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Key Concept

Rounding is a strategy in which we replace one number with another that is close to it and easier to mentally calculate.
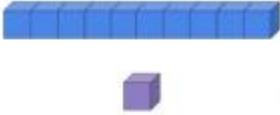
Learning Objective

In this unit, students are working on rounding numbers to the nearest tens. The objective for this opening conversation is to anchor student learning in real world application. In this unit launcher, students will make connections and discuss healthy eating. Students will be setting a foundation for a 3-part Real World Investigation, *Colleen's Calorie Count*, which will unfold part by part over the course of this unit of study.

Unit Launcher: Class Discussion - 20 to 30 minutes

The teacher is facilitating a classroom discussion to create a context for learning about fractions and set the stage for a 3-part investigation called *Alleah's School.* The screens below present a screen-by-screen orientation to the conversation.

Screen 1 – Using the sticky notes, guide the students to open a conversation about multiplication. Students discuss place value.

Screen 2 – This screen sets the stage for the Real World Investigation. Students discuss what it means to eat healthy and the kinds of foods that would be considered healthy vs. unhealthy.

Screen 3 – This screen builds even more context for the Real World Investigation. Students discuss their experience with reading food labels and the kinds of information it provides.

Screen 4 – Students are briefly introduced to the three parts of the investigation in this screen. Students will be engaging in problems that require rounding and computing in the real world.

The KWL Chart

The KWL Chart is presented as part of the unit launcher to offer an optional classroom technique designed to anchor instruction. The purpose for the chart is for the classroom community to record what they already <u>know</u> that provides background knowledge for the unit of study; what they <u>want</u> to learn during the unit of study; and what they <u>learned</u> as they look back on a completed unit of study.

Complete using a large piece of paper and marking pen. Then post in the classroom for reference throughout the unit.

Screen 5 – This screen introduces the KWL chart. You may choose to skip this screen and just complete the chart on a separate sheet of paper. The sticky notes will act as a guide to fill in the chart.

Screen 6 – In the final screen of the launcher, students are given an opportunity to share what they are excited to learn about in this unit.

Colleen's Data (Part 1)

Learning Objective

Students will apply previous learning about rounding and computation to complete a data table and solve a real world problem using appropriate strategies.

Introducing the Investigation: Class Discussion - 7 minutes

The teacher facilitates a student dialogue to introduce the Real World Investigation. Colleen is learning about healthy eating in school. Students will determine the number of calories that were in Colleen's breakfast.

Screen 1 – Using the sticky notes as a guide, students begin a discussion about the prompt and foods they enjoy eating for breakfast. Students also discuss what calories per serving means.

Screen 2 – Students gain more information regarding the problem. Students discuss rounding to the nearest tens and how to interpret the number of servings eaten.

Screen 3 – The teacher guides students through a discussion about the total calories Colleen had for breakfast and how to figure that out.

Completing the Investigation: Student Work Using Printout – 15 minutes

Begin working on the problem. Be prepared to share your solution.

Colleen learned about healthy eating in school. She looked up the calories for the foods she liked to eat for breakfast so she could figure out how many calories she ate during her breakfast this morning.

- The table below shows the calories in a serving of some breakfast foods that Colleen enjoys eating. Round the calories in each item to the nearest ten.
- Use the rounded calorie count to find out about how many calories Colleen ate during this morning's breakfast.
- Colleen's teacher said that a breakfast for children her age should total about 500 calories. If Colleen's breakfast is less than 500 calories, is there something else she could add to her breakfast? If Colleen's breakfast is over 500 calories, what should she eliminate from her breakfast?

Food	Calories Per Serving	Calories Rounded to the Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Egg	72		2	
Waffle	94		0	
Yogurt	76		1	
Fruit Salad	74		1	
Orange Juice	92		1	
Milk	85		0	
Total Calories				

Screen 4 – Hand out the printed copy of the problem. Students can work individually, cooperatively or collaboratively. Having students work in groups will allow students to engage in math discourse.

Debriefing on the Investigation: Class Discussion – 8 minutes

Use the sticky notes to help guide a discussion to help summarize student learning of writing and comparing fractions.

1 of 5 ✕

Let's share the work we did today. Let's have some volunteers to share a strategy they used to solve this problem.

The first question asks students to <u>recall</u> the strategies they used to solve the problem.

2 of 5 ✕

How did rounding the calories per serving help you solve this problem?

The second question offers a chance for students to reflect and <u>evaluate</u> how rounding was useful for solving this problem.

3 of 5 ✕

How did you determine if Colleen ate about 500 calories?

This question solicits students to <u>explain</u> how they figured out the total number of calories.

4 of 5 ✕

Would Colleen be able to add something to her breakfast? If so, what? If not, does she have to eliminate something from her breakfast?

The fourth question allows students to <u>indicate</u> whether or not Colleen would be able to eat an additional item for breakfast.

5 of 5 ✕

Would you enjoy eating a breakfast like Colleen's?

This question challenges students to <u>make a connection</u> to what Colleen ate for breakfast and whether they would enjoy eating a breakfast like that.

Create Some Data (Part 2)

Learning Objective

Students will apply previous learning about rounding and computation to complete a data table and solve a real world problem using appropriate strategies.

Introducing the Investigation: Class Discussion – 7 minutes

The teacher facilitates a student dialogue to introduce to the Real World Investigation. Colleen is learning about healthy eating at school. Students will determine the foods Colleen can eat for lunch that contains about 500 calories.

Screen 1 – This screen introduces the prompt to students. Students discuss their favorite foods for lunch and how they compare to Colleen's favorite foods.

Screen 2 – The teacher guides students through a discussion in which they talk about how rounding will be useful for making a plan to make sure Colleen eats 500 calories. Students will also discuss their plans for deciding how many servings of the foods Colleen will eat.

Screen 3 – Students are introduced to the last piece of this investigation. They will need to create two separate plans. Allow students to discuss how they will create two different lunch plans.

Completing the Investigation: Student Work Using Printout – 15 minutes

Screen 4 – Hand out the printed copy of the problem. Students can work individually, cooperatively or collaboratively. Having students work in groups will allow students to engage in math discourse.

Debriefing on the Investigation: Class Discussion – 8 minutes

Use the sticky notes to help guide a discussion to help summarize student learning of writing and comparing fractions.

1 of 4

Let's share some of the work we did today.

What strategies did you use to create two different lunch plans?

The first question asks students to <u>describe</u> strategies for solving the problem.

2 of 4

How did you determine that each plan contained about 500 calories?

This second question asks students to <u>outline</u> how they determined that each plan did not exceed 500 calories.

3 of 4

Why was rounding to the nearest tens helpful for solving this problem?

This question allows students <u>evaluate</u> and <u>justify</u> how rounding was helpful for the calculations in this problem.

4 of 4

Are these lunch plans that you would enjoy eating?

This questions asks students to <u>make a connection</u> to the problem and see if they would enjoy eating a lunch based on the plans they created for Colleen.

Your Data (Part 3)

Learning Objective

Students will apply previous learning about rounding and computation to complete a data table and solve a real world problem, using appropriate tools, structure, and reasoning.

Introducing the Investigation: Class Discussion – 5 minutes

The teacher facilitates a student dialogue to introduce to the Real World Investigation. In this problem, students are solving an open-ended prompt in which they generate their own data by selecting the foods they will include in their dinner and determining the calories in each of the items.

Screen 1 – This screen introduces the prompt to the students. The teacher facilitates a discussion about food that can be eaten for dinner and what some healthy options might be.

Screen 2 – The teacher guides students through the first three columns of the data table. Students will discuss how they can find the calories per serving and how rounding will be useful.

Screen 3 – This screen ties in the last piece of the investigation. Students will discuss how they will determine the number of servings to eat and the total number of calories in their dinner.

Completing the Investigation: Student Work Using Printout – 20 minutes

Screen 4 – Hand out the printed copy of the problem. Students can work individually, cooperatively or collaboratively. Having students work in groups will allow students to engage in math discourse.

Debriefing on the Investigation: Class Discussion – 5 minutes

Use the sticky notes to help guide a discussion to help summarize student learning.

1 of 5

Let's share some of the work we did today. How did you decide on which foods to include in your dinner plan?

This first question asks students to share how they determined the foods they would eat for dinner.

2 of 5

How did the 700 calorie limit affect the number of servings that were being included in your plan?

This question elicits students to analyze their solutions and how the 700 calorie limit affected their plans.

3 of 5

Explain how rounding to the nearest tens helped you solve this problem.

The third question asks students to explain how their knowledge of rounding extended into solving this problem.

4 of 5

How does the serving size affect the number of calories per serving?

The fourth question asks students to infer from their understanding of serving size and explain how it will affect the number of calories per serving.

5 of 5

Is your meal healthy? Did it include at least three different food groups?

This question prompts students to rationalize their meals as healthy. It also allows students to reflect and see if they included at least three different food groups.

The Rubric and the KWL Chart

The rubric is designed to provide the teacher and the students with a meaningful evaluation tool. It can be applied to groups of students (in cooperative or collaborative learning environments) or individuals.

If the class began this Place Value unit with a KWL chart, this is a good time to complete the L section by making a list of what students have <u>learned</u>.

Colleen's Calorie Count: Colleen's Data (Part 1)

Colleen learned about healthy eating in school. She looked up the calories for the foods she liked to eat for breakfast so she could figure out how many calories she ate during her breakfast this morning.

- The table below shows the calories in a serving of some breakfast foods that Colleen enjoys eating. Round the calories in each item to the nearest ten.

- Use the rounded calorie count to find out about how many calories Colleen ate during this morning's breakfast.

- Colleen's teacher said that a breakfast for children her age should total about 500 calories. If Colleen's breakfast is less than 500 calories, is there something else she could add to her breakfast? If Colleen's breakfast is over 500 calories, what should she eliminate from her breakfast?

Food	Calories Per Serving	Calories Rounded to the Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Egg	72		2	
Waffle	94		0	
Yogurt	76		1	
Fruit Salad	74		1	
Orange Juice	92		1	
Milk	85		0	
Total Calories				

Colleen's Calorie Count: Create Some Data (Part 2)

Colleen learned about healthy eating in school. She learned that her lunch should contain a total of about 500 calories.

- The table below shows the calories in a serving of some lunch foods that Colleen enjoys eating. Round the calories in each item to the nearest ten.

- In each of the tables below, plan a lunch that has about 500 calories. How many servings of each item will each meal contain?

Food	Calories Per Serving	Calories Rounded to Tens Place	Number of Servings Eaten	Total Calories (Rounded)	Food	Calories Per Serving	Calories Rounded to Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Salad	63				*Salad*	63			
Yogurt	76				*Yogurt*	76			
Orange	39				*Orange*	39			
Cheese	94				*Cheese*	94			
Crackers	88				*Crackers*	88			
Turkey	82				*Turkey*	82			
Juice	63				*Juice*	63			
Milk	85				*Milk*	85			
Total Calories					**Total Calories**				

Your Calorie Count: You Data (Part 3)

After learning about healthy eating, you want to plan a dinner that has about 700 calories.

- Choose the foods you will include in your dinner. List them in the table.
- Look up the calories that are in each food. List the calorie count in the table.
- Round the calories in each item to the tens place.
- Choose how many servings of each item you will include in your meal.
- Determine how many calories are in your entire meal.

Food	Calories Per Serving	Calories Rounded to Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Total Calories in the Meal				

Questions for Reflection:
- Is your meal a healthy meal?
- Does your meal include at least three different food groups?
- How does the serving size affect the number of calories per serving?
- Are the calories per serving reasonable?

Place Value
Big Idea 1: Number and Operations in Base Ten
Real World Investigation: Colleen's Calorie Count

	3- Advanced Problem Solver	2- Proficient Problem Solver	1- Emerging Problem Solver	0-Beginning Problem Solver	Student score	Teacher score
Demonstrates understanding of the Big Idea	☐ My solution shows that I have a deep understanding of the Big Idea for this unit. ☐ I answered all reflection questions with detailed explanations.	☐ My solution shows that I have an understanding of the Big Idea for this unit. ☐ I answered the reflection questions with some explanation.	☐ My solution shows that I have some understanding of the Big Idea for this unit. ☐ I answered the reflection questions with no explanation.	☐ My solution does not show understanding of the Big Idea for this unit. ☐ I did not answer the reflection questions.		
Makes sense of problems and perseveres in solving them.	☐ I read and understood all parts of the problem. ☐ I was able to complete the problem with little to no help from others. ☐ I stayed focused on the task.	☐ I read and understood most of the problem. ☐ I was able to complete most of the problem with little help from others. ☐ I mostly stayed focused on the task.	☐ I had some difficulty understanding the problem. ☐ I completed the problem with help from others on most of the problem. ☐ I was often off task.	☐ I did not read and understand the problem ☐ I did not ask for help to solve the problem. ☐ I did not stay on task and finish my work.		
Attends to precision	☐ My calculations are all, if not mostly, correct. ☐ My answers make sense. ☐ I completed all parts of the problem.	☐ My calculations are mostly correct. ☐ My answers make sense. ☐ I completed all parts of the problem.	☐ My calculations have a few mistakes. ☐ My answers do not all make sense. ☐ I completed most of the problem.	☐ My calculations have many mistakes. ☐ My answers do not make sense. ☐ I did not complete many parts of the problem.		
Utilizes appropriate strategies, models and tools	☐ I chose appropriate math strategies on my own. ☐ I used appropriate models or tools to help me solve the problem.	☐ I asked for help in choosing appropriate math strategies. ☐ I used appropriate models or tools to help me solve the problem.	☐ I did not choose appropriate math strategies. ☐ The models or tools I chose were not appropriate.	☐ I did not use math strategies, models, or tools to solve this problem.		
Constructs viable arguments	☐ I explained and justified my solutions. ☐ I answered all questions from others with detailed explanations. ☐ My answers were correct.	☐ I explained and justified parts of my solutions. ☐ I answered some questions from others with detailed explanations. ☐ My answers were mostly correct. Only a few mistakes.	☐ I tried to explain and justify my solutions, but my explanations were unclear or contained some mistakes. ☐ I had trouble answering questions from others.	☐ I did not or could not explain my solutions. ☐ I could not answer questions from others.		

Colleen's Data (Part 1) Solution

Check for Understanding

Ask students to share their work on the investigation. Ask students to explain their reasoning and to share any models they created to support their answer. Correct answers are shown in the table. Since she only ate 380 calories, she could also add another serving of one of the items to her meal to get her closer to 500 calories.

Food	Calories Per Serving	Calories Rounded to the Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Egg	72	<u>70</u>	2	<u>140</u>
Waffle	94	<u>90</u>	0	<u>0</u>
Yogurt	76	<u>80</u>	1	<u>80</u>
Fruit Salad	74	<u>70</u>	1	<u>70</u>
Orange Juice	92	<u>90</u>	1	<u>90</u>
Milk	85	<u>90</u>	0	<u>0</u>
Total Calories				<u>380</u>

Indicators of Understanding

✔ Creates an organized plan for solving a multi- step problem.
✔ Explains thinking when asked to justify a method or solution.
✔ Selects appropriate tools and/or strategies to solve the problem.

Create Some Data (Part 2) Solution

Check for Understanding

Ask students to share their work on the investigation. Ask students to explain their reasoning. Explore the strategies students used.

Answers will vary, but numbers should be rounded to the nearest ten and the total number of calories in each lunch should be about 500 calories.

Food	Calories Per Serving	Calories Rounded to the Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Salad	63			
Yogurt	76			
Orange	39			
Cheese	94			
Crackers	88			
Turkey	82			
Juice	63			
Milk	85			
Total Calories				

Food	Calories Per Serving	Calories Rounded to the Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Salad	63			
Yogurt	76			
Orange	39			
Cheese	94			
Crackers	88			
Turkey	82			
Juice	63			
Milk	85			
Total Calories				

Indicators of Understanding

✔ Creates an organized plan for solving a multi-step problem.
✔ Explains thinking when asked to justify a method or solution.
✔ Selects appropriate tools and/or strategies to model and solve the problem

Your Data (Part 3) Solution

Check for Understanding

Ask students to share their work on the investigation. Ask students to explain their reasoning. It is important that student responses demonstrate an understanding of rounding and the ability to apply place value concepts when computing.

Food	Calories Per Serving	Calories Rounded to the Tens Place	Number of Servings Eaten	Total Calories (Rounded)
Total Calories in the Meal				

Extend/Modify

How would your meal change if you were preparing dinner for your family? How many servings would you prepare and how many calories would be in the entire meal?

Indicators of Understanding (As assessed by the rubric)

✔ Demonstrates an understanding of rounding and the ability to apply place value concepts when computing.
✔ Makes sense of problems and perseveres in solving them.
✔ Attends to precision.
✔ Utilizes appropriate strategies, models and tools.
✔ Constructs viable arguments.