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MISSISSIPPI
EXEMPLAR
Units & Lessons
MATHEMATICS

Grade 3

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W.K. KELLOGG FOUNDATION

Lesson 3: Word Problems Involving Rounding

Focus Standard(s): 3.NBT.1

Additional Standard(s): 3.OA.8, 3.NBT.2

Standards for Mathematical Practice: SMP.1, SMP.2, SMP.3, SMP.4, SMP.5, SMP.6

Estimated Time: 90 minutes (2 days)

Resources and Materials:

- 100 – 1000 Posters
- Sticky Notes
- Student Journals
- Three different Colored Dice
- Handout 3.1: Introductory Problem Task
- Handout 3.2: Journal Prompt
- Handout 3.3: Estimating with Operations Cards
- Handout 3.4: What Number am I?
- Handout 3.5: Rounding Dice Game Recording Sheet
- Handout 3.6: Balloon Game
- Handout 3.7: Exit Ticket

Lesson Target(s):

- Students will solve word problems with the four operations using rounding strategies.
- Students will assess the reasonableness of answers using estimation strategies including rounding.
- Students will rotate through stations to practice rounding to the nearest ten and hundred.

Guiding Question(s):

- What strategies can students use to solve word problems that involve rounding?
- How can I prove the reasonableness of my answers using various rounding strategies?

Vocabulary

Academic Vocabulary:	Instructional Strategies for Academic Vocabulary:
• Base-Ten System • Benchmark Number • Estimate • Expanded Form • Place Value • Round • Standard Form • Whole Number • Word Form	☐ Introduce words with student-friendly definitions and pictures ☐ Model how to use the words in discussion ☐ Discuss the meaning of word in a mathematical context ☐ Create pictures/symbols to represent words ☐ Write/discuss using the words

Symbol	Type of Text and Interpretation of Symbol
	Instructional support and/or extension suggestions for students who are EL, have disabilities, or perform well below the grade level and/or for students who perform well above grade level
✓	Assessment (Pre-assessment, Formative, Self, or Summative)

Instructional Plan

Understanding Lesson Purpose and Student Outcomes: Students will recall strategies for rounding or estimating and will prove/explain reasonableness of an answer.

Anticipatory Set/Introduction to the Lesson: Homework Gallery Walk
Prior to the lesson, put 100 – 1000 posters around the room. Distribute 2 sticky notes to each student. Tell students to write each of their numbers from last night's homework on the sticky notes (one number per sticky note). Instruct students to post their cards to the poster that their number rounds to (e.g., 532 will be posted on the 500 poster). Instruct students to do a Gallery Walk to see if there are any errors. Tell students if they find an error, to raise their hand and explain what they are thinking. Allow time to answer any questions and clarify any misconceptions (SMP.3).

Activity 1: Connecting to Real World
Lead a discussion to recall terms needed for understanding word problems.

Note: Be sure to include the terms *about* and *approximately* in your focus as these words are often a clue that the word problem will involve rounding.

Ask the following questions to prompt student discussion:

- What do you know about rounding to the nearest ten and hundred?
- What are some key terms that help you understand what operation to use for the word problem and if rounding is needed?

Distribute and display **Handout 3.1: Introductory Problem Task**. Ask students to identify key words in the problem that help to determine how to solve the problem and what operation to choose (SMP.2). Tell students to turn to a partner and find the answer. Allow time for students to work with their partner and discuss their findings. Call on student pairs to show their work, answer any questions and clarify any misconceptions.

✓Distribute and display **Handout 3.2: Journal Prompt**. Tell students to work individually to solve the problem in their math journal (SMP.1). Tell students to use words or pictures to justify their answers. When all students have completed their work, tell them to take their journals and move to one side of the room if they agree with Jimmy and to the other side of the room if they agree with Maria. Tell students to discuss their work with the people on their side of the room and construct an argument to convince the other side that their side is correct. Each side will choose a spokesperson to report out on their findings. Have spokespersons explain their work and justify their answer (SMP.3). Lead a discussion to clarify any misconceptions.

Note: Have previous anchor charts on rounding and solving word problems available for both visual and written representations.

For students who are EL, have disabilities, or perform well below grade level:

- Provide base ten blocks and a place value mat.

Extensions for students with high interest or working above grade level:

- Have students create another journal prompt for this same activity. If time allows, let the class use the problem and choose sides.

Activity 2: Stations

Assign students to groups and groups to a station. The four stations are as follows:

- Station 1: Teacher Table
- Station 2: What Number am I?
- Station 3: Rounding Dice Game
- Station 4: Balloon Game

Directions for Stations:

- Station 1 – Students will bring their journals and work with the teacher to solve word problems involving the four operations and rounding. Distribute **Handout 3.3: Estimating with Operations Cards** and, if necessary, guide students as they solve the problems. Scaffold guidance by removing assistance until the students can solve on their own.
- Station 2 – Distribute the cards from **Handout 3.4: What Number am I?** Place the cards face down in the center of the table. Tell students they will each draw a card from the stack and work individually to find their number. When everyone has found their number, share the clue and the number with the group. Tell students to check each other's work for accuracy (SMP.6).
- Station 3 – Distribute **Handout 3.5: Rounding Dice Game Recording Sheet** to each student and 3 different colored dice to the group. Each dice represents a place value: ones, tens, and hundreds (predetermine the color value prior to the game). Each player rolls the dice and writes down a number on their recording sheet and rounds the number to the nearest tens and the nearest hundreds. Students check each other's work. Each player gets one point for every correct rounding. The player with the most points at the end of the game wins (SMP.5).
- Station 4 – Distribute **Handout 3.6: Balloon Game** to each student in the group. Students work individually to use given numbers to answer the question that refers to a number in a balloon. When students have completed the first question, turn and share with a partner to assess each other's work.

For students who are EL, have disabilities, or perform well below grade level:

- Use anchor charts for both visual and written representations.
- Supply base ten blocks and place value mats.

Extensions for students with high interest or working above grade level:

- Have students write their own word problems for the four operations using rounding and share with a partner who will solve the problem.

Reflection and Closing:

Refer to the strategies used in the teacher station from today to review the lesson. Ask the following questions to prompt students:

- What strategies did you use to help solve word problems that involved rounding (SMP.4)?
- Were you able to prove or explain that your answers were reasonable with those strategies?

✓ **Exit Ticket**: Using **Handout 3.7: Exit Ticket**, have students complete the ticket out the door.

Homework

Students will not have homework.

Handout 3.1: Introductory Problem Task

Name:_____Date: _____

As of April 17, 2014, Bill Elliott topped the list of fastest qualifying track records in NASCAR history, having driven **212 mph** at Talladega in 1987.

What is the fastest qualifying track record rounded to the nearest ten and rounded to the nearest hundred? Justify your strategy.

Handout 3.2: Journal Prompt

Jimmy and Maria are saving up for a new television and Nintendo Switch. They found a television at Best Buy for $245 and the Nintendo Switch for $317.

Jimmy says they need to save about $500 to buy the television and the Nintendo Switch. Maria says they need to save about $600. Who do you agree with? Why?

Handout 3.3: Estimating with Operations

1. Dr. Boyd bought a Memphis Grizzlies ticket. The ticket cost $11. She also spent $34 on a hot dog, popcorn, and drinks. About how much money did Dr. Boyd spend in all?
2. There are 384 boys at Lake Cormorant Elementary School and 416 girls. About how many more girls attend Lake Cormorant Elementary School than boys?
3. Carrie and Larry pick 48 strawberries each day for 3 days. About how many strawberries did they pick in 3 days?
4. In the 3rd grade there are 147 girls. Mrs. Gilner divided the girls into groups of 5. About how many groups of girls will Mrs. Gilner have?
5. Charlie wants to buy a video game for $45. He also wants to buy a DVD for $22. Approximately how much money does he need?
6. In the 4th grade at Lake Cormorant Elementary School, there are 116 girls and 142 boys. About how many more boys are there than girls?

Handout 3.4: What Number am I?

1. I am the smallest 2-digit number that rounds to 100 when rounded to the nearest ten. What number am I? _____	2. I am the greatest 2-digit number that rounds to 60 when rounded to the nearest ten. What number am I? _____
3. I am the greatest 3-digit number that rounds to 500 when rounded to the nearest hundred. What number am I? _____	4. I am the smallest 3-digit number that rounds to 400 when rounded to the nearest ten. What number am I? _____
5. All 3 of my digits are the same. When I am rounded to the nearest hundred, I become 900. What number am I? _____	6. All 3 of my digits are the same. When I am rounded to the nearest hundred, I become 800. What number am I? _____
7. All 3 of my digits are even, but none of my digits are the same. If you round me to the nearest 10, I become 260. What number am I? _____	8. All 3 of my digits are odd, but none of my digits are the same. If you round me to the nearest 10, I become 350. What number am I? _____
9. I am an odd 3-digit number. If you round me to the nearest ten, I become 790. The sum of my digits is 17. What number am I?	10. I am an even 3-digit number. If you round me to the nearest ten, I become 450. The sum of my digits is 11. What number am I?

Handout 3.4: What Number am I? – Key

1. 50
2. 64
3. 499
4. 350
5. 888
6. 777
7. 264
8. 351
9. 791
10. 452

Handout 3.5: Rounding Dice Game Recording Sheet

Name: _____ Date:_____

Number Rolled	**Number Rounded to the Nearest 10**	**Number Rounded to the Nearest 100**

Handout 3.6: Balloon Game

Name: _____ Date:_____

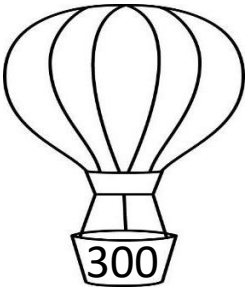
Use the digits in each box to help answer the questions.

Do not use the same digit more than once **in a number**.

4	**5**
6	**7**

1. Write three 2-digit numbers that can be rounded to the number in the balloon.

_____ _____ _____



0	**1**	**3**
5	**7**	**9**

2. Write two 2-digit numbers and one 3-digit number so that the tens digit can be rounded to the same tens digit as the tens digit in the number in the balloon.

_____ _____

0	**4**
5	**9**

3. Write six 3-digit numbers that can be rounded to the number in the balloon.

_____,_____,_____,_____,_____, _____

Handout 3.7: Exit Ticket

Name: _____ Date: _____

Jack has 326 blue marbles in a jar and 285 red marbles in another jar. Approximately how many marbles does he have in both jars combined? To find the total, ROUND each number to the nearest hundred, then solve.

Name: _____ Date: _____

Jack has 326 blue marbles in a jar and 285 red marbles in another jar. Approximately how many marbles does he have in both jars combined? To find the total, ROUND each number to the nearest hundred, then solve.

Name: _____ Date: _____

Jack has 326 blue marbles in a jar and 285 red marbles in another jar. Approximately how many marbles does he have in both jars combined? To find the total, ROUND each number to the nearest hundred, then solve.

For training or questions regarding this unit,
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