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How to Estimate with Decimals to Solve Math Problems

Watch this video lesson to learn how you can estimate problems with decimals in them so you can get a quick answer when you need it - for example, when you are at the gas station and you need to know how much gas you can afford.

A Word Problem

This video lesson is about estimating **decimal numbers**, numbers with decimal points, so we can easily and quickly estimate our answers to problems that involve decimal numbers. Being able to estimate our answers gives us a general idea of what kind of answer we should expect. This is very useful in real life. For example, say we are going on a road trip to our favorite vacation spot by the beach. We are amped up and ready to relax by the beach with a nice cold drink in our hands.

But we have to drive there first! We need to fill our gas tank so that we don't get stranded in the middle of nowhere. We go to the gas station and see that gas costs $3.69 a gallon. We need 10.3 gallons to fill up our car. About how much money should we expect to pay? Estimating our decimals will help us a great deal in answering this problem. Let's see how we do this.

Estimating Decimals

Because this problem is asking us 'about how much,' it is asking us to estimate an answer. We don't need an exact answer, so we don't need to use the exact decimal numbers. We can estimate our decimal numbers using numbers that are easier for us to calculate.

For example, instead of using 3.69, we can use 4. Don't you think 4 is easier to work with? How did we get 4? We rounded our decimal to the nearest whole number. We can round our 10.3 to a simple 10. To find our estimated answer, we multiply the number of gallons, 10, we need by the cost per gallon, 4. We get 10 * 4 = 40. It will cost us about $40 to fill up our tank. How does this compare with the actual? Let's see. 3.69 * 10.3 = $38.01. Our estimate is pretty good; only two dollars off!

Another Example

Let's look at another problem. We are at the store this time shopping for groceries. We have three things in our basket. We want to quickly add up the cost of each item so we know roughly how much money we need to purchase all three of them. We have a package of spaghetti that costs $2.79, a pound of ground beef that costs $5.69, and a can of spaghetti sauce that costs $6.97. About how much can we expect to pay for all three items?

We go ahead and we round the cost per item to a number that we can easily deal with. The spaghetti for $2.79 we round to $5. The pound of ground beef for $5.69 we round to $5. And the can of spaghetti sauce for $6.97 we also round to $5. All of these numbers are fairly close to 5, so rounding them all to 5 makes the problem that much easier to work with.

To purchase all three, I will need about 5 + 5 + 5 = $15. Is this pretty accurate? Let's see. $2.79 + $5.69 + $6.97 = $15.45. Wow! Not bad! I was only 45 cents off! In this case, because we rounded some numbers down, our estimate may be lower than the actual. In real life, when we make these estimates, we need to account for that and give our estimate some room to grow. So if our estimate is $15, we perhaps will need just a few more dollars to cover the difference between our estimate and the actual. But for calculating purposes, the estimate makes quick work out of a problem that could have taken a bit of time and the need for perhaps paper and pen, if not a calculator.

One More Example

Let's look at one last example. This is the kind of problem that you might expect to see on a standardized test.

Estimate the product of 30.6 * 12.3.

Your answer choices are:

a) 400

b) 300

c) 200

d) 100

e) 500

How would you estimate these decimal numbers?

I would round the 30.6 to 30 and the 12.3 to 10. I wouldn't round the 12.3 to 12 because I can't do 30 * 12 that easily. I can do 30 * 10 very easily. And looking at my answers, it looks like I would be multiplying something by 10 anyways. So 30 * 10 gives me 300. Is this one of my answer choices? Yes, it is! My answer is b.

Lesson Summary

We've looked at three examples now. What have we learned? We've learned that we can estimate problems with **decimal numbers**, numbers with decimal points in them, to make the problem easier to work with. The way we estimate our decimal numbers is to round them to a number that we can easily work with. It can be either a whole number or the nearest tens.

We can round to whatever will make it easy for us to estimate our problem. We can round up or round down as needed. If we round down, though, we have to keep in mind that perhaps our actual answer will be slightly higher. If we are dealing with money, we may need more money than our estimate to cover the actual cost.

Learning Outcome

By the end of this lesson, you should be able to estimate the outcome of a math problem involving decimals.