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How to Use Front-End Estimation

In this video lesson, you will learn how to estimate addition and subtraction problems by using the method of front end estimation. Learn what is involved and what you need to be careful of.

Rounding Review

Rounding, replacing a number with a simpler number, is a very important skill to have as you go through your math lessons and real life. For example, when you go shopping, it is much easier to add up rounded numbers than it is to add up the exact cost of each item. By rounding your numbers, you will get an estimate of your total. This will give you an idea of about how much you will need to pay.

To round, we use the 5 or greater rule. Say we are rounding to the nearest ten. Then, we look at the digit to the right of the ten's place. If this number is 5 or greater, then we round our ten's digit up by one. If this number is less than 5, then we round down by keeping our tens digit and changing all the numbers to the right of the tens digit to 0. We call this rounding down because our rounded number will be less than our beginning number.

For example, 26 is rounded up to 30 because the digit to the right of the ten's place is a 6, which is greater than 5. 43 is rounded down to 40 because the digit to the right of the ten's place is a 3, which is less than 5. Do you see how 40 is less than 43? If we are rounding to the nearest hundred, we follow the same rules except now we are working with the hundred's place and the digit directly to the right of it.

For example, 478 is rounded up to 500 because the digit to the right of the hundred's place is a 7, which is greater than 5. 742 is rounded down to 700 because the digit to the right of the hundred's place is a 4, which is less than 5.

Front End Estimation

Now that we have reviewed our rounding rules, let's talk about the method called **front end estimation**. This is one method we can use to estimate the answer to a math problem. With this method, we round each number to the leftmost digit. This means that if we have the number 34, then we round to the ten's place and if we have the number 7,456, then we round to the thousand's place. Whatever is our leftmost digit, that is where we round to. It's called front end estimation because the leftmost digit is the first digit you come across as you read from left to right. It is the front end of our number.

Let's look at a couple of examples of front end estimation in action.

Example 1

Use front end estimation to estimate the answer to 6,989 + 3,200.

Using front end estimation to round each number, we get to the leftmost digit or the first digit we see. So, we round 6,989 to the nearest thousand and 3,200 to the nearest thousand as well. We get 7,000 and 3,000. Adding these numbers up, we get 7,000 + 3,000 = 10,000. Our estimated answer is 10,000.

Example 2

Our last example had two numbers that were both rounded to the nearest thousand. What if our two numbers were rounded to two different places? What then? Let's look.

Use front end estimation to estimate the answer to 756 - 32.

In this problem, we round our first number, 756, to the nearest hundred and our second number, 32, to the nearest ten. Doing this, we get 800 and 30. Now our problem is 800 - 30. What is our estimated answer? 770.

When we have two numbers that we round to different places, we just have to make sure that we are working with the right numbers. In our example, we just had to make sure that we were subtracting 30 and not 300.

Lesson Summary

Let's review what we've learned now. **Rounding** is replacing a number with a simpler number. To round, we look at the digit to the right of the digit we are rounding. If this digit is 5 or greater, we round up. If this digit is less than 5, then we round down by keeping the digit we are rounding and changing all the digits to the right to 0.

Front end estimation is one method we use to estimate the answer to a math problem. With this method, we round each number to the leftmost digit, and then we perform our operation, either subtraction or addition.

Learning Outcome

After you are done with this lesson you should be able to use rounding to help estimate the outcome of a math problem.