Study Guide: 5.1 Rounding Decimals

Standard: 5.1- The student, given a decimal through thousandths, will round to the nearest whole number, tenth, or hundredth.

What you need to know: *How to round to the nearest whole number (which is the ones place), tenths, and hundredths place.*

- A decimal point separates the whole number places from the places less than one. Place values extend infinitely (forever) in two directions from a decimal point.

- To read decimals,

    - read the whole number to the left of the decimal point;

    - read the decimal point as "and";

    - read the digits to the right of the decimal point just as you would read a whole number; and

    - say the name of the place value of the digit in the smallest place.

- Any decimal less than one will include a leading zero (e.g., 0.125). This number may be read as "zero and one hundred twenty-five thousandths" or as "one hundred twenty-five thousandths."

- Decimals can be rounded in situations when exact numbers are not needed. Strategies for rounding whole numbers can be applied to rounding decimals.

Key Vocabulary:

Decimal number or decimal- a number with a decimal point in it. Numbers to the right of the decimal point represent parts of a whole.

Whole number– the number to the left of the decimal. When we round to the nearest whole we refer to the one's place as the "nearest whole."
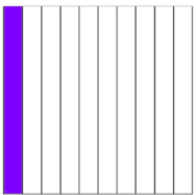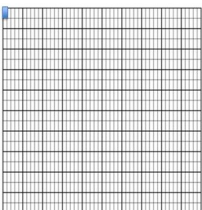

⇐ **Tenth**– Place value directly to the right of the decimal point. The value is one-tenth of a whole (a whole divided into ten parts– one of those parts)

One-tenth, 0.1, 1/10
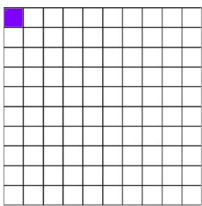
Hundredth– Place value two places to the right of the decimal point. The value is one– hundredth of a whole.
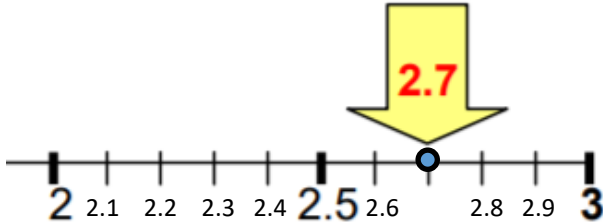
One-hundredth, 0.01, 1/100

Thousandth-Place value three places to the right of the decimal point. The value is one- thousandth of a whole.

One-thousandth, 0.001, 1/1000

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Conceptual Examples of Rounding:

Round 2.7 to the nearest whole:

Looking at 2.7 on a number line, we start at 2, since that is the number in our "whole" (or ones) spot, and then count on in 0.1 intervals all the way to the next "whole" (one) which is 3.

Now we mark the number we are rounding, 2.7. Look at the number line and determine the whole 2.7 is closer to: 2 or 3.
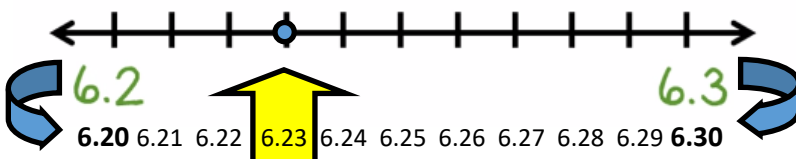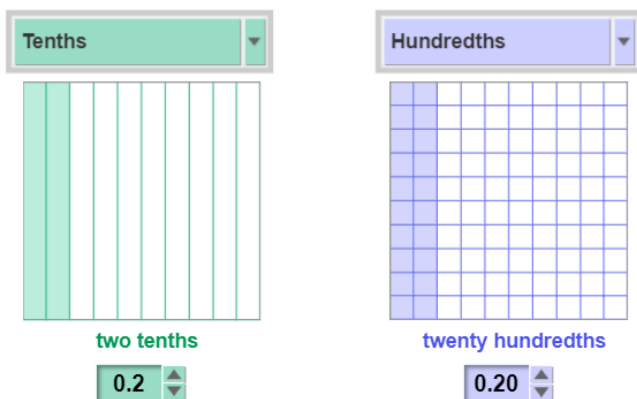
Looking at the number line we can see that 2.7 rounds up to 3 because it is closer to 3 wholes than 2 wholes – we only need 0.3 more to get to 3 rather than 0.7 to get to 2.

Think of it like a road trip. If you started at a place called 2 and are heading toward a place called 3, are you closer to your starting location or destination?

You can do the same when rounding to the nearest 10th or 100th.
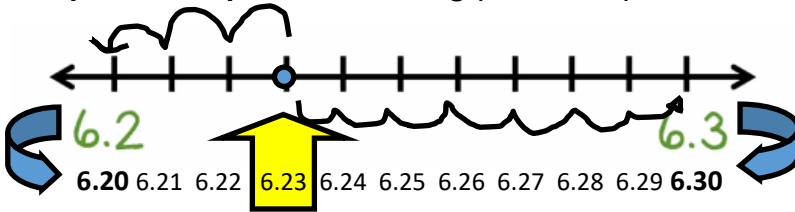
Round 6.23 to the nearest tenth:

First, place 6.23 on a number line. To do this, think back to what you learned in fourth grade. We know that 6.2 is the same as 6.20 (the zero just means that each piece is the size of a hundredth instead of a tenth, therefore instead of 2 tenths you have 20 one-hundredths-see picture below). With this information, we can create our number line.

two tenths

0.2

twenty hundredths

0.20

6.2   6.3

6.20 6.21 6.22 6.23 6.24 6.25 6.26 6.27 6.28 6.29 **6.30**

Conceptual Examples of Rounding (continued):

Looking at this number on the number line, which number is 6.23 closest to- 6.20 or 6.30?

ANSWER: 6.20 (six and twenty hundredths), which is the same as 6.2 (six and two tenths, which is the place value we were asked to round to).

How to do it WITHOUT a number line:

Step 1: Underline the number in the place value you are rounding to.

Example 1) Round 26.537 to the tenths place.

- Underline the 5, which is in the tenths place. (26.537)

Step 2: Circle the number behind the underlined number.

- Circle the 3, the number behind the underlined number. (26.537)

Step 3: If the circled number is 5 or higher, the underlined number goes up by one digit. If the circled number is four or less, the underlined number stays the same.

- The "three" is less than four, so the 5 will stay the same. (26.500)

Step 4: Write your new rounded number. Remember that any numbers behind the circled numbers become zeroes or disappear.

- Write your new number one of two ways: 26.500 or 26.5

More Examples of Rounding Decimals:

Example 2) Round 47.629 to the nearest whole number.

Step 1- Underline the 7, which is the nearest whole number (47.629)

Step 2- Circle the 6, the number behind the underlined number (47.629)

Step 3- The "six" is more than five, so the 7 will go up one (48.000)

Step 4- Write your new number one of two ways: 48.000 or 48

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Example 3) Round 6.278 to the nearest hundredth.

Step 1- Underline the 7, which is in the hundredths place. (6.278)

Step 2- Circle the 8, the number behind the underlined number. (6.278)

Step 3- The 8 is more than 5, so the seven will go up one. (6.280)

Step 4- Write your new number one of two ways: 6.280 or 6.28

How you may see the question presented on the SOL test:

1. Round 34.386 to the tenths place. (You type in the answer)

2. Which shows 34.638 rounded to the nearest whole number?
a. 30.000
b. 34.600
c. 34.000
d. 34.630

3. Which number rounds to 65.7?
a. 65.763
b. 64.675
c. 65.648
d. 65.652

4. Round the following numbers:

To the nearest whole number	To the nearest tenth	To the nearest hundredth
12.567	26.0842	34.3961
45.226	.2431	21.0033
99.674	1.9892	36.2984

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5. Which numbers round to 5.6? (Circle them)

5.49   5.56   5.51   5.648   5.501   5.65   5.61

6. What is 34.769 rounded to the nearest whole number?

7. What is 45.964 rounded to the hundredths place? The tenths place?

hundredths

tenths

8. Which numbers round to 4? (Circle them)

3.95   4.521   3.52   3.48   4.46   3.702   3.459
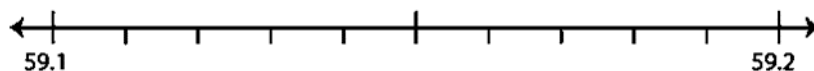
9. Which numbers round to 2.34? (Circle them)

2.347   2.352   2.342   2.336   2.434   3.344   2.334

10. Round the decimal to the nearest tenth using the number line.
    59.14
    A) Place the point 59.14 on the number line.

    B) Which is closer to 59.14? Circle your answer.
            59.1   59.2

    C) 59.14 rounded to the nearest tenth is: _____