

Problem Solving: Rounding and Estimating Guided Notes

Rounding is a way of simplifying numbers to make them easier to understand or work with them.

Rounding can be used when an exact number isn't needed, and an approximate answer will do.

Rules for Rounding

The rules for rounding are simple, and should make sense if you understand what rounding is.

Step 1 Identify the place value of the digit you want to round.

Step 2 If the digit to the right of the identified digit is **5 or more (5, 6, 7, 8, 9)**, increase the identified digit by 1.

If the digit to the right is **less than 5 (0, 1, 2, 3, 4)**, do not change the identified digit.

Step 3 Change all digits to the right of the rounded identified digit to zeros.

Sample Problem 1: Round the following numbers.

a. **141** Nearest ten

b. **1,156** Nearest hundred

c. **17,999** Nearest thousand

d. **342.12** Nearest tenth

e. **0.346** Nearest hundredth

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Using the Number Line to Round Numbers

We can visualize the process of rounding by using a number line.



Sample Problem 2: Round the following numbers. (USE NUMBER LINE)

- a. **239**
Nearest ten
- b. **1,235**
Nearest hundred
- c. **15.07**
Nearest tenth

Estimating

Estimating is another way of making numbers easier to work with when we don't need to know exactly how many; we just need to know about how many. Estimation is finding a number that is close enough to the right answer.

Rounding Method

Rounding is one common method used for estimating. Determine the place value to use for the particular problem you want to estimate. Now that your numbers end in zero, you can easily do mental math to solve the problem, whether that requires adding, subtracting, multiplying or dividing.

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Sample Problem 3: Estimate the answer using rounding method.

a. $4,345 + 222 =$

b. $7,135 - 2,545 =$

c. $35 * 12 =$

d. $1,629 \div 389 =$

Front End Estimation

The name comes from the way that you round. Instead of rounding each number to a given place value, we round whatever number is in the front.

With front end estimation, we only round and calculate with numbers in the leftmost place or the very last number on the left. This means that all numbers in other places will be zeros except the number in the leftmost place after the numbers are rounded.

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Sample Problem 4: Estimate the answer using front end estimation.

a. $15,345 + 122 =$

b. $81,135 - 12,545 =$

c. $230 * 128 =$

d. $5,875 \div 145 =$

Cluster Estimation

Cluster estimation can be used to estimate sums and products when the numbers you are adding or multiplying cluster near or is close in value to a single number.

Sample Problem 5: Estimate the answer using cluster estimation.

a. $345 + 387 + 421 + 399 =$

b. $25 * 28 * 31 * 33 =$