimal number with two decimal places, I will add a decimal to the end of my 20 and add two 0s to it so I can subtract properly. I place my decimal in line with all the other decimal points in my answer line. Then, I go ahead and start subtracting from right to left.

I subtract 7 from 0, but since 0 is less than 7, I need to borrow a 1 from the number to the left of the 0, so I am subtracting 7 from 10. But, since the number to the left of the 0 is also a 0, I need to keep going to the left until I see a number I can take 1 away from. I reached the 2, so now I can change the 2 to a 1 and the following 0s to 9s.

Essentially, what I have done is to take 1 from 200, so I have 199 on the very top row now. So, 10 - 7 is 3. Then, I subtract 9 from 9 to get 0. Then, I subtract 8 from 9 to get 1, and finally, 1 - 1 is 0, which I can ignore since it's a leading 0 to the left of the decimal point. So, my answer is $1.03, which means Sarah needs to get that much in change back from the cashier.

The Winning Score Problem

Let's try another problem:

'James is a runner on the school's track team. In a recent event, he scored 10.391 seconds on a sprint contest. There were four other runners competing in that event as well. If the other runners each scored 10.392, 10.284, 10.403, and 10.399, respectively, what place did James win?'

So first, I see that I only need to concern myself with the scores of the runners, including James. What I need to do is to compare James' score to the scores of the other runners to see if James won first, second, or third place. In order to do that, I need to order my decimal numbers. Everything else in the problem I can ignore now.

I know how to order decimals numbers by comparing the numbers starting at the decimal point and going from left to right. The process is similar to the way I would alphabetize two names. So, I go ahead and order all the decimal numbers, and I get 10.284, 10.391 (which is James), 10.392, 10.399, and 10.403. Wow, what a close race! I marked James' time so I can pick out his time easier in the line-up. I see that James is in second place. So, that's what he won: second place. And, that's my answer.

Lesson Summary

In review, we've seen how useful decimal number problems are in the real world. Recall that **decimal numbers** are the numbers that have a decimal point in them.

Two places where you will see these types of problems are when shopping and in sports. To solve straightforward math problems, it might be helpful to relate the decimal numbers to something you can understand easier, such as money.

For word problems, the key to solving them is to visualize them and figure out the important numbers you need to be concerned about. Then, think about what operation is needed to find your answer. The rest of the problem just becomes fluff at this point.

Learning Outcome

You may be able to apply math skills to two real-world scenarios after watching this video lesson on the use of decimal numbers. After learning about some problem-solving strategies, you could notice an enhanced ability to work through math equations and word problems involving decimals.