

Engage NY Module 1

{ Lesson 8 – Objective: Round a given decimal to any place using place value understanding and the vertical line.

Say the Decimal	Name the tenths	Say the Decimal	Name the thousandths
13 tenths = _____	2 and 5 tenths = _____	37 hundredths = _____	0.548 = _____
14 tenths = _____	17 and 5 tenths = _____	137 hundredths = _____	1.548 = _____
24 tenths = _____	24 and 5 tenths = _____	537 hundredths = _____	2.548 = _____
124 tenths = _____	42 and 3 tenths = _____	296 hundredths = _____	7.352 = _____
524 tenths = _____	195 and 1 tenth = _____	45 hundredths = _____	34.531 = _____

Fluency Practice – Rename the Units

Standard Form	Unit Form	Word Form	Expanded Form
8.735			
	7458 thousandths		
		One and two tenths	
			$10 + 3 + .9 + .07$

Draw a vertical number line with 2 endpoints and a midpoint.

1. Ask yourself what two ones is 8.735 between?
2. Ask yourself what is the midpoint between 8 and 9?
3. Now fill in the endpoints and midpoint on the vertical number line.
4. Ask yourself how many tenths are in the midpoint (8.5)?
5. Ask how many tenths are in 8.735? (87 tenths)?
6. Now show 8.735 on your number line and write the number sentence.
7. Number sentence = 8.735 is between 8.5 and 9 on the number line and $8.735 \approx 9$.

Have Students repeat for the other 3 numbers.

Fluency Practice – Round to Different Place Values

- ⌘ Please complete in your math/science journal. Give your answer in the form of statement of solution.
- ⌘ Organic, whole-wheat sells in bags weighing 2.915 kilograms. How much flour is this rounded to the nearest tenth? How much flour is this rounded to the nearest one? What is the difference of the two answers? Use a place value chart and number line to explain your thinking.

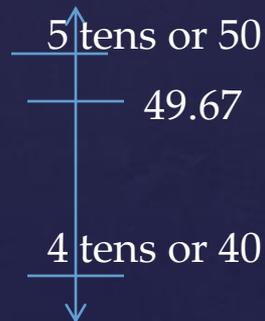
Application Problem

⌘ Round 49.67 to the nearest ten.

- ⌘ What are some different ways 49.67 could be decomposed using place value disks.
- ⌘ Now show the decomposition that you think will be most helpful in rounding to the nearest ten.
- ⌘ Below is a few ways to think of it

4 tens	9 ones	6 tenths	7 hundredths
	49 ones	6 tenths	7 hundredths
		496 tenths	7 hundredths

- ⌘ Which one of these is the most helpful and why?
- ⌘ Draw and label a number line and circle the rounded value. Explain your reasoning.
- ⌘ Discuss as a whole group and then repeat for rounding to the nearest ones and tenths.



Concept Development – Problem 1

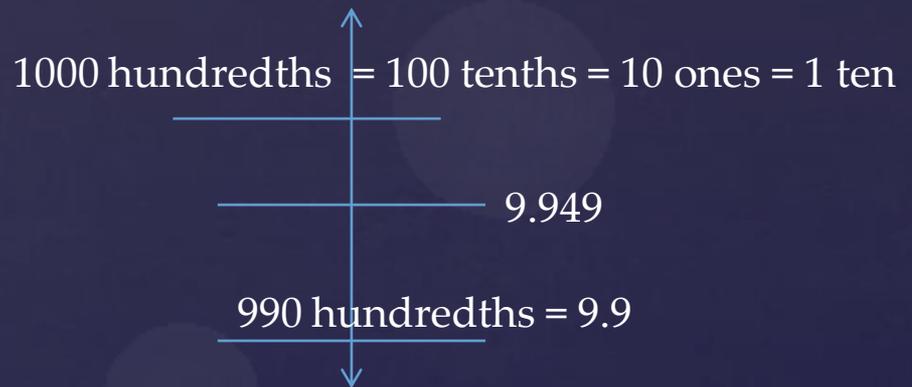
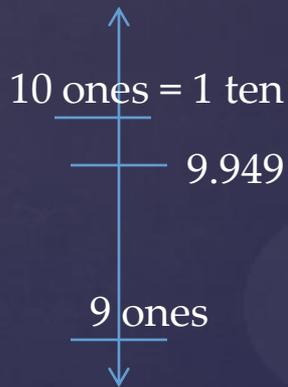
- ⌘ Decompose 9.949 to the nearest ones, tenths and then hundredths. Show your work on a number line.
 - ⌘ Before drawing the number line think about how you can display it on a place value chart.
 - ⌘ Below is a few ways to think of it

9 ones	9 tenths	4 hundredths	9 thousandths
	99 tenths	4 hundredths	9 thousandths
		994 hundredths	9 thousandths

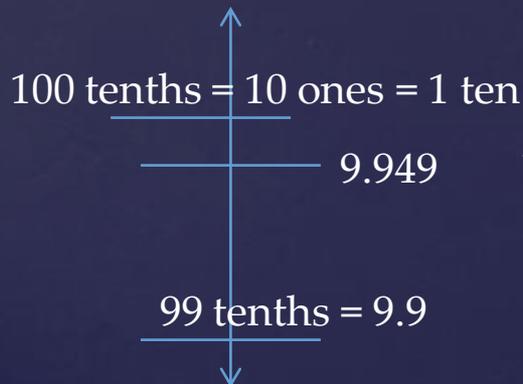
- ⌘ Which one of these is the most helpful when rounding to the nearest ones and why?
 - ⌘ The one using the most tenths to name the decimal fraction. I knew I would round to either 9 ones or ten ones. I looked at the tenths. Nine tenths is past the midpoint, so I rounded to the next ones, 10 ones. 10 ones is the same as 1 ten.
- ⌘ Which one of these is the most helpful when rounding to the nearest tenths and why?
- ⌘ Which one of these is the most helpful when rounding to the nearest hundredths and why?
- ⌘ Draw and label a number line and circle the rounded value. Explain your reasoning. See next slide.

Concept Development – Problem 2

9 ones	9 tenths	4 hundredths	9 thousandths
	99 tenths	4 hundredths	9 thousandths
		994 hundredths	9 thousandths



Which digit made the difference when rounding to the nearest hundredth?



Which digit made no difference when you rounded to the nearest tenth?

Concept Development – Problem 2

A decimal number has 1 digit to the right of the decimal point. If we round this number to the nearest whole number, the result is 27. What are the maximum and minimum possible values of these two numbers? Use a number line to show your reasoning. Include the midpoint on the number line.

- ↳ Draw a vertical number line with 3 points
- ↳ What do we know about the unknown number?
 - ⌘ It has a number in the tenths place, but nothing else past the decimal point. We know that it has been rounded to 27.
- ↳ Write 27 at the bottom point on the number line and circle it. Why did I place 27 as the lesser rounded value?
 - ⌘ We are looking for the largest number that will round down to 27. That number will be greater than 27, but less than the midpoint between 27 and 28?
- ↳ What number would go on the top line and why?
 - ⌘ 28 because it is the next number after 27 and we are trying to find a number that will round to 27, so it will not be above 28.
- ↳ Write 28 on the top line.
- ↳ What is the midpoint between 27 and 28?
 - ⌘ 27.5
- ↳ Place 27.5 on the number line.
- ↳ If we look at numbers that have exactly 1 digit to the right of the decimal point, what is the greatest one that will round down to 27?
 - ⌘ 27.4.
- ↳ Now draw another point (line) just below 27.5 and label it as 27.4.
- ↳ Why is 27.4 the greatest one that will round down to 27?
 - ⌘ If we go to 27.5, that would round up to 28 because it is even with the midpoint.



Concept Development – Problem 3

A decimal number has 1 digit to the right of the decimal point. If we round this number to the nearest whole number, the result is 27. What are the maximum and minimum possible values of these two numbers? Use a number line to show your reasoning. Include the midpoint on the number line.

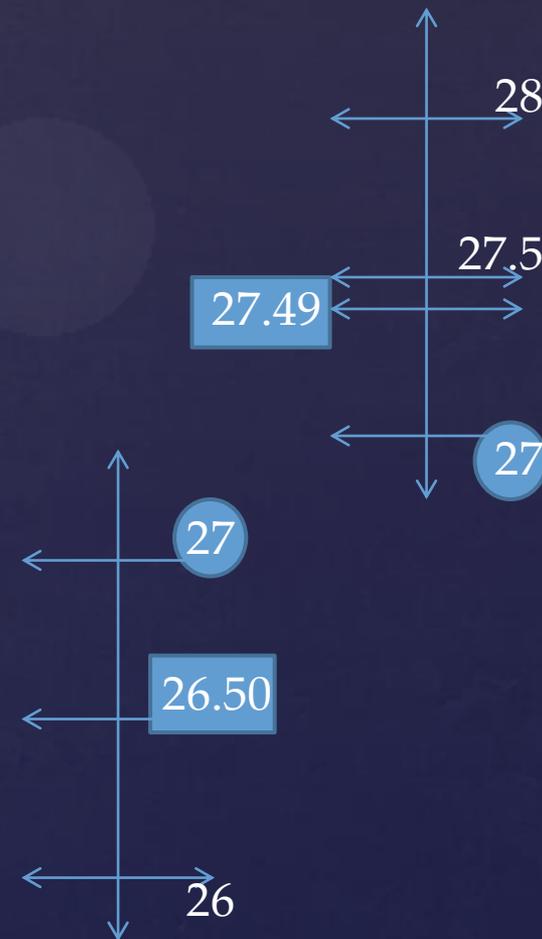
- ⌘ Now let's find the minimum value that will round to 27
- ⌘ Discuss with your group.
- ⌘ Now draw a vertical number line with 3 points label the number line. . Circle 27 so you recall what number you are rounding to.
- ⌘ Place a box around the smallest number that will round to 27.



Concept Development – Problem 3

A decimal number has 2 digits to the right of the decimal point. If we round this number to the nearest whole number, the result is 27. What are the maximum and minimum possible values of these two numbers? Use a number line to show your reasoning. Include the midpoint on the number line.

- ⌘ Now let's find the maximum and minimum value that will round to 27
- ⌘ Discuss with your group.
- ⌘ Now draw 2 vertical number lines with 3 points label the number line. . Circle 27 so you recall what number you are rounding to.
- ⌘ Place a box around the largest and smallest numbers that will round to 27.



Concept Development – Problem 3

Problem Set (group work)

Debrief (discussion as a whole group).

Exit Ticket (individual work)

Homework (more practice)