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Multiplying and Dividing Decimals: Examples & Word Problems

Watch this video lesson to learn what you need to do to get a correct answer when multiplying and dividing decimals. Learn the easy tricks to figuring out where the decimal point goes.

Multiplying Decimals

Decimal numbers, those numbers with a decimal point in them, aren't scary or difficult to work with if you know the shortcuts that I will show you. In this video, we are specifically talking about multiplication and division of decimal numbers. I will show you that multiplying and dividing decimal numbers is exactly the same as multiplying and dividing whole numbers with just one difference.

In the real world, multiplying and dividing decimals happens all the time, so being able to multiply and divide decimals is an essential skill to have. For example, when you are shopping, you may need to quickly find out how much tax you can expect to pay for your purchase so that you can keep an eye out so you are not overcharged.

Let's first look at multiplying decimal numbers. Let's say we want to multiply 1.25 and 3.5. What do we do? We proceed by first multiplying the two numbers while ignoring the decimal. So we go ahead and multiply 125 with 35. We get 4,375.

Now this is where the one difference comes in and where we can apply our trick. The trick here is to count the number of decimal places we have in total. We have two from 1.25 and we have one from 3.5. We have a total of three decimal places, so that tells us that we need to count three decimal places, and that is where we put our decimal point. So our decimal goes between the 4 and the 3. Our final answer is 4.375.

Sales Tax: A Multiplication Example

Now let's look at a real-world example. You are shopping, and you want to buy two pairs of shoes. The total for the two shoes is $62.18. The sales tax in your area is 6 percent. How much should you expect to pay in sales tax?

$$\begin{array}{r} 1.25 \\ \underline{\times 3.5} \\ 4.375 \end{array}$$

To solve this problem, you need to multiply your total of $62.18 with the sales tax of 0.06 percent. Yes, we are multiplying the two decimals together. Remember what we just learned? First, go ahead and multiply as if there are no decimals. We multiply 6,218 with 6 to get 37,308. Then we count the total number of decimal places we have between our two numbers. We have four.

Now we count four decimal places in our answer to find where we should put our decimal point. We place it between the beginning 3 and the 7. Our final answer is 3.7308. We can expect to pay around $3.73 in sales tax.

Dividing Decimals

Let's move onto division now. Division is also similar to dividing whole numbers. The only difference here is that if the number we are dividing by is a decimal, then we will want to convert it to a whole number before we divide. If we are dividing 7.24 by 0.2, we would first change the 0.2 to a 2. To do that, we move the decimal place over one space to the right.

Because we are doing this to one number, we also need to move the decimal place one place to the right in the other number. So my 7.24 becomes 72.4. Now we can go ahead with our long division of 72.4 divided by 2. Once we get our answer, we write in the decimal point so that it matches the position of the decimal point in the 72.4

```
   36.2
2 | 72.4
  -6
   12
  -12
    0 4
     -4
      0
```

Our answer is 36.2. See how the decimal point in the answer is directly above the decimal point in 72.4?

Sharing Burgers: A Division Example

In the real world, we come across division problems also. For example, we could be eating out with three of our friends at a burger place. Once the check comes, we need to figure out how much everyone should pay since we all shared the food. If the total of the check is $36.12 and there are four people total, how much should each person pay?

To answer this question, we need to divide $36.12 by 4. The number we are dividing by is already a whole number, so we don't need to convert it or move any decimal points around. We go ahead and we do the long division for 36.12 divided by 4. My answer is 9.03. Notice again how the decimal points are aligned.

Lesson Summary

We've now covered both multiplication and division of decimal numbers. Let's review what we've learned. We know that our **decimal numbers** are the numbers with decimal points in them. To multiply them, we go ahead and multiply as if there were no decimals. Then we count the number of decimal places between our numbers to find the number of decimal places we need in our answer. To divide, we first convert the number we are dividing by to a whole number if it is a decimal number.

```
        9.03
  4|36.12
   −36
     0 12
     −12
        0
```

If it is already a whole number, then we can go ahead and perform long division with our problem. If we needed to convert the number we are dividing by to a whole number by moving the decimal point over a certain number of places, then we also need to move the decimal point the same number of places over in the other number. After performing the long division, we put the decimal point in our answer so that it is aligned with the decimal point underneath.

Learning Outcome

Once you are finished reviewing this lesson you should be able to solve a multiplication or division problem that includes decimals.