MISSISSIPPI DEPARTMENT OF EDUCATION
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MISSISSIPPI

EXEMPLAR Units & Lessons

MATHEMATICS

Grade 3

Grant funded by:
W.K. KELLOGG FOUNDATION

MISSISSIPPI DEPARTMENT OF EDUCATION

P.O. Box 771 | Jackson, MS | 39205-0771
Tel (601) 359-2586
www.mde.k12.ms.us
Twitter: @MissDeptEd

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Director, Office of Human Resources
MISSISSIPPI DEPARTMENT OF EDUCATION
359 North West Street, Suite 203
Jackson, Mississippi 39201
(601) 359-3511

Acknowledgements

Mississippi Exemplar Units and Lessons Project Leads

The Mississippi Department of Education gratefully acknowledges the following individuals for their leadership in the development of the Mississippi Exemplar Units and Lessons.

Dr. Nathan Oakley
Chief Academic Officer

Devin Boone
Office of Professional Development Program Manager

Barbara Bowen
ELA Professional Development Coordinator

Elise Brown
Math Professional Development Coordinator

Wendy Clemons
Office of Professional Development Executive Director

Dana Danis
Office of Secondary Education ELA Curriculum Specialist

Dr. Marla Davis
Office of Secondary Education Bureau Director

Joyce Greer
Office of Early Childhood Instructional Specialist

Kristi Higginbotham
Special Education Professional Development Coordinator

Dr. Felicia Jackson-Stewart
ELA Professional Development Coordinator

Ashley Kazery
ELA Professional Development Coordinator

Kristina Livingston
Professional Development Coordinator Director

Celeste Maugh
Math Professional Development Coordinator

Tanjanikia McKinney
Science Professional Development Coordinator

Jennifer Nance
Office of Secondary Education Office Director II

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Kimberlee Alexander
Greenville Public School District

Teresa Amacker
Ocean Springs School District

Terwinda T. Banks
Canton Public School District

Ebony Bealer
Harrison County School District

Kate Boteler
Madison County School District

Lydia Boutwell
MDE Early Childhood Consultant

Jeannie Brock
Benton County School District

Elisa Bryant
Lafayette County School District

Melissa Buck
MDE Literacy Coach

Leigh Ann Cheeseman
MDE Literacy Coach

Cindy Christian
Rankin County School District

Nicole Cockrell
Madison County School District

Angela Davis
MDE Literacy Coach

Samantha Edwards
South Panola School District

Beverly Farr
DeSoto County School District

Lisa Hamrick
Pascagoula – Gautier School District

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Roxanne Harper
Brookhaven School District

Jessica Holyfield
Rankin County School District

Melanie Irby
Pearl Public School District

Lisa Lairy
West Point Consolidated School District

Shirley Massey
MDE Literacy Coach

Catrice Mitchell
Hinds County School District

Brenda Nelson
Gulfport School District

Cyndi Parker
Harrison County School District

Allison Ruhl
Madison County School District

Rebecca Russell
Rankin County School District

Kelly Smith
MDE Literacy Coach

Leigh Ann Smith
Lauderdale County School District

Nicole Smith
Jones County School District

Lori Stringer
MDE Literacy Coach

Katie Szabo
Lafayette County School District

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Lydia Boutwell
MDE Early Childhood Consultant

Courtney D. Brown
Jackson Public School District

Ashley Boyd
DeSoto County School District

Toni Canizaro
Clinton Public School District

Tracy Catchings
Vicksburg-Warren School District

Susan Craddieth
Columbus Municipal School District

Alesheia Cunningham
DeSoto County School District

Savannah Evans
Lamar County School District

Fanchon Freeman
Clarksdale Municipal School District

Beth Fulmer
Math Curriculum Consultant

Jennifer Gaston
Coffeeville School District

Kathleen Hamilton
Marshall County School District

Rachael Hayes-Magee
Biloxi Public School District

Caroline Heblich
DeSoto County School District

Susan Jarvis
Ocean Springs School District

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Vicksburg-Warren School District

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Jeyakumar Jeyaraj
East Jasper Consolidated School District

Melissa Lowe
Lauderdale County School District

Lucy Ann Martin
Jackson Public School District

Lynda Mathieu
George County School District

Bonnie Maready
DeSoto County School District

Kimberly B. McKinney
West Point Consolidated School District

Hertensia V. Mixon
DeSoto County School District

Shalaan Oliver-Hendricks
Columbus Municipal School District

Amy Shelly
Special Education Professional Development Coordinator

TaShara Smith-Shoemaker
Hattiesburg Public School District

Mariella Simons
MDE Consultant

Ashleigh Syverson
Harrison County School District

David H. Taylor II
Laurel School District

Jennifer C. Wilson
Rankin County School District

Introduction

Mission Statement

The Mississippi Department of Education (MDE) is dedicated to student success, including the improvement of student achievement in English Language Arts (ELA) and mathematics in order to produce citizens who are capable of making complex decisions, solving complex problems, and communicating fluently in a global society. The Mississippi College- and Career-Readiness Standards (MS CCRS) provide a consistent, clear understanding of what students are expected to know and be able to do by the end of each grade level or course. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that students need for success in college and careers and to compete in the global economy. The goal of the MDE is to provide educators with the training and resources to understand and implement the MS CCRS effectively.

Purpose

In efforts to facilitate implementation and promote understanding of the MS CCRS for ELA and mathematics, the W. K. Kellogg Foundation generously awarded the MDE a grant to secure a cadre of effective educators to develop the MS CCRS Exemplar Units for teachers. Specifically, a group of highly-effective Mississippi educators developed exemplar instructional units and lessons aligned to the MS CCRS for ELA and mathematics. The MS CCRS Exemplar Units address difficult-to-teach standards as determined by teachers and are designed to serve as exemplar models for instructional units, lessons, and resources. The MS CCRS Exemplar Units have been vetted through nationally renowned vendors to ensure exemplar quality.

Design Overview

The MS CCRS Exemplar Units for ELA and mathematics address grade-level specific standards for Pre-Kindergarten-8th grade, as well as for Algebra, English I, and English II. The overall unit plan is described in the first section of the ELA and math units. This section includes the unit title, a suggested time frame, the grade level MS CCRS addressed and assessed, a unit overview with essential questions and a summary of lesson tasks, and the culminating/performance task description and rubric.

Though the math and ELA overall unit plan designs are very similar, some design aspects differ in order to accommodate the respective requirements of each content area. For mathematics, the first section also provides a segment designated for the Standards for Mathematical Practices (SMPs) addressed in the unit. For ELA, the first section also includes a text set with links to texts (if in the public domain) and a fresh/cold-read task.

The second section of each unit includes lesson plans. Within the lesson plans, provided are lesson-specific MS CCRS, suggested time frames, learning targets, guiding questions, required resources and materials, vocabulary terms and instructional strategies, teacher directions, instructional supports for students, enrichment activities, student handouts, assessments (formative, summative, pre-, and self-), and additional resources to aid in the implementation of the lessons.

Implementation

The intention of the MS CCRS Exemplar Units for ELA and mathematics is to provide educators with resources to understand and implement the MS CCRS effectively. The implementation of the MS CCRS Exemplar Units for ELA and mathematics is voluntary. Additionally, the MDE will provide ongoing support for implementation of the MS CCRS Exemplar Units with initial regional trainings followed by site-specific support through our regional service delivery model. For regional and site-specific training, please contact the MDE Office of Professional Development.

Grade Level	Unit Title	Duration
3	Rounding Two- and Three-Digit Numbers	8

Mississippi College- and Career-Readiness Standards for Mathematics	Standards for Mathematical Practice
Focus: **3.NBT.1** Use place value understanding to round whole numbers to the nearest 10 or 100 **Additional:** **3.NBT.2** Fluently add and subtract (including subtracting across zeros) within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Include problems with whole dollar amounts **3.OA.8** Solve two-step (two operational steps) word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding3. Include problems with whole dollar amounts	**SMP.1** Make sense of problems and persevere in solving them. **SMP.2** Reason abstractly and quantitatively. **SMP.3** Construct viable arguments and critique the reasoning of others. **SMP.4** Model with mathematics. **SMP.5** Use appropriate tools and manipulatives strategically. **SMP.6** Attend to precision. **SMP.7** Look for and make use of structure. **SMP.8** Look for and express regularity in repeated reasoning.

Unit Overview

Throughout this unit, students will gain a deep understanding of the concept of rounding to the nearest tens or hundreds place, regardless of the number of digits. Students will need to have a strong foundation in place value concepts, which will be essential for the development of number sense and the subsequent work involved in rounding numbers. As students build on previous understandings of place value of digits in multi-digit whole numbers, they will begin to develop an understanding of rounding to tens and hundreds. The students will use number lines and base-ten blocks to determine which multiple of ten or hundred a number is nearest. Upon completion of the unit, the

students' understanding of place value will deepen as they learn various strategies needed for rounding, which are valuable for estimating, justifying and predicting the reasonableness of solutions in problem solving as seen in the performance task.

Essential Questions:

How does rounding help us make sense of numbers?
How can rounding be used in the real world?

Lesson Tasks

Lesson 1: Rounding to the Nearest 10
Students will round to the nearest ten using a number line and place value.
Lesson 2: Rounding to the Nearest 100
Students will round to the nearest hundred using place value and base ten blocks
Lesson 3: Word Problems Involving Rounding
Students will review and practice rounding to the nearest ten and hundred during workstations.
Lesson 4: Performance Task
Students will analyze a table to determine which group of students had higher attendance at a water park. They will then write a letter to persuade the cafeteria manager to expect more students of that grade level in upcoming visits.

Performance/Culminating Task

Who's Getting Wet?

This task connects how rounding helps to make sense of numbers and how rounding can be used in the real world. During this activity, students will be asked to calculate about the number of 3rd and 4th graders who went to a local water park on a given weekend. Students will round the number of 3rd and 4th graders to the nearest ten and to the nearest hundred. Then the students will be asked to analyze the results and write a persuasive letter to the owner to justify their response using pictures, numbers or words.

Standards Assessed: 3.NBT.1

Rubric for Performance/Culminating Task

Level	Mastery Level	Rounding Tens	Rounding Hundreds	Problem Solving
4	Exemplifying Mastery	6 numbers rounded correctly to the nearest ten.	6 numbers rounded correctly to the nearest hundred.	All or almost all math vocabulary is used correctly.
3	Approaching Mastery	4-5 numbers rounded correctly to the nearest ten.	4-5 numbers rounded correctly to the nearest hundred.	Most math vocabulary is used correctly.
2	Developing Mastery	1-3 numbers rounded correctly to the nearest ten.	1-3 numbers rounded correctly to the nearest hundred.	Some math vocabulary is used correctly.
1	Not Representing Mastery	0 numbers rounded correctly to the nearest ten.	0 numbers rounded correctly to the nearest hundred.	No math vocabulary is used, or it is mostly (50% or more) used in the wrong way.
0	No Understanding	Nothing was turned in, or the work was too messy to read.		

Lesson 1: Rounding to the Nearest Ten

Focus Standard: 3.NBT.1

Additional Standard: 3.NBT.2

Standards for Mathematical Practice: SMP.2, SMP.3, SMP.4, SMP.5, SMP.6, SMP.8

Estimated Time: 90 minutes (2 days)

Resources and Materials:

- Anchor Chart Markers
- Anchor Chart Paper
- Clothes Pins
- Index Cards
- Number Cubes
- Small Manipulatives (buttons, macaroni, color chips, paper clips, etc.)
- String for Clothesline
- Handout 1.1: Anchor Chart Samples: http://www.3rdgradegridiron.com/search/label/math
- Handout 1.2: Poppin' the Kernels PowerPoint
- Handout 1.3: Clothesline Activity Cards
- Handout 1.4: Student Clotheslines
- Handout 1.5: Let's Roll Recording Sheet
- Handout 1.6: Exit Ticket

Lesson Target:

- Students will use place value understanding to round numbers to the nearest ten on a number line.

Guiding Questions:

- How can a number line be helpful when rounding to the nearest ten?
- How does place value help with rounding to the nearest ten?

Vocabulary

Academic Vocabulary:

- Base-Ten System
- Benchmark Number
- Expanded Form
- Place Value
- Round
- Standard Form
- Whole Number
- Word Form

Instructional Strategies for Academic Vocabulary:

☐ 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 be introduced to the number line and place value strategies for rounding whole numbers to the nearest ten. Students will determine the place value of the number by rounding with a number line.

Anticipatory Set/Introduction to the Lesson: Concrete-Pictorial-Abstract Representation
Distribute a random number of small manipulatives such as macaroni, buttons, or color chips on each table. Do not give any groups a multiple of ten. Have students determine how many they need to move to the next benchmark numbers. For example, if a group has 23 buttons, they will need 7 more to reach 30 or they will need to remove 3 buttons to drop down to 20. Have teams discuss which benchmark number their item is closest to (SMP.3 and SMP.4).

Allow time for students to exchange values with other groups to work through rounding several benchmarks and to determine any repeated reasoning observed (SMP.8).

Activity 1: Creating Anchor Charts to Round to the Nearest Ten

Facilitate a conversation about any repeated reasoning students noticed in the anticipatory set. Focus on having students explain benchmark numbers and how they determined which it was closer to, as well as what to do if they had 5 ones. Create an anchor chart to model how to determine the benchmark number using a number line. If needed, use **Handout 1.1: Anchor Chart Samples**.

Explain to students that rounding is finding a benchmark number that a number is closest to (SMP.2, SMP.6) Ask the following questions to prompt student discussion:

- What is the number you are supposed to round?
- What are the two benchmark tens that the number you are rounding comes between? (72 comes between the benchmark numbers of 70 and 80.)
- How many "hops" or numbers to each ten?
- Which ten is nearest to the number you rounded? Model several examples of how to round on a number line.

Note: Keep focus on place value and not on "rules," songs, or poems.

Distribute **Handout 1.2: Poppin' the Kernels PowerPoint** to students and have students complete the PowerPoint with their groups referring to the anchor chart created to help students understand how to round using benchmark numbers on a number line.

Note: Make sure to include various two and three digit numbers. Have students complete, with teacher guidance. This is a good stopping point if splitting the lesson into 2 days.

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

- Provide students with a number line that includes the benchmark number already labeled.
- Use anchor charts for both visual and written representations.

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

- Encourage students to use a number line to round four digit numbers to the nearest ten.

Activity 2: Clothesline Activity

Note: Prior to this activity, hang string to create a clothesline. You will also need enough clothespins or paperclips for students to hang four cards.

Distribute cards from **Handout 1.3: Clothesline Activity Cards** and three blank index cards to each student**.** Ask students to write down on their blank cards the benchmark numbers their card falls between and the middle number. For example, if a student receives 234, they will write the numbers 230, 235, and 240 on their cards.

Allow several students to demonstrate the placement of their cards on the clothesline. Distribute **Handout 1.4: Student Clothesline** and instruct students to line up their cards in the appropriate location on their clothesline and record their response (SMP.2 and SMP.4). Have students determine what their card will round to.

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

- Use anchor chart for both visual and written representations.
- Pull students together at the teacher lead table for extra assistance.

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

- Provide students with a benchmark number. Challenge students to find all the numbers that would round to that benchmark number.

Activity 3: Let's Roll

Distribute **Handout 1.5: Let's Roll Recording Sheet** and one number cube to each pair of students. Instruct students to roll the number cube three times and record each roll on their handout. Using the number line, the students will mark the two benchmark numbers, the middle number, and the location of the number created with their roll (SMP.4, SMP.5, SMP.6). Have students circle the benchmark number their number was closest to. Pairs will play this game four times.

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

- Use anchor charts for both visual and written representations.
- Allow students to create two-digit numbers instead of three-digit numbers.

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

- Allow students to make predictions before using the number line as to which benchmark number theirs will round to.
- Allow students to create 4-digit numbers or money values instead of 3-digit numbers.

Reflection and Closing:

Refer to the anchor chart from today to review the lesson. Ask the following questions to prompt students:

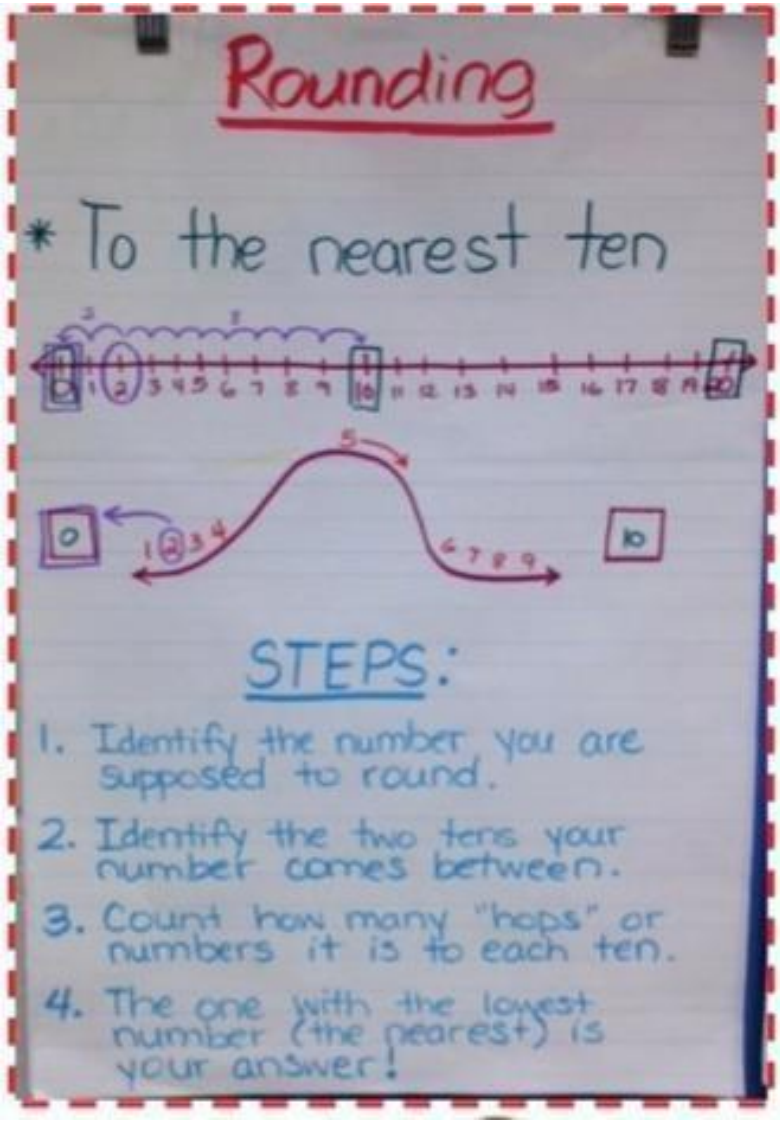
- How can a number line be helpful when rounding to the nearest ten?
- How does place value help with rounding to the nearest ten?

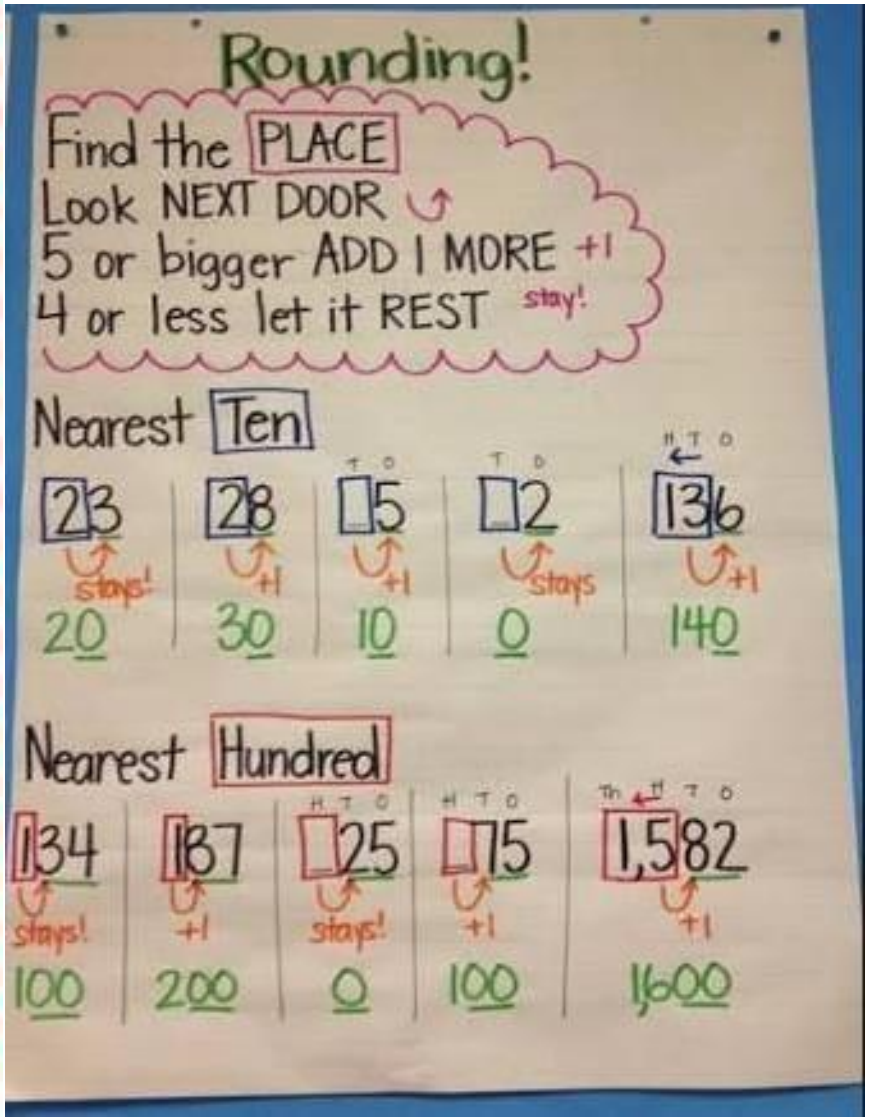
✓ **Exit Ticket:** Using **Handout 1.6: Exit Ticket**, have students complete the ticket out the door.

Homework

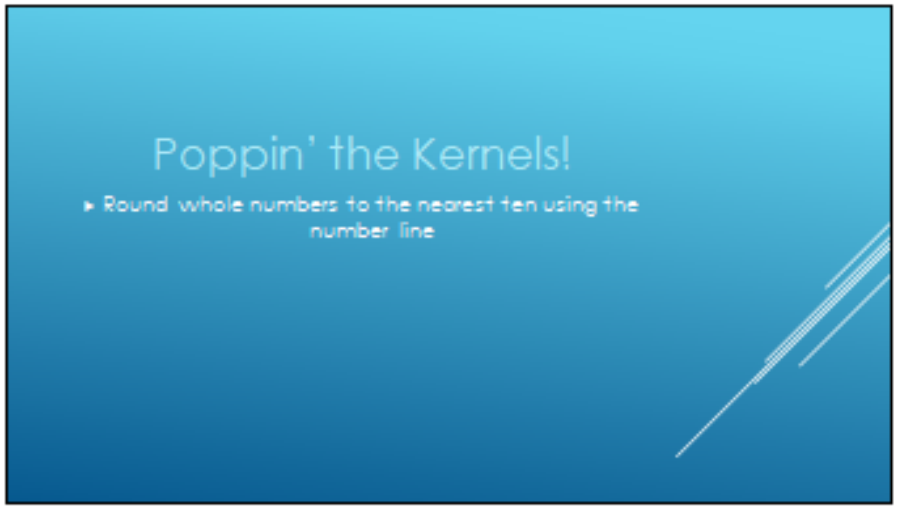
Instruct students to obtain the ages from an adult they know. They will then round their age using a number line.

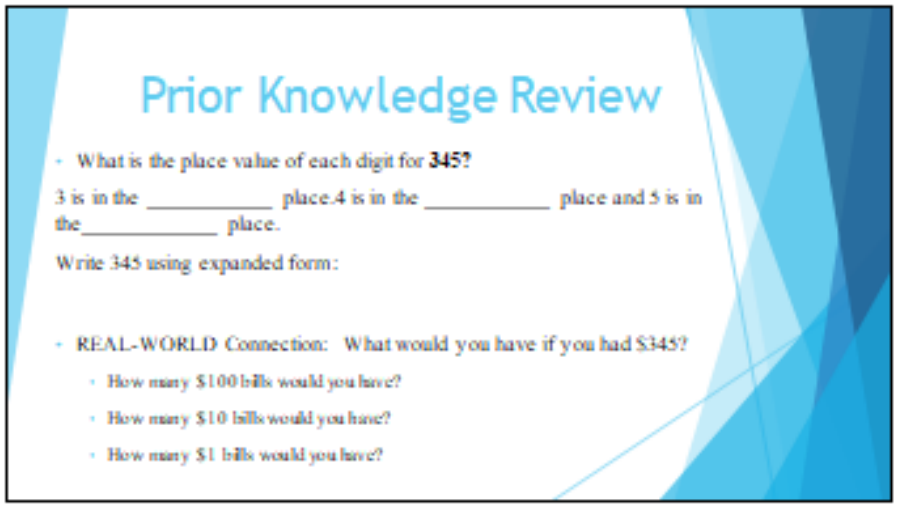
Handout 1.1: Anchor Chart Samples

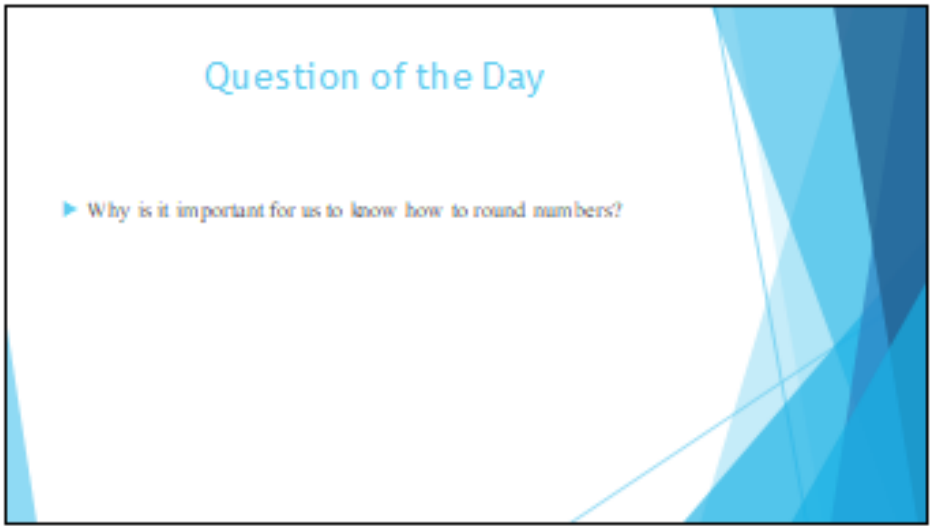


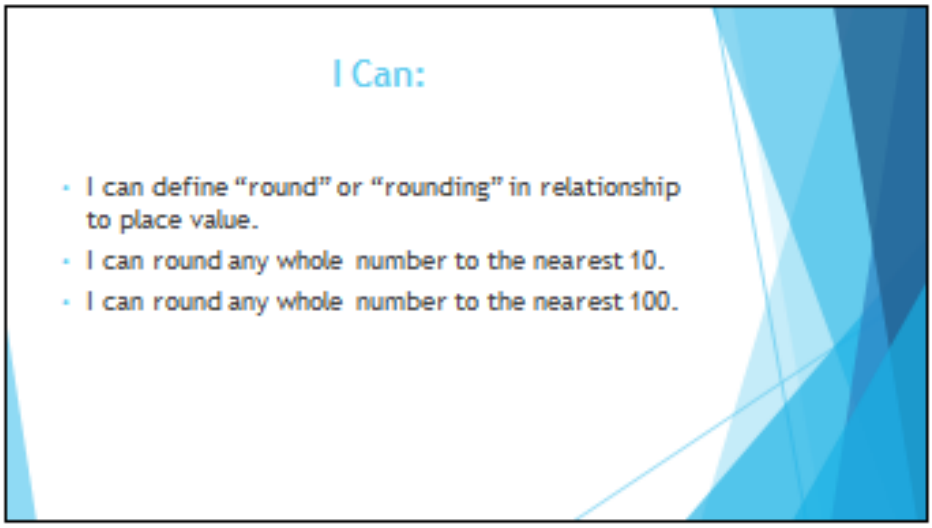


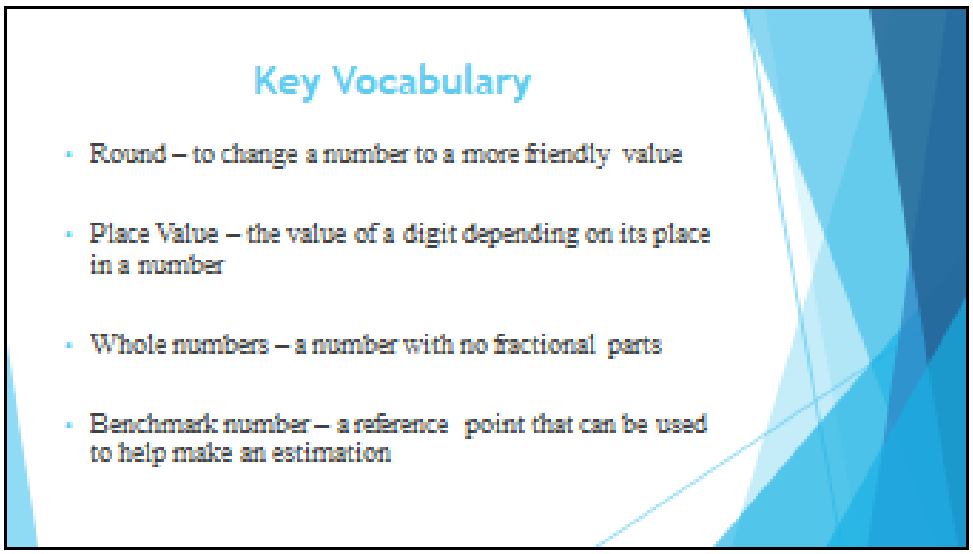
Handout 1.2: Poppin' the Kernels PowerPoint

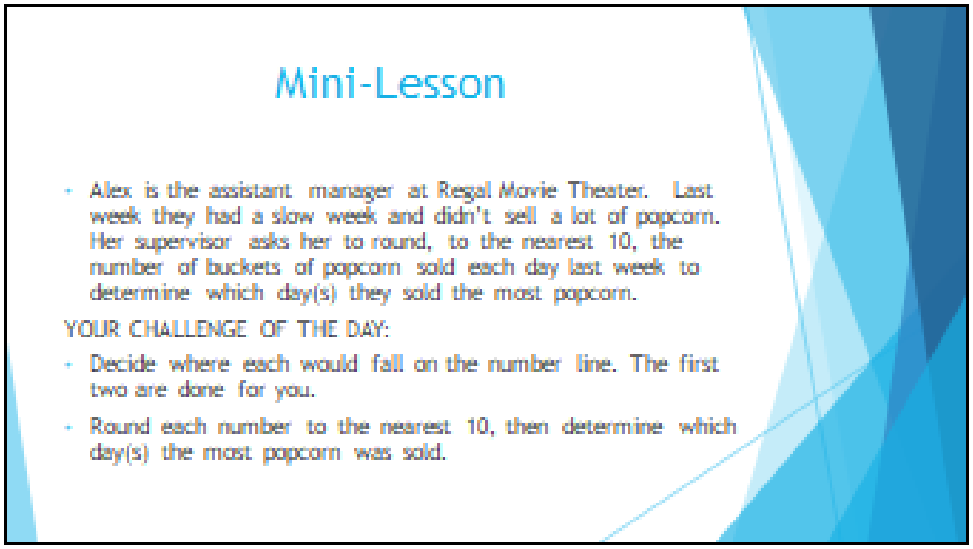


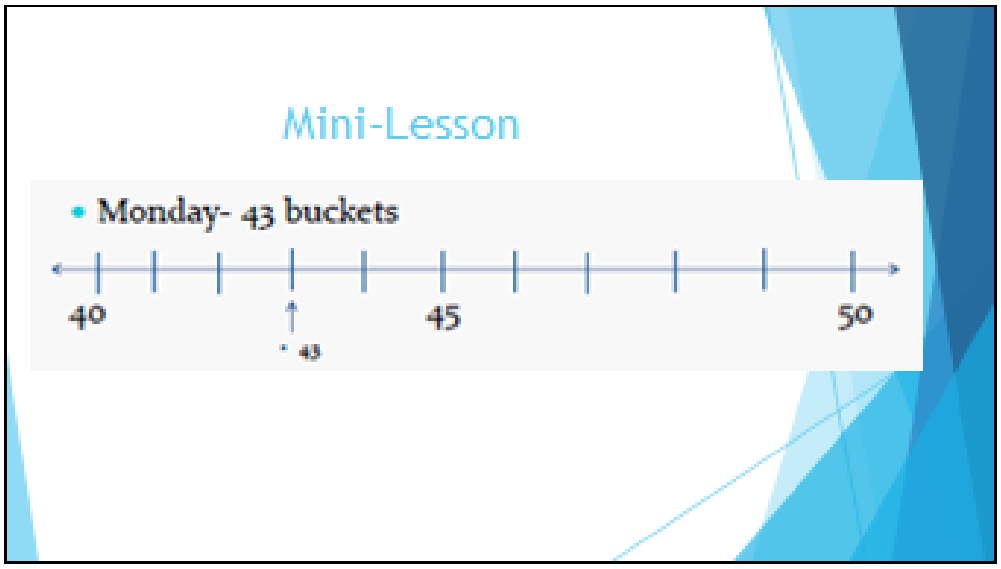


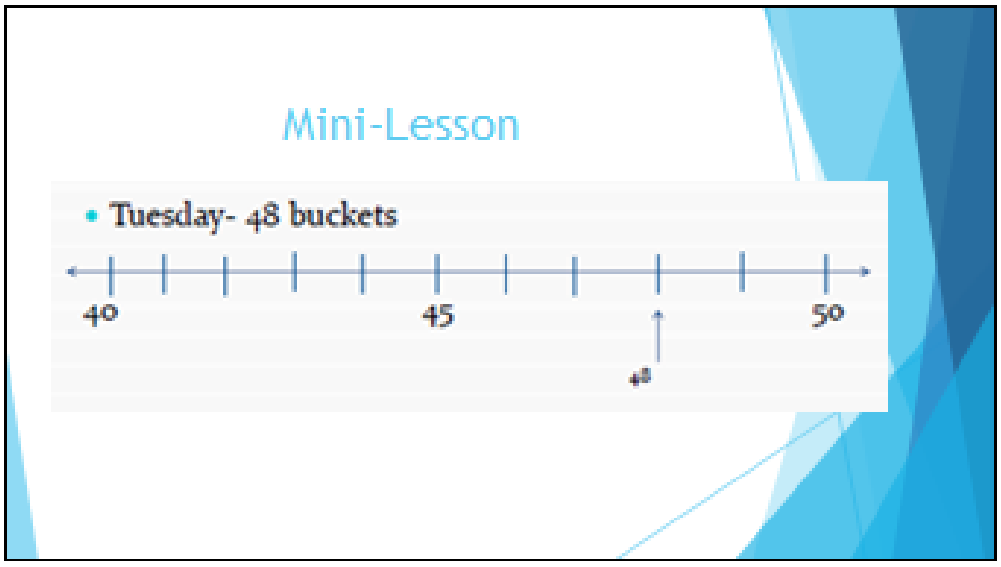

Question of the Day
Why is it important for us to know how to round numbers?


I Can:
I can define "round" or "rounding" in relationship to place value.
I can round any whole number to the nearest 10.
I can round any whole number to the nearest 100.

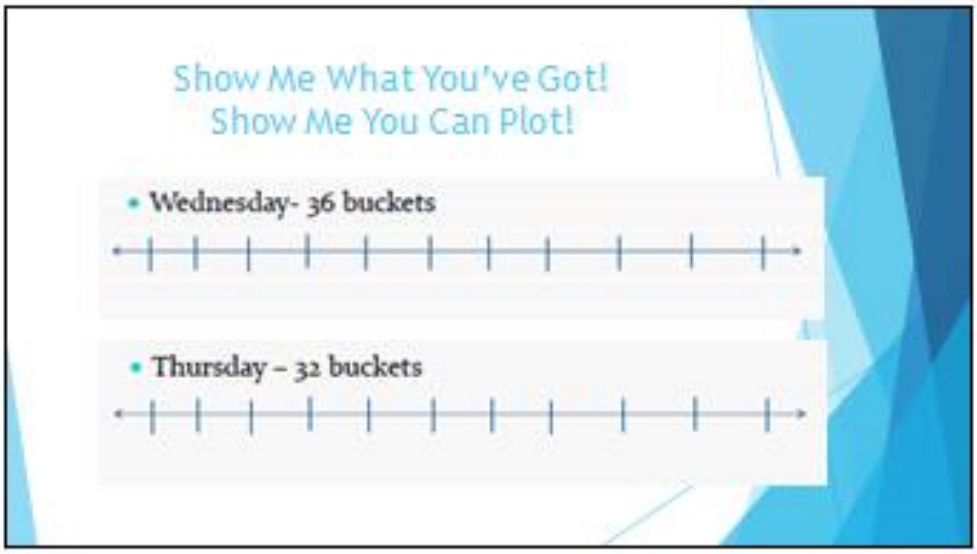

Key Vocabulary
Round – to change a number to a more friendly value
Place Value – the value of a digit depending on its place in a number
Whole numbers – a number with no fractional parts
Benchmark number – a reference point that can be used to help make an estimation

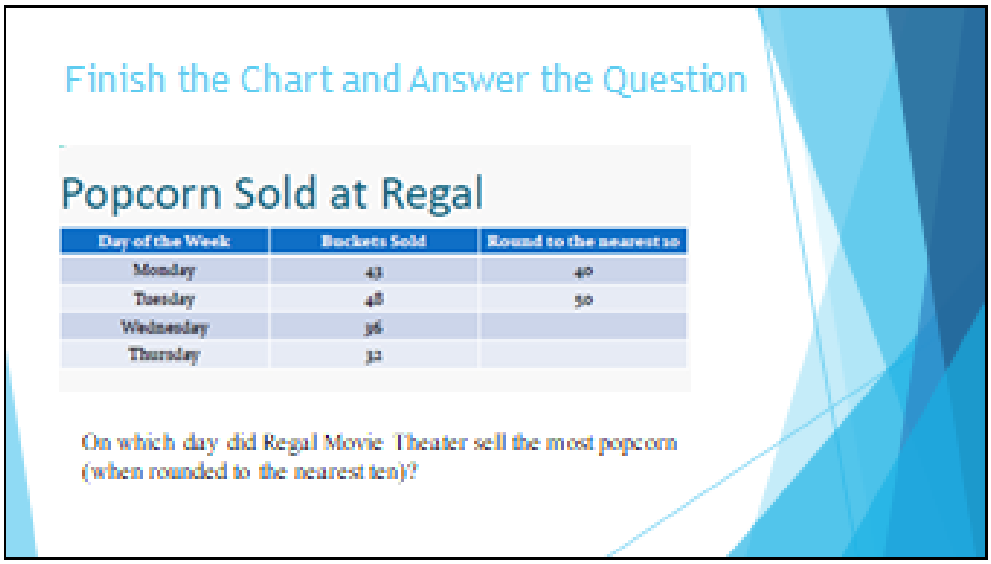

Mini-Lesson
Alex is the assistant manager at Regal Movie Theater. Last week they had a slow week and didn't sell a lot of popcorn. Her supervisor asks her to round, to the nearest 10, the number of buckets of popcorn sold each day last week to determine which day(s) they sold the most popcorn.
YOUR CHALLENGE OF THE DAY:
Decide where each would fall on the number line. The first two are done for you.
Round each number to the nearest 10, then determine which day(s) the most popcorn was sold.

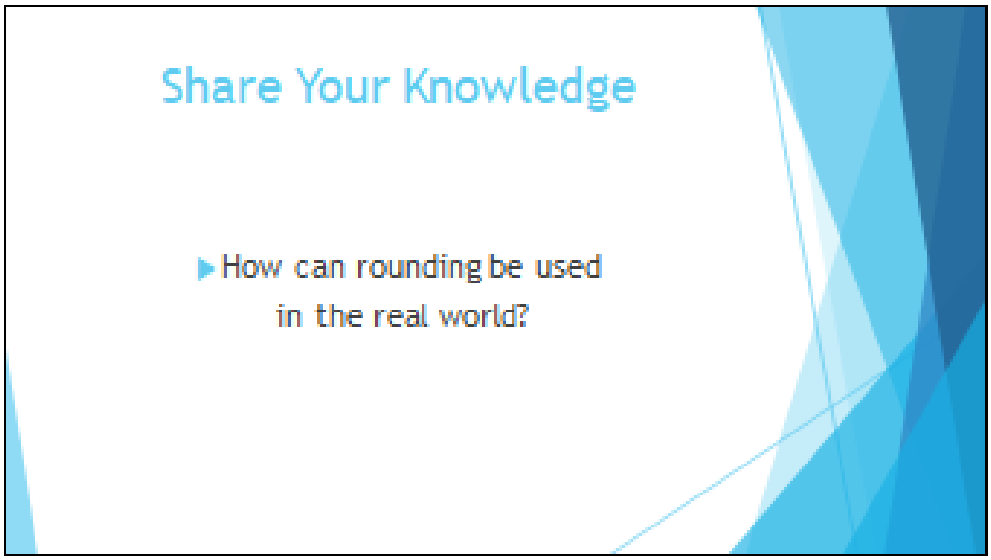

Mini-Lesson
Monday- 43 buckets
40
45
50
43


Mini-Lesson
Tuesday- 48 buckets
40
45
50
48

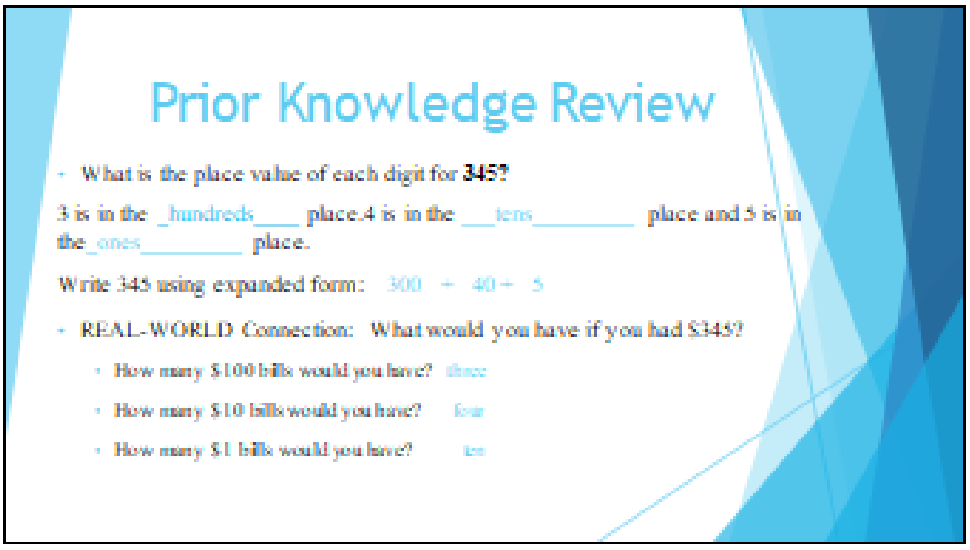

Popcorn Sold at Regal
Day of the Week
Buckets Sold
Round to the nearest 10
Monday
43
40
Tuesday
48
50
Wednesday
36
Thursday
32

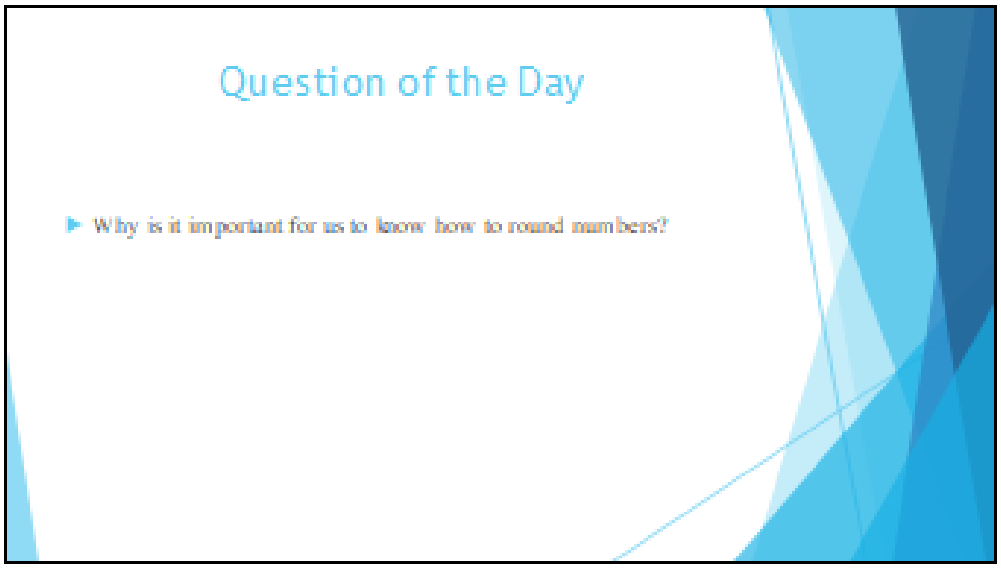

Show Me What You've Got!
Show Me You Can Plot!
Wednesday- 36 buckets
Thursday – 32 buckets


Finish the Chart and Answer the Question
Popcorn Sold at Regal
Day of the Week
Buckets Sold
Round to the nearest 10
Monday
43
40
Tuesday
48
50
Wednesday
36
Thursday
32
On which day did Regal Movie Theater sell the most popcorn (when rounded to the nearest ten)?


Share Your Knowledge
How can rounding be used in the real world?


Poppin' the Kernels! - KEY
Round whole numbers to the nearest ten using the number line


Prior Knowledge Review
What is the place value of each digit for 345?
3 is in the _hundreds___ place.4 is in the ___tens_____ place and 5 is in the_ones_____ place.
Write 345 using expanded form: 300 + 40 + 5
REAL-WORLD Connection: What would you have if you had $345?
How many $100 bills would you have? three
How many $10 bills would you have? four
How many $1 bills would you have? ten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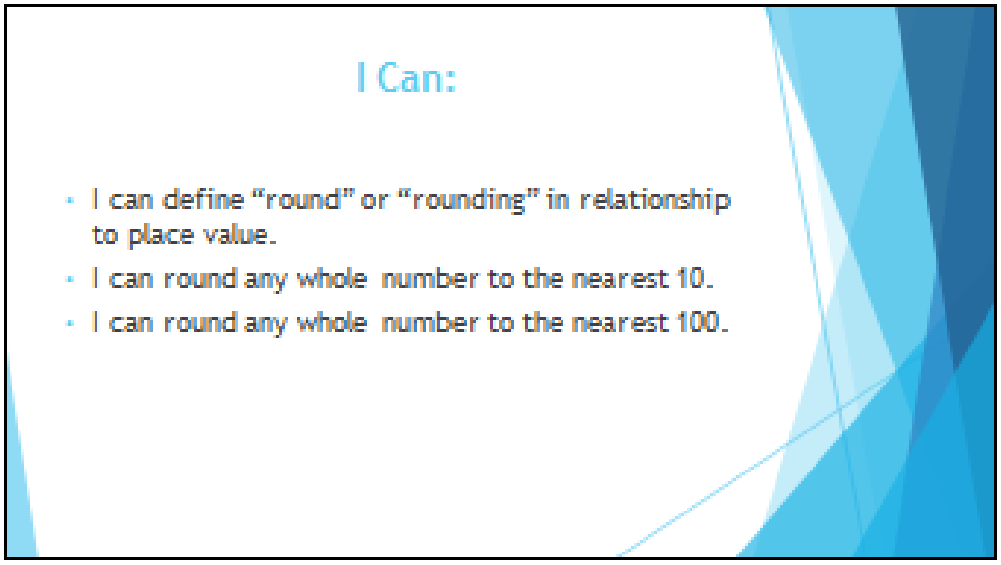
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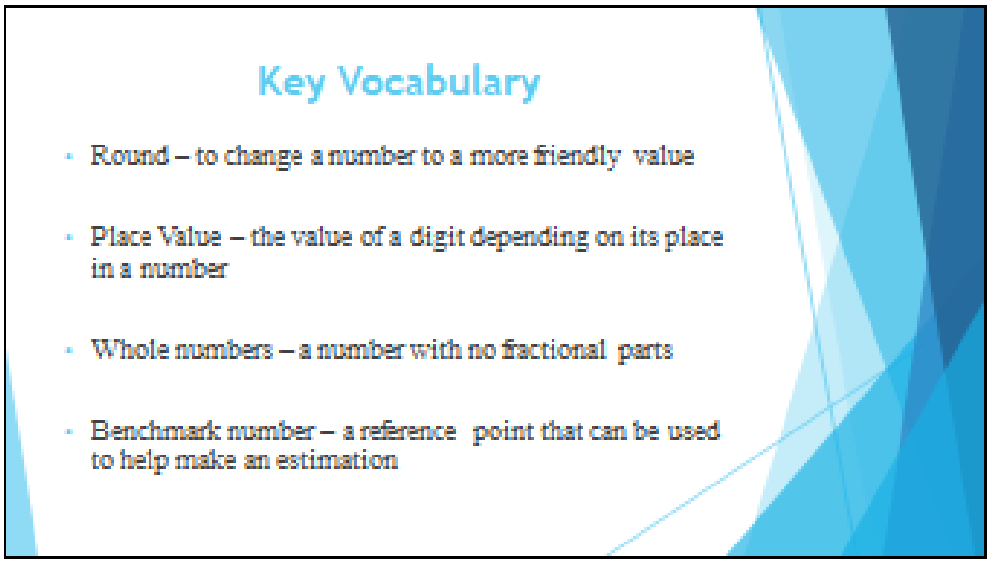
I can round any whole number to the nearest 10.
I can round any whole number to the nearest 100.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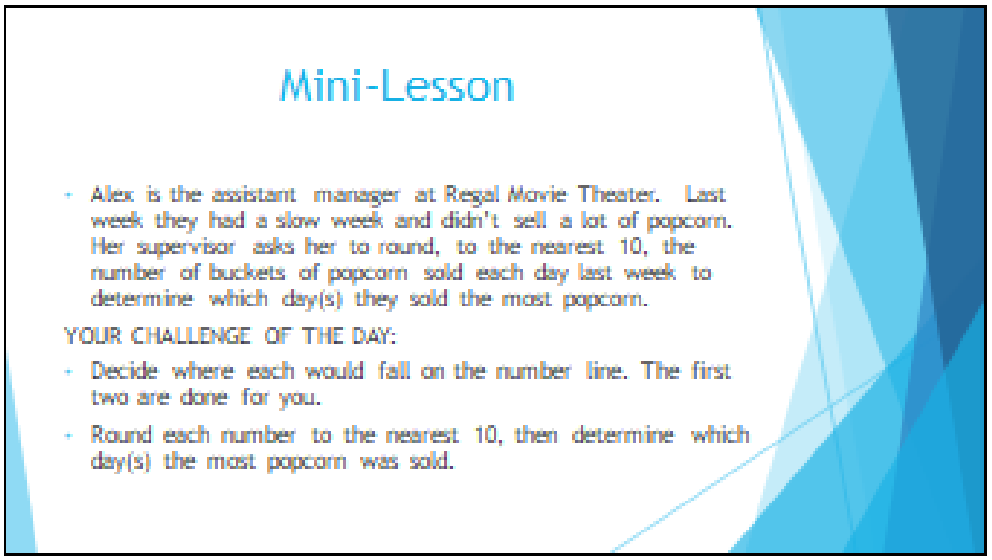
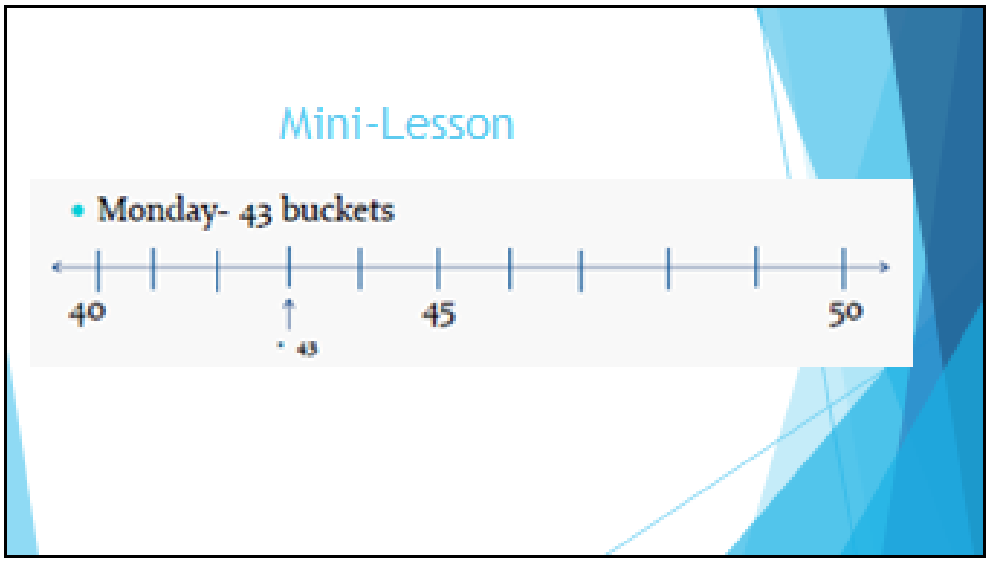
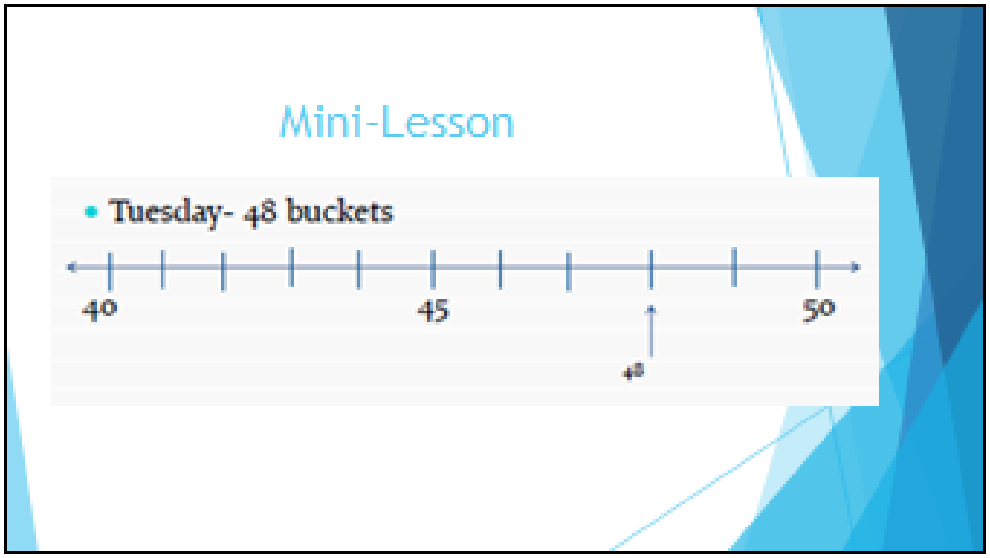
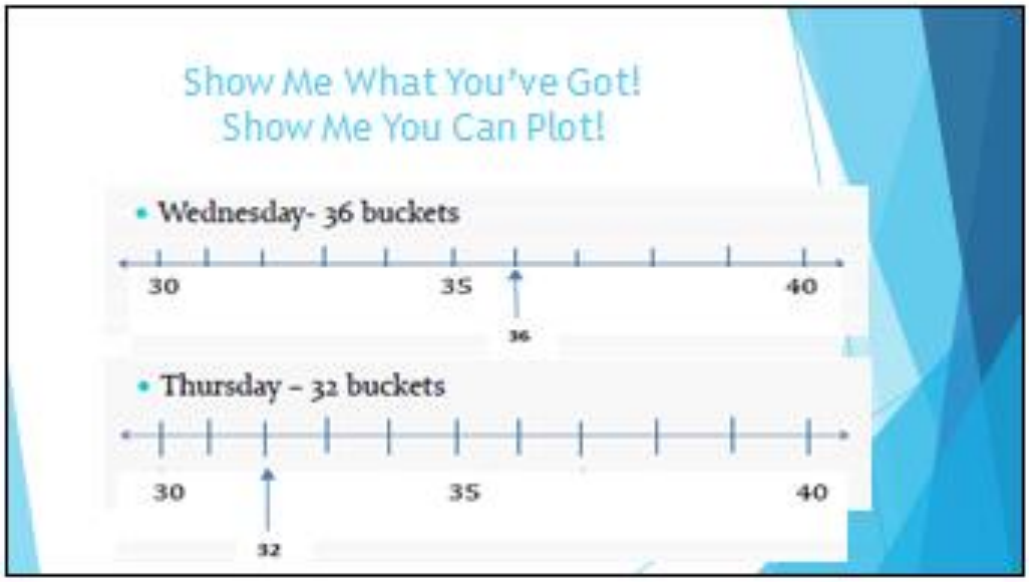
Round – to change a number to a more friendly value
Place Value – the value of a digit depending on its place in a number
Whole numbers – a number with no fractional parts
Benchmark number – a reference point that can be used to help make an estimation

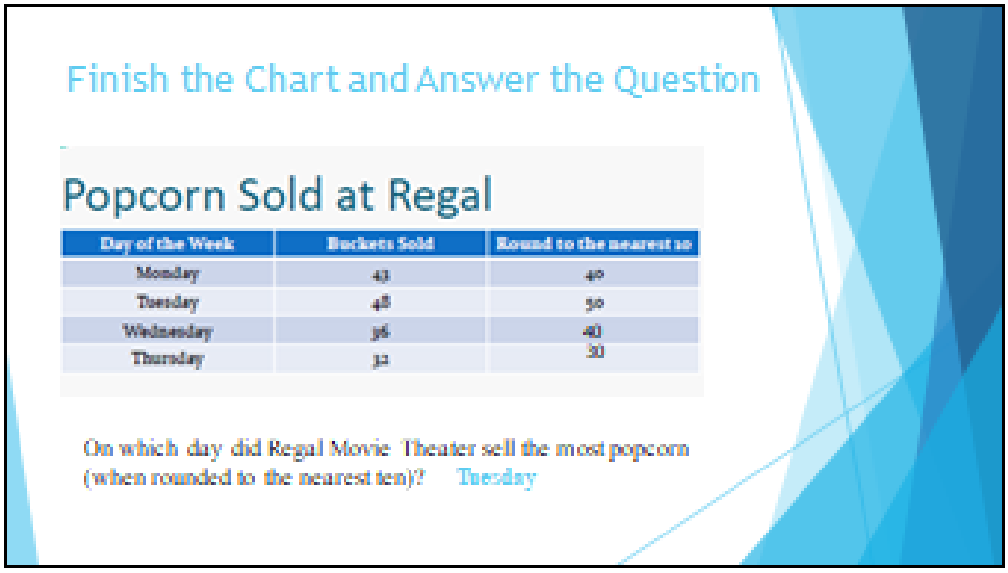

Mini-Lesson
Alex is the assistant manager at Regal Movie Theater. Last week they had a slow week and didn't sell a lot of popcorn. Her supervisor asks her to round, to the nearest 10, the number of buckets of popcorn sold each day last week to determine which day(s) they sold the most popcorn.
YOUR CHALLENGE OF THE DAY:
Decide where each would fall on the number line. The first two are done for you.
Round each number to the nearest 10, then determine which day(s) the most popcorn was sold.

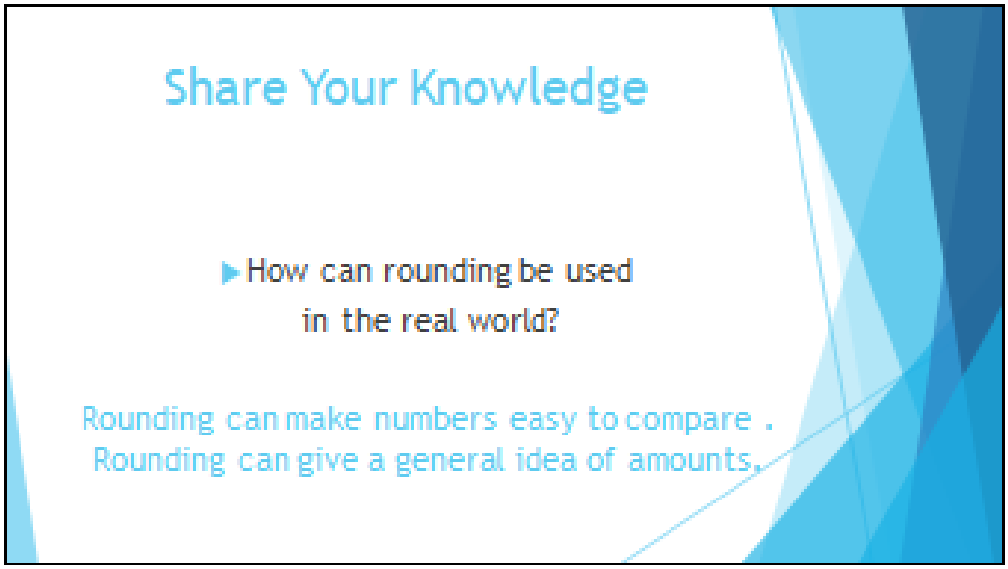

Mini-Lesson
Monday- 43 buckets
40
45
50
43


Mini-Lesson
Tuesday- 48 buckets
40
45
50
48


Popcorn Sold at Regal
Day of the Week
Buckets Sold
Round to the nearest 10
Monday
43
40
Tuesday
48
50
Wednesday
36
Thursday
32


Show Me What You've Got!
Show Me You Can Plot!
Wednesday- 36 buckets
30
35
40
36
Thursday – 32 buckets
30
35
40
32


Finish the Chart and Answer the Question
Popcorn Sold at Regal
Day of the Week | Buckets Sold | Round to the nearest 10
Monday | 43 | 40
Tuesday | 48 | 50
Wednesday | 36 | 40
Thursday | 32 | 30
On which day did Regal Movie Theater sell the most popcorn (when rounded to the nearest ten)? Tuesday

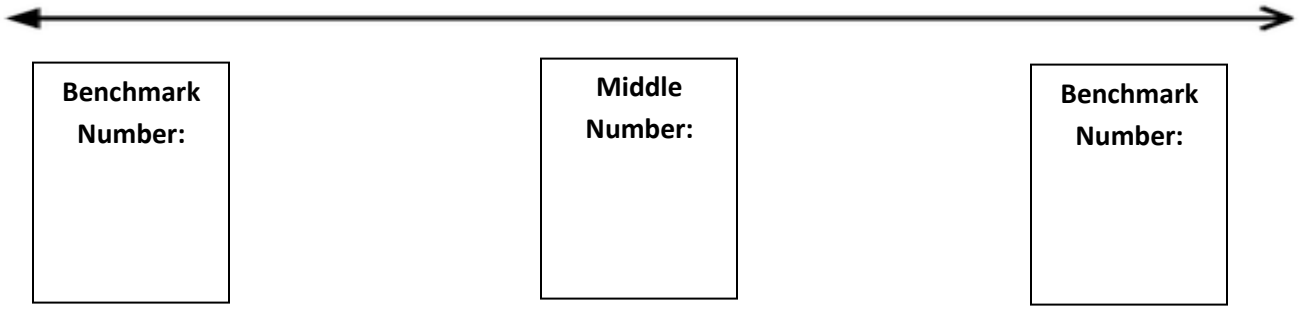

Share Your Knowledge
How can rounding be used in the real world?
Rounding can make numbers easy to compare .
Rounding can give a general idea of amounts.

Handout 1.3: Clothesline Activity Cards

92	57	88
74	35	109
15	62	46
152	131	87
19	1521	116
249	359	782
56	985	633
327	1059	428

Handout 1.4: Student Clothesline

My number is: _____



My number rounds to: _____

Handout 1.5: Let's Roll Recording Sheet

Directions: With a partner, take turns rolling a number cube 3 times. Record your numbers in the boxes to create a 3-digit number. Use the number line to label the benchmark numbers, middle number, and your number. Then, round your number to the nearest ten.

First Round:

Roll 1	Roll 2	Roll 3

Rounds to: ____

Second Round:

Roll 1	Roll 2	Roll 3

Rounds to: ____

Third Round:

Roll 1	Roll 2	Roll 3

Rounds to:

Fourth Round:

Roll 1	Roll 2	Roll 3

Rounds to:

Handout 1.6: Exit Ticket

Exit Ticket

Round 72 to the nearest 10. Use the number line to show how you rounded the number.

Lesson 2: Rounding to the Nearest 100

Focus Standard: 3.NBT.1

Additional Standard: 3.NBT.2

Standards for Mathematical Practice: SMP.1, SMP.3, SMP.4, SMP.5, SMP.6, SMP.7, SMP.8

Estimated Time: 90 minutes (2 days)

Resources and Materials:

- Anchor Chart Paper
- Anchor Chart Markers
- Game Markers- 2 different colors
- Place Value Mat
- Handout 2.1: Anchor Chart Sample: http://www.3rdgradegridiron.com/search/label/math
- Handout 2.2: Movie Time PowerPoint
- Handout 2.3: Spider Web Board Game: https://www.teacherspayteachers.com/Product/Spider-Round-UpGameTensHundreds-363734.
- Handout 2.4: Spider Web Game Cards
- Handout 2.5: Cones and Scoops
- Handout 2.6: Exit Ticket

Lesson Target:
Students will use place value understanding to round numbers to the nearest hundred on a number line.

Guiding Questions:

- How can a number line be helpful when rounding to the nearest hundred?
- How does place value help with rounding to the nearest hundred?

Vocabulary

Academic Vocabulary:

- Base-Ten System
- Benchmark Number
- Expanded Form
- Place Value
- Round
- Standard Form
- Whole Number
- Word Form

Instructional Strategies for Academic Vocabulary:

☐ 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 use number lines, base ten blocks, and place value strategies for rounding whole numbers to the nearest hundred.

Anticipatory Set/Introduction to the Lesson: Age is Just a Number
On an index card, have students write the actual age and the rounded age of the adult they used for homework in the previous lesson. Have students line up in order from least to greatest without speaking, first with the rounded ages and then more precisely with the exact ages (SMP.1, SMP.4, and SMP.6).

Ask students what would happen if they were rounding to the nearest hundred instead of tens.

Activity 1: Creating Anchor Charts to Round to the Nearest Hundred
Facilitate a conversation about any repeated reasoning students noticed in the anticipatory set (SMP.8). Focus on having students explain benchmark numbers and how they determined which it was closer to, as well as what to do if they had 5 tens. Create an anchor chart to model how to determine the benchmark number using a number line. If needed, use **Handout 2.1: Anchor Chart Samples** for guidance. Model several examples of how to round on a number line. Ask the following questions to prompt student discussion:

- What is the number you are supposed to round?
- What are the two benchmark hundreds that the number you are rounding comes between? (488 comes between the benchmark numbers of 400 and 500.)
- How many "hops" or numbers to each hundred?
- Which hundred is nearest to the number you rounded?

Distribute **Handout 2.2: Movie Time PowerPoint** to students and have students complete the PowerPoint with their groups referring to the Anchor Chart created to help students understand how to round using benchmark numbers on a number line.

Note: Make sure to include various two and three digit numbers. Have students complete, with teacher guidance. This is a good stopping point if splitting the lesson into 2 days.

Activity 2: Base Ten Blocks
Distribute base ten blocks and a place value mat to each student. Model how to create 3-digit numbers using base ten blocks (SMP.4 and SMP.5). Have students Turn and Talk about how the models can be used to help round to the nearest hundred (SMP.3). Share several examples with the class before moving to the next activity.

Activity 3: Spider Web Rounding
Pair students and distribute **Handout 2.3: Spider Web Rounding Game Board, Handout 2.4: Spider Web Game Cards**, and two game markers. Instruct both players to place their marker on a spider to start. Players will take turns selecting a card and explaining how to round the number to the nearest hundred. After answering correctly, students will move their marker to the next space on the web. The game ends when both players return to their spider.

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

- Use anchor charts for both visual and written representations.
- Allow students to continue modeling with base ten blocks or number lines.

Activity 4: I Scream, You Scream!

Note: Prior to lesson, cut out cones and scoops from **Handout 2.5: Cones and Scoops**. Write 3-digit numbers on as many scoops as needed for your class. Distribute a cone or scoop to each student in the class. Allow time for students to find their match when rounding to the hundreds place. Ask students if it is possible to have any double or triple scoop ice cream cones. Ask students what the scoops have in common (SMP.7).

Note: This activity can be adapted for rounding to the nearest ten.

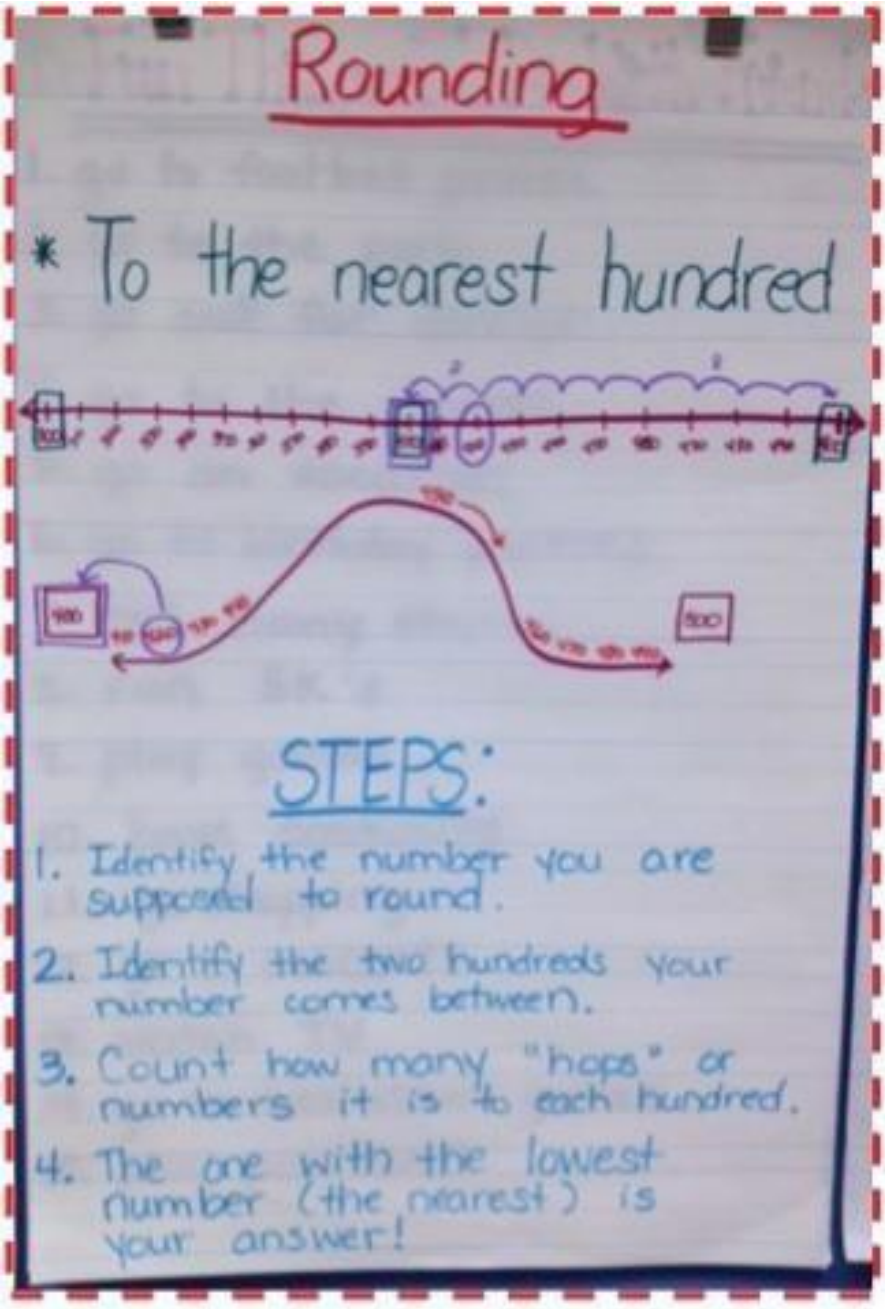
Reflection and Closing:

- ✓ **Exit Ticket:** Using **Handout 2.6**: **Exit Ticket**, have students complete the ticket out the door.

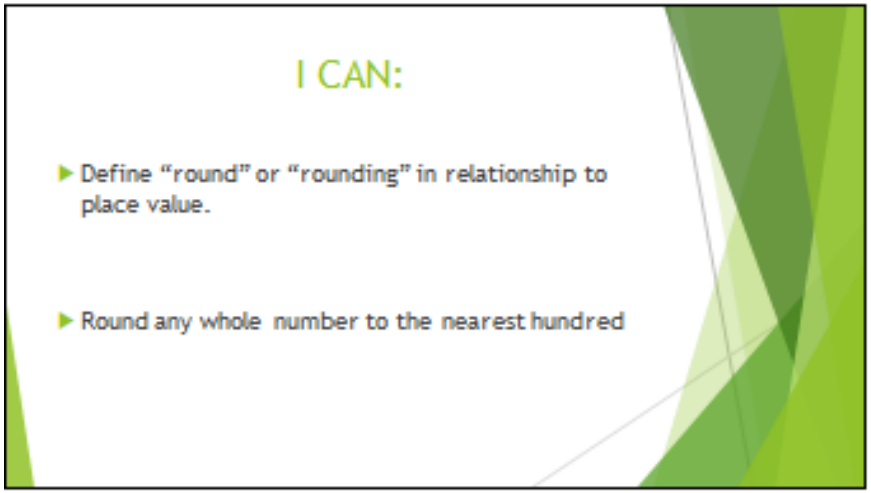
Homework

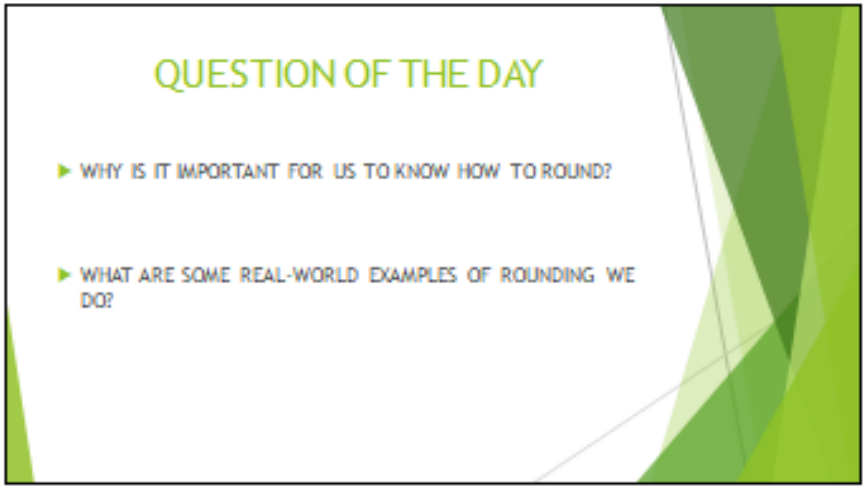
Students will look in a book, magazine, or newspaper to find two 3-digit numbers that they will round to the nearest hundred.

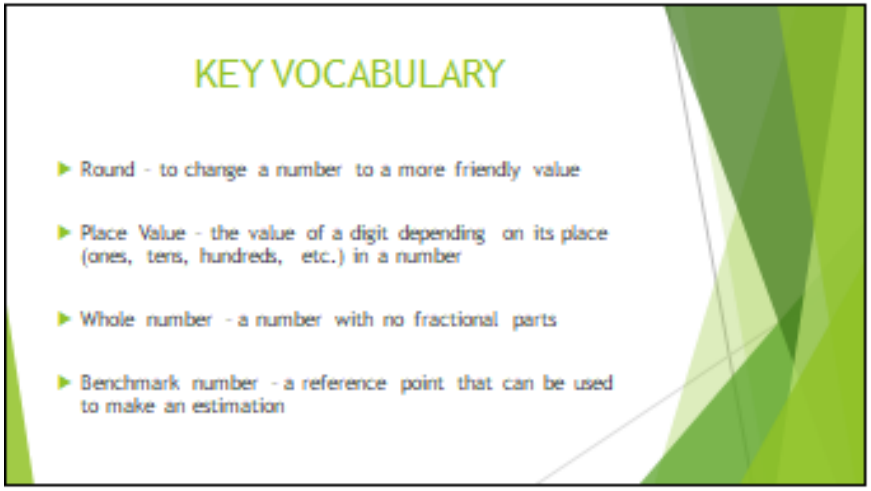
Handout 2.1: Anchor Chart Sample



Handout 2.2: Movie Time PowerPoint







MINI - LESSON

- The Regal Movie Theatre had a huge movie premier this weekend and hundreds of movie-goers came through their doors. The theatre manager wants to round the daily amounts to the nearest hundred to compare them and see which day they had the most movie-goers.
- On Friday, 682 people went to the movies. On Saturday, 848 people with to the movies and on Sunday, 951 people went to the movies.

MINI-LESSON

- How could we round 682 to the nearest 100?

- Friday there were 682 movie-goers. Mark 682 on the number line and write your answer in the chart.

Use the Number Line to Find the Answers to Fill in the Chart

Day of the Week	Number of Movie Goers	Rounded to the Nearest 100
Friday	682	
Saturday	848	
Sunday	951	

MINI-LESSON

- How could we round 848 to the nearest 100?

- Saturday there were 848 movie-goers. Mark 848 on the number line and write your answer in the chart.

MINI-LESSON

- How could we round 951 to the nearest 100?

- Sunday, there were 951 movie goers. Mark 951 on the number line and write your answer in the chart.

EXIT TICKET

- Bonnie worked at a video game store. There was a sale for four days. Her boss wanted to know on which day of the big sale the most video games were bought. She asked Bonnie to round these numbers to the nearest hundred.

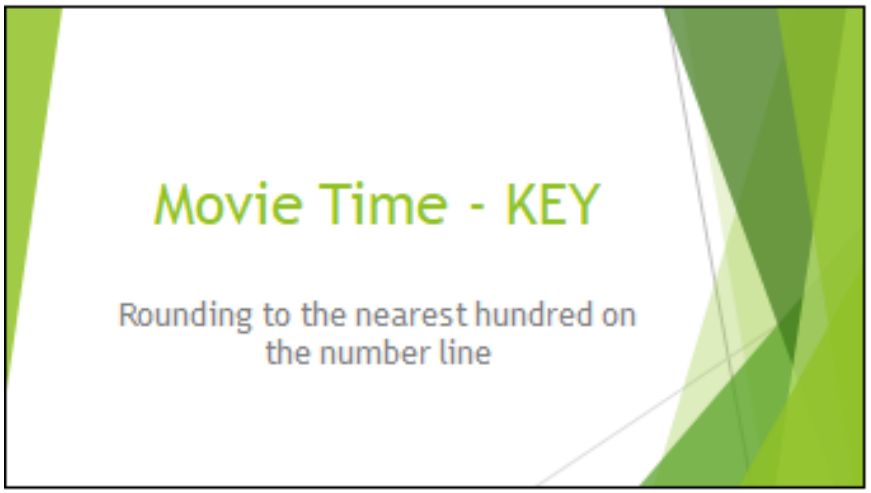
625 678 650 611

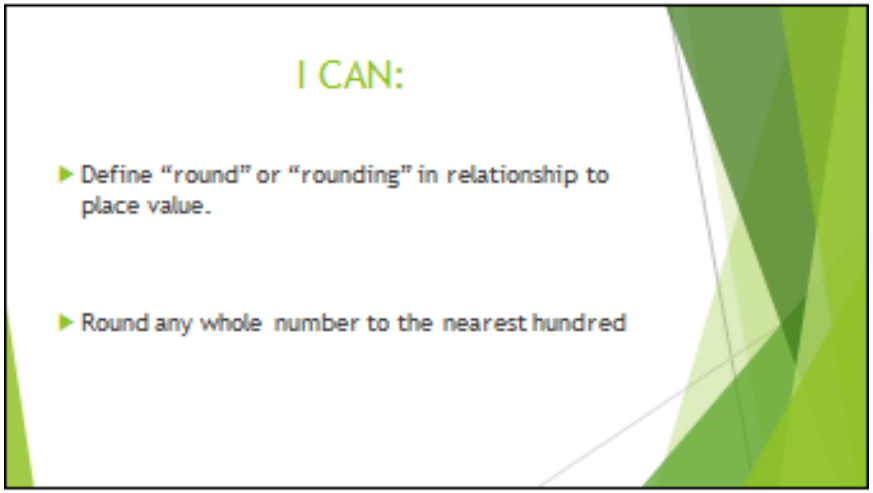
- Which of these numbers would Bonnie round to 600. Show your thinking using the number line, pictures, or words.

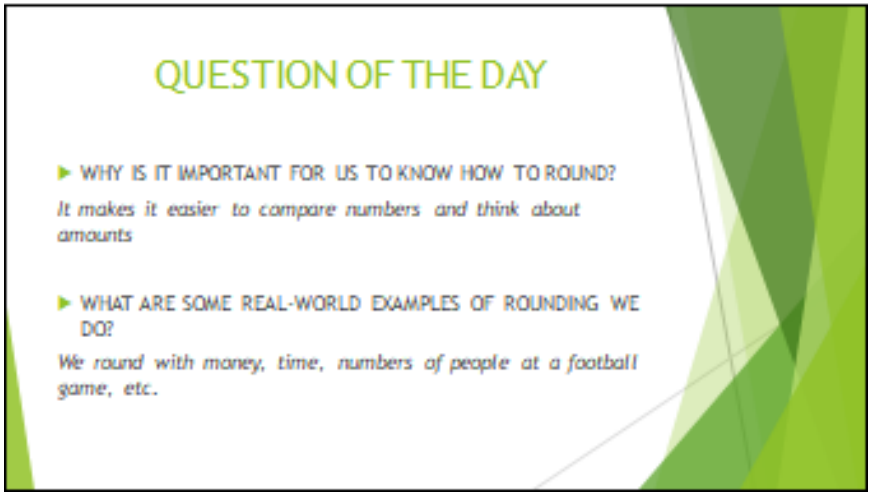
SHARE YOUR KNOWLEDGE

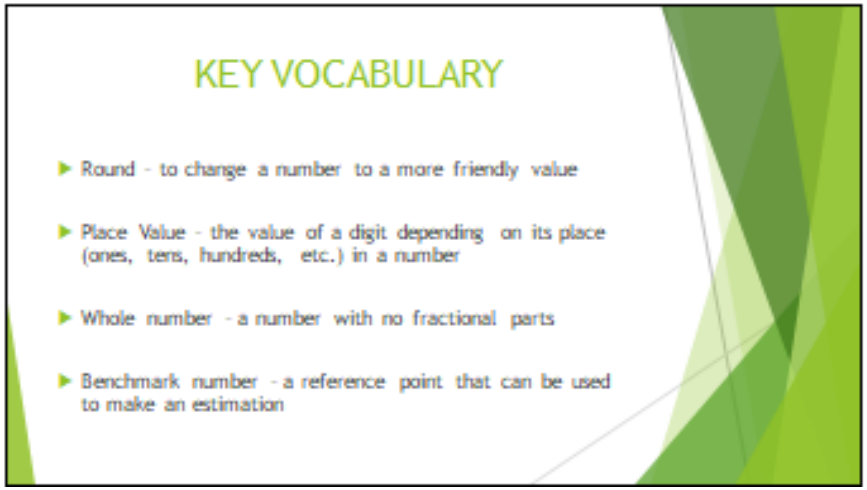
- Check your answers and talk about how you got your answers.
- Explain how rounding will help you in the real world.

Handout 2.2: Movie Time PowerPoint - Key









MINI - LESSON

- The Regal Movie Theatre had a huge movie premier this weekend and hundreds of movie-goers came through their doors. The theatre manager wants to round the daily amounts to the nearest hundred to compare them and see which day they had the most movie-goers.
- On Friday, 682 people went to the movies. On Saturday, 848 people with to the movies and on Sunday, 951 people went to the movies.

MINI-LESSON

- How could we round 682 to the nearest 100?

- Friday there were 682 movie-goers. Mark 682 on the number line and write your answer in the chart.

Use the Number Line to Find the Answers to Fill in the Chart

Day of the Week	Number of Movie Goers	Rounded to the Nearest 100
Friday	682	700
Saturday	848	900
Sunday	951	1000

MINI-LESSON

- How could we round 848 to the nearest 100?

- Saturday there were 848 movie-goers. Mark 848 on the number line and write your answer in the chart.

MINI-LESSON

- How could we round 951 to the nearest 100?

- Sunday, there were 951 movie goers. Mark 951 on the number line and write your answer in the chart.

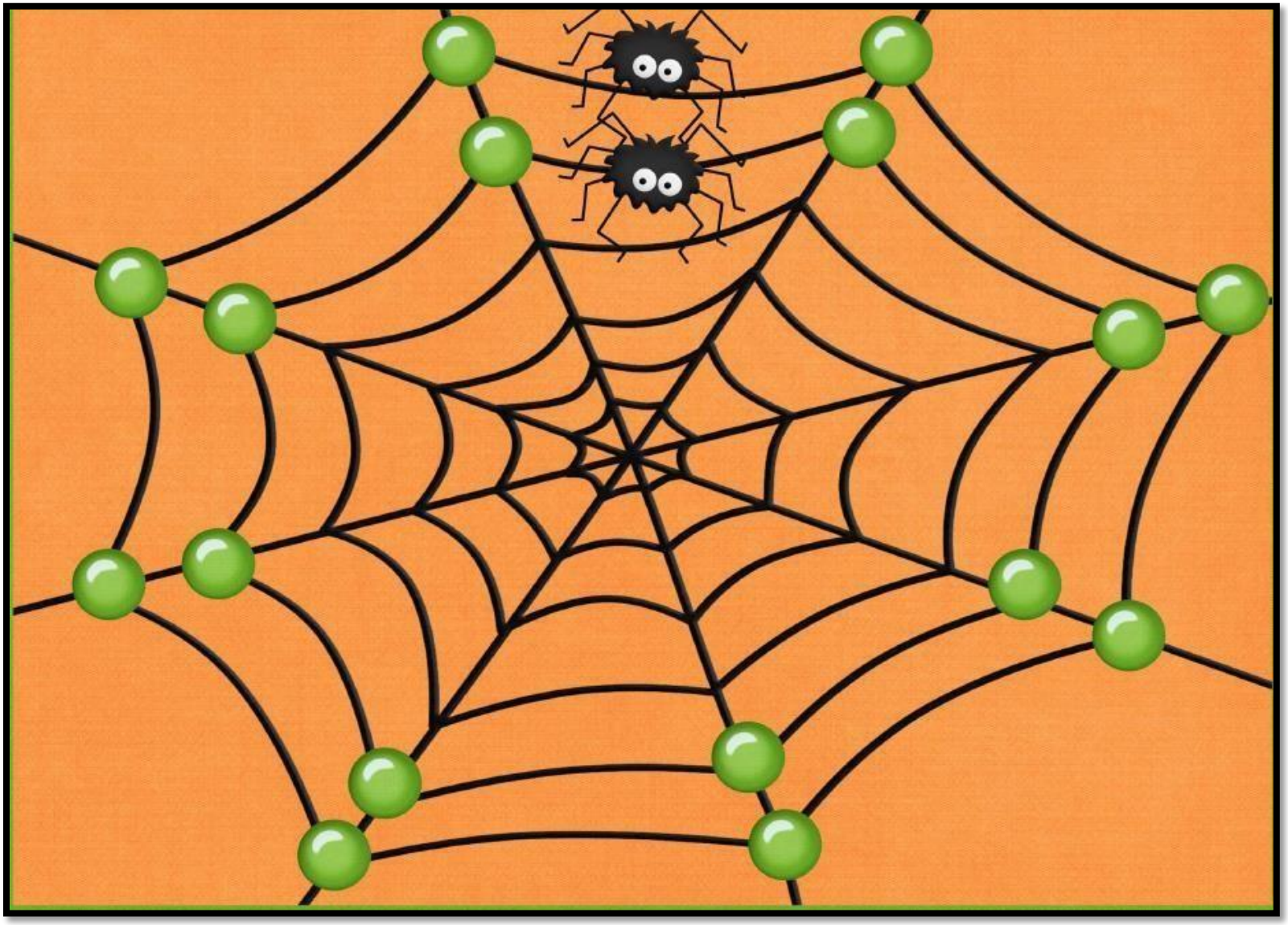
SHARE YOUR KNOWLEDGE

- Check your answers and talk about how you got your answers.
- Explain how rounding will help you in the real world.

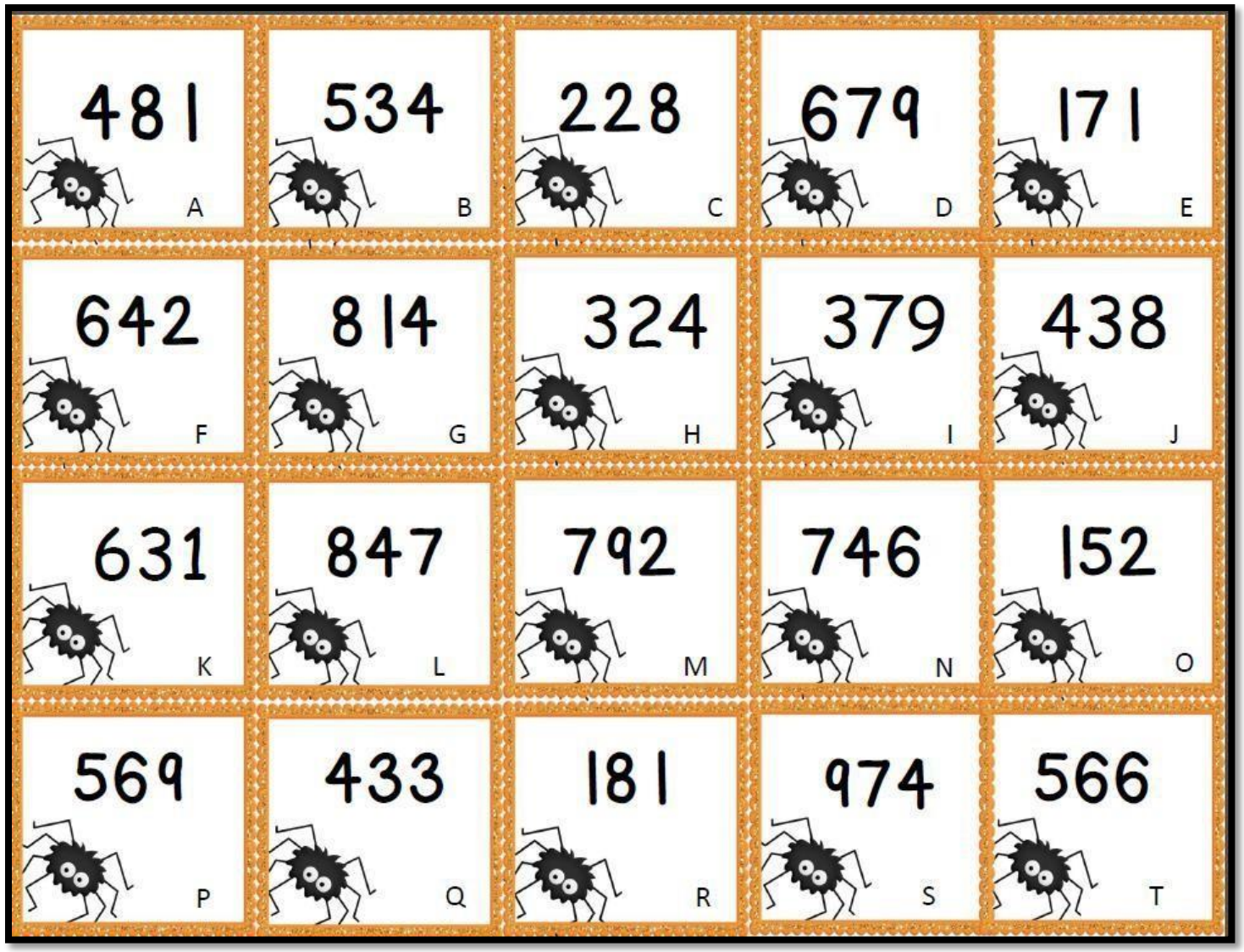
SHARE YOUR KNOWLEDGE

- Check your answers and talk about how you got your answers.
- Explain how rounding will help you in the real world.

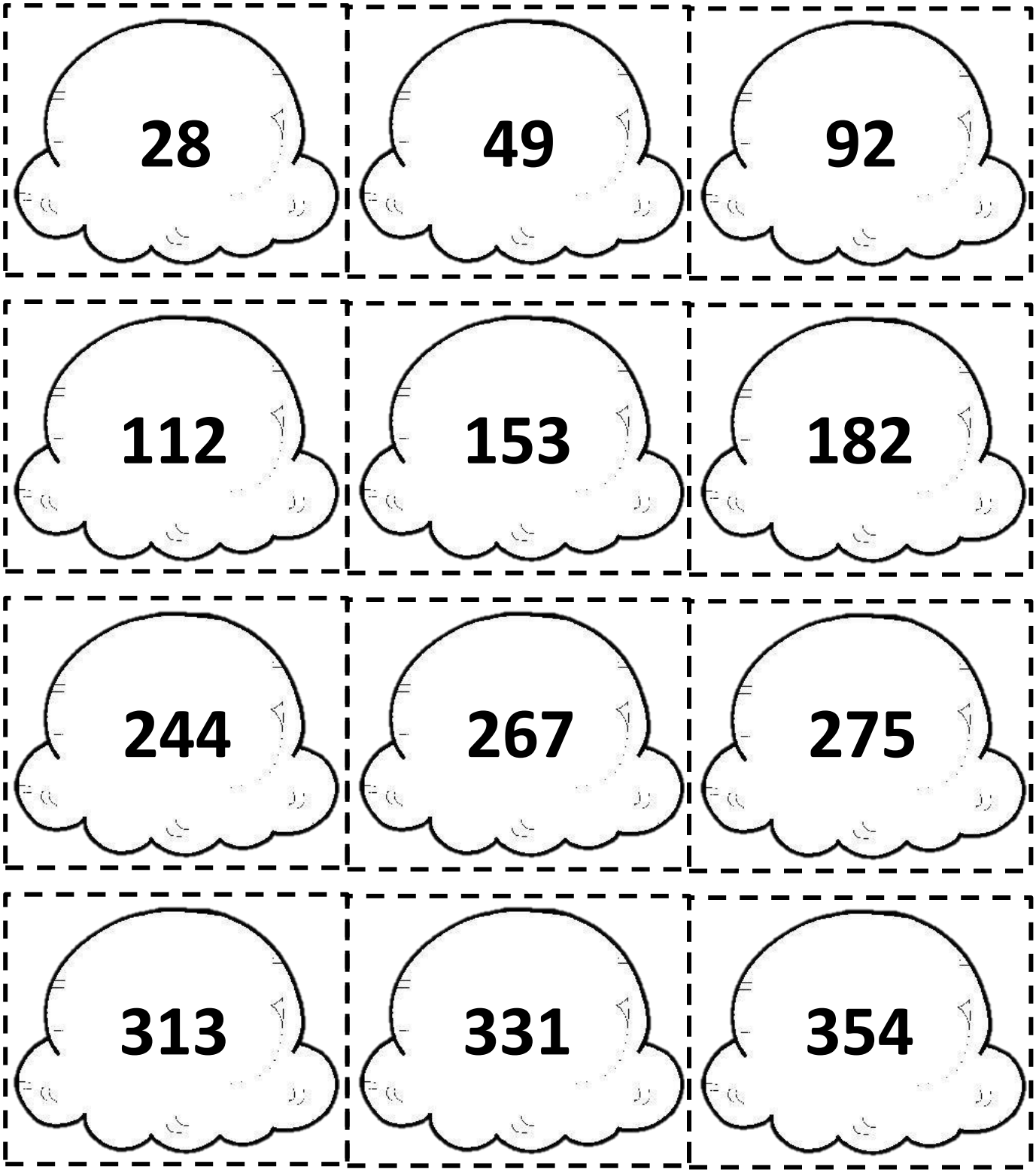
Handout 2.3: Spider Web Game Board

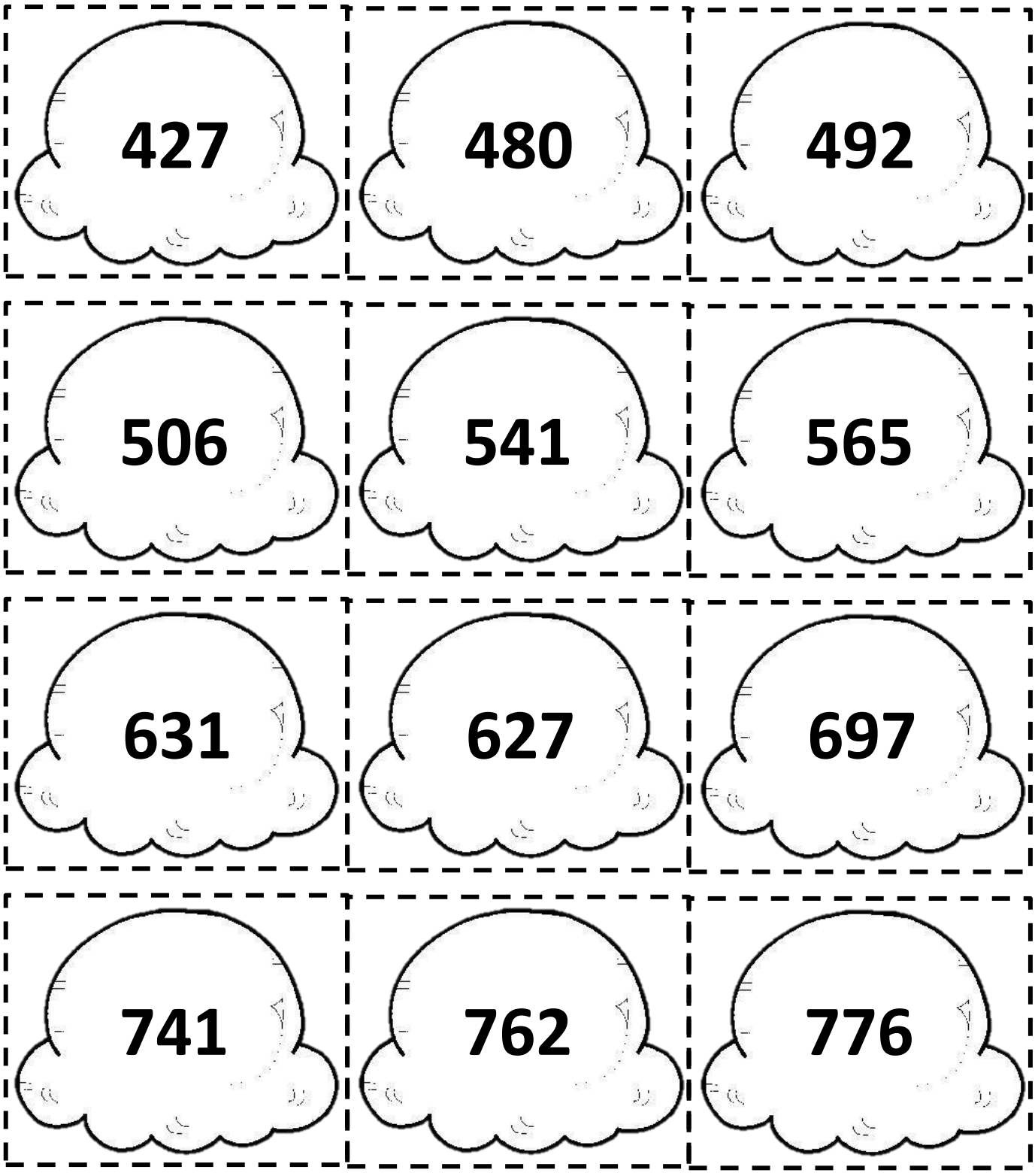


Handout 2.4: Spider Web Game Cards



Handout 2.6: Cones and Scoops

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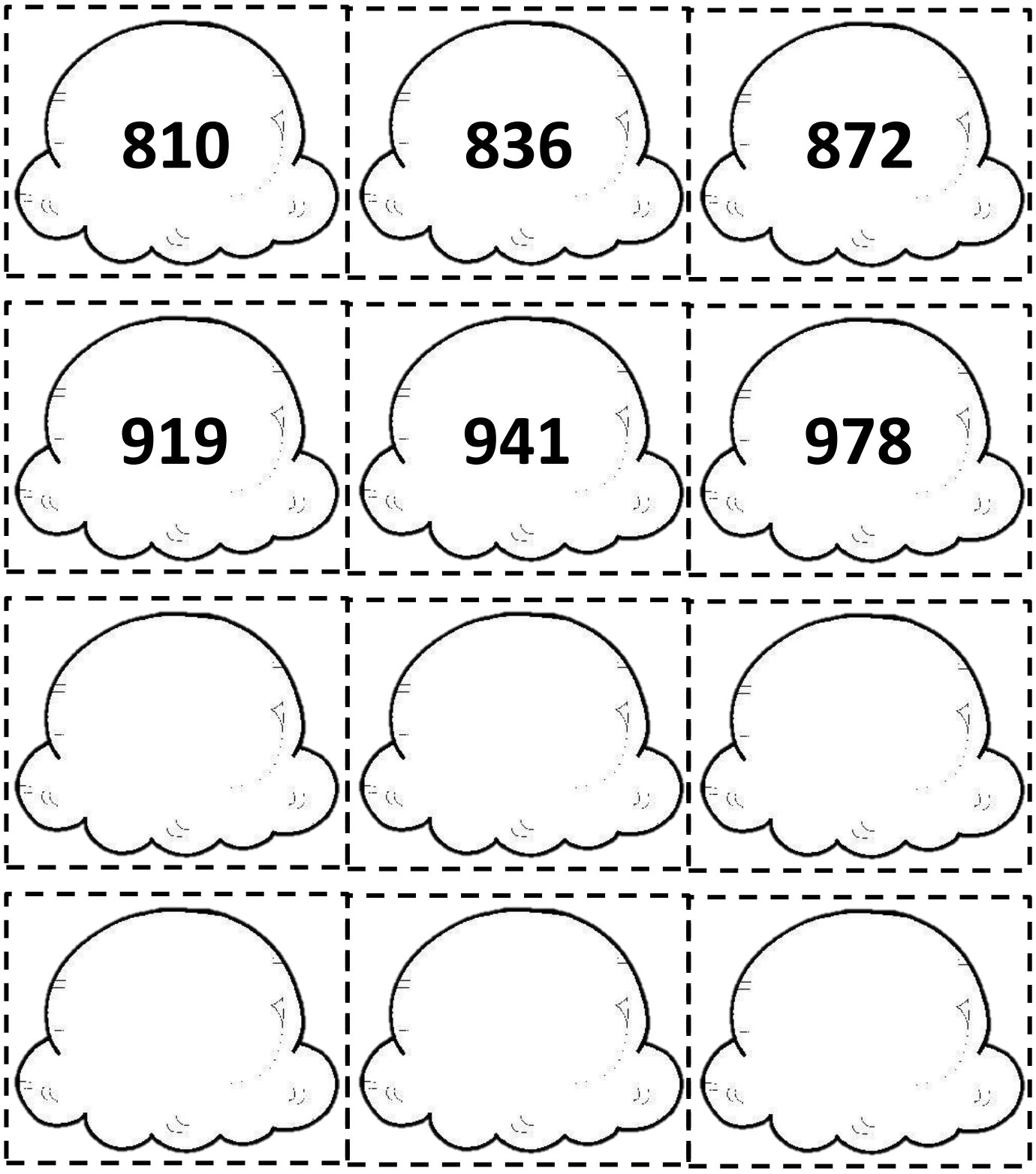
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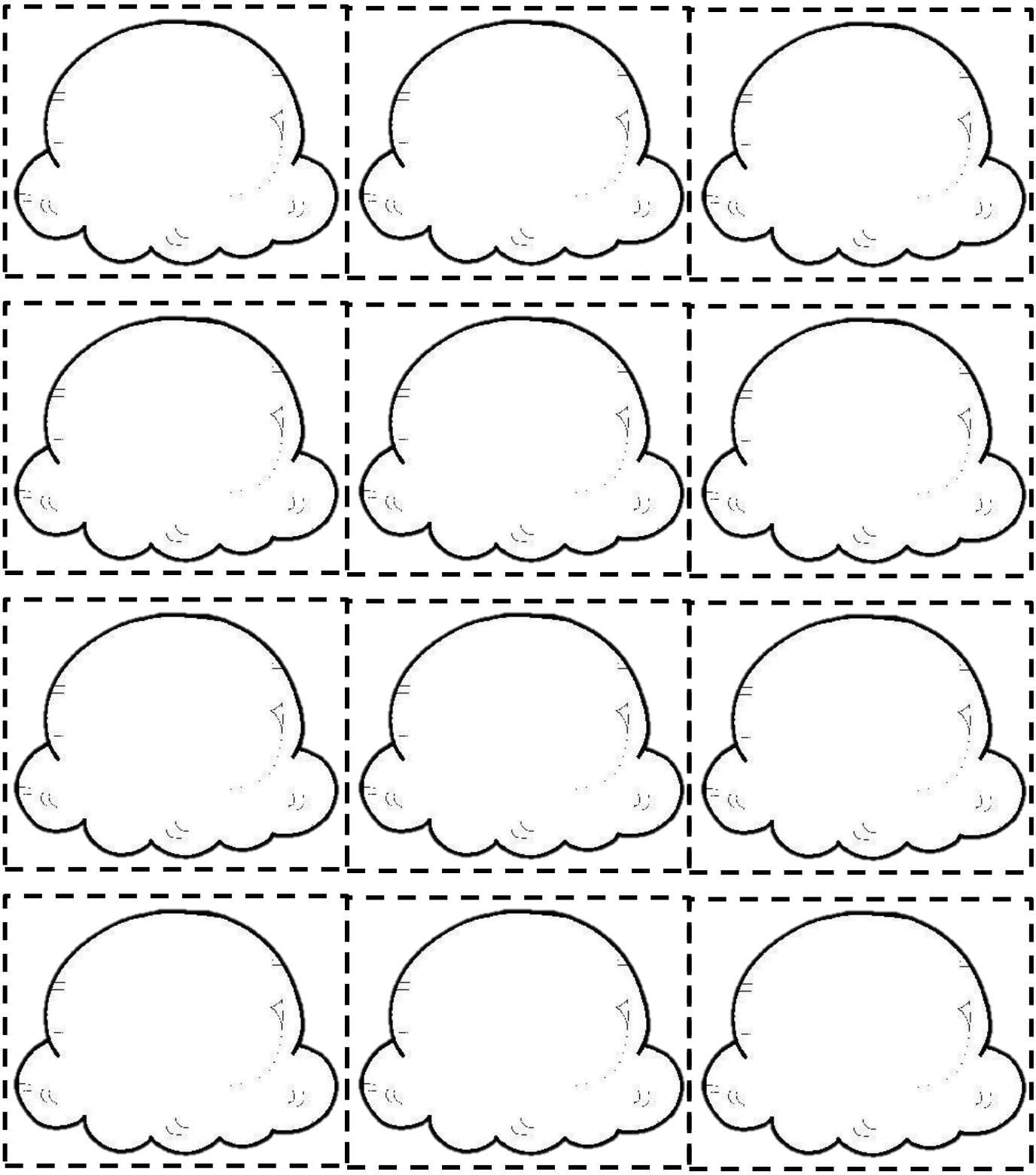

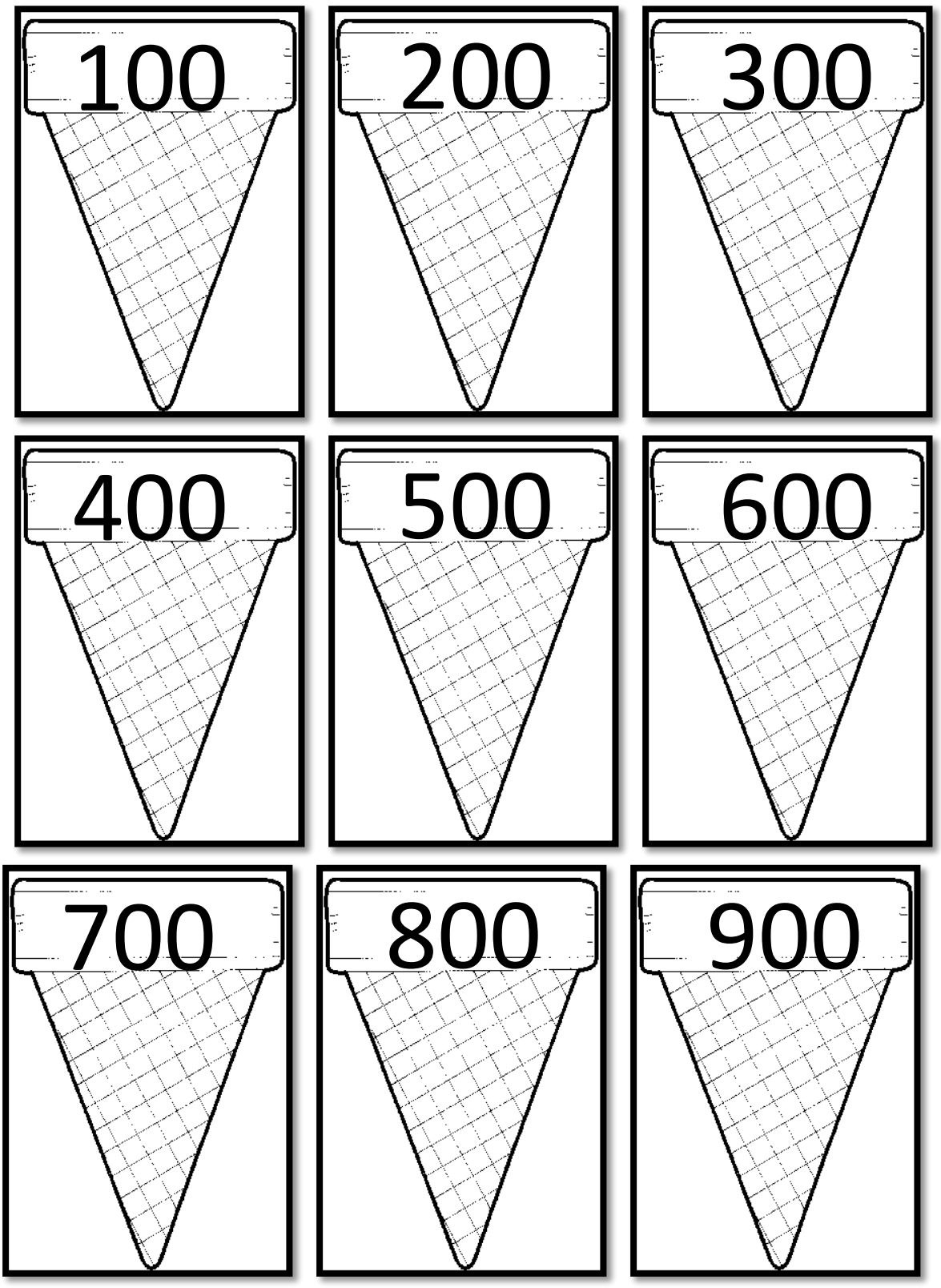
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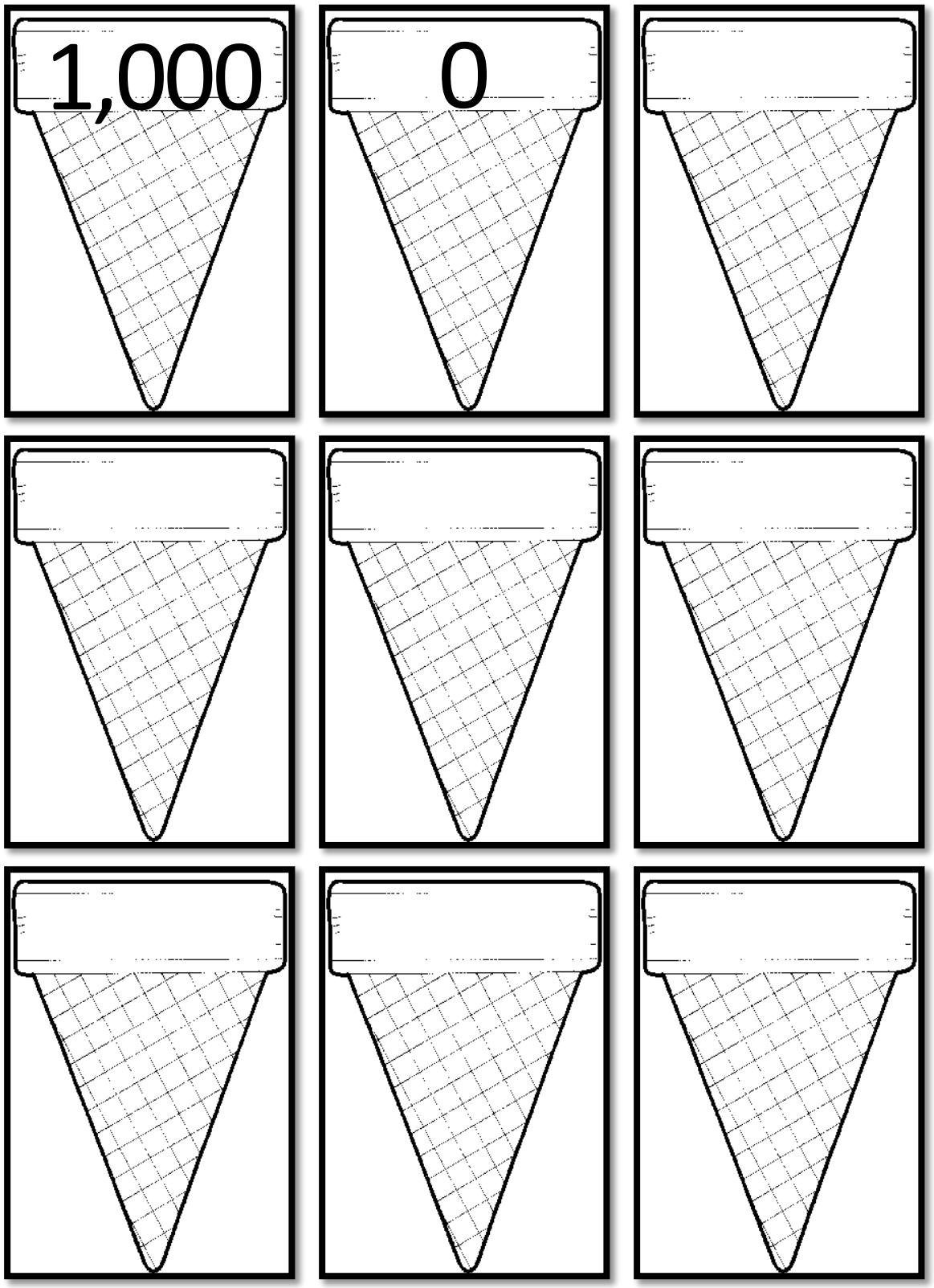
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Handout 2.6: Exit Ticket

Exit Ticket

Directions: Round the following numbers to the nearest tens place:

742_____ **563_____**

Directions: Round the following numbers to the nearest hundreds place:

612_____ **852_____**

Handout 2.6: Exit Ticket - Key

Exit Ticket

Directions: Round the following numbers to the nearest tens place:

742 740 **563** 560

Directions: Round the following numbers to the nearest hundreds place:

612 600 **852** 900

Lesson 3: Word Problems Involving Rounding

Focus Standard: 3.NBT.1

Additional Standards: 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 Targets:

- 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 Questions:

- 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:

- Base-Ten System
- Benchmark Number
- Estimate
- Expanded Form
- Place Value
- Round
- Standard Form
- Whole Number
- Word Form

Instructional Strategies for Academic Vocabulary:

☐ 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, place value mats, and number lines.

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 answer with words and pictures.

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. With whom do you agree? Why?

Handout 3.2: Journal Prompt - Key

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. With whom do you agree? Why?

I agree with Jimmy. $245 rounds to $200, and $317 is closer to $300. $200+$300=$500.

******Note:*** *It is likely that some students will agree with Maria by saying that $245+$317=$562, which is closer to $600. We use rounding to make it easy to work with numbers, so we round before adding or subtracting. If we already have an exact total (like Maria did), there isn't an use in rounding. She would say that they need to save $562. The important thing to remember is* ***round first****, work with operations next.*

Handout 3.3: Estimating with Operations

1. Dr. Boyd bought a Memphis Grizzlies ticket. The ticket cost $11. She also spent $32 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 3.3: Estimating with Operations - Key

1. Dr. Boyd bought a Memphis Grizzlies ticket. The ticket cost $11. She also spent $33 on a hot dog, popcorn, and drinks. About how much money did Dr. Boyd spend in all? Dr. Boyd spent about $40.
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? About 40 more girls attend LCES than boys.
3. Carrie and Larry pick 48 strawberries each day for 3 days. About how many strawberries did they pick in 3 days? They picked about 150 strawberries.
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? Mrs. Gilner had about 30 groups of girls.
5. Charlie wants to buy a video game for $45. She also wants to buy a DVD for $22. Approximately how much money does she need? Charlie will need approximately $70.
6. In the 4th grade at Oaklawn Elementary School, there are 116 girls and 142 boys. About how many more boys are there than girls? There are about 30 more boys 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 least 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 amI? _____	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 amI? _____

Handout 3.4: What Number Am I? – Key

1. 50
2. 64
3. 549
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**.

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

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

_____ _____ _____

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

_____ _____ _____

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

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

_____ _____ _____

_____ _____ _____

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 Jack have in the two 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 Jack have in the two 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 Jack have in the two jars combined?
To find the total, round each number to the nearest hundred, then solve.

Lesson 4: Performance Task

Focus Standard: 3.NBT.1

Additional Standards: 3.NBT.2, 3.OA.8

Standards for Mathematical Practice: SMP.1, SMP.2, SMP.3, SMP.4, SMP.5, SMP.6, SMP. 7 and SMP.8

Estimated Time: 90 minutes (2 days)

Resources and Materials:

- Handout 4.1: Cafeteria Lunch Orders
- Handout 4.2: Optional Assessment
- Handout 4.3: Optional Assessment

Lesson Targets:

- Students will demonstrate their understanding of rounding to the nearest ten and hundred and how this helps to make sense of numbers.
- Students will understand how rounding can be used in the real world.

Guiding Questions:

- How does rounding help us make sense of numbers?
- How can rounding be used in the real world?

Vocabulary

Academic Vocabulary:	**Instructional Strategies for Academic Vocabulary:**
• About • Round	☐ 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 use knowledge of rounding to answer word problems and justify the reasonableness of their answer using pictures, numbers or words.

Anticipatory Set/Introduction to the Lesson: Cafeteria Lunch Orders

- ✓ Distribute **Handout 4.1: Cafeteria Lunch Orders**. Have students work in pairs to complete the table, respond to the prompts, and write a letter to the cafeteria manager explaining which type of lunch he/she should purchase more of (hot or cold).

Reflection and Closing:

Upon completion, collect **Handout 4.1: Cafeteria Lunch Orders** to verify the students understanding of rounding and problem solving. Review any questions the following day to avoid any misconceptions.

Homework

The students will not receive homework.

Handout 4.1: Who's Getting Wet?

Name:_____ Date: _____

Who's Getting Wet?

Splashtown Water Park is giving special passes to elementary school students. The cashier is looking at her data to see who attended last weekend. She has collected data to determine the number of 3rd and 4th graders who came to the park. The owner wants to know if she should expect more 3rd graders or 4th graders next weekend.

Task:

- ✓ Complete the table.
- ✓ Write an email to the owner. Explain whether she should expect more 3rd graders or 4th graders next weekend. Support your response with three reasons or models based on the data in the table.

Day	3rd Graders	Rounded Nearest 10	Rounded Nearest 100	4th Graders	Rounded Nearest 10	Rounded Nearest 100
Friday	249			235		
Saturday	392			331		
Sunday	286			304		

Key for Table:

Day	3rd Graders	Rounded Nearest 10	Rounded Nearest 100	4th Graders	Rounded Nearest 10	Rounded Nearest 100
Friday	249	250	300	235	240	200
Saturday	392	390	400	331	330	300
Sunday	286	290	300	303	300	300
Sums (for teacher's quick reference)	927	930	1,000	869	870	800

Rubric for Performance/Culminating Task

Level	Mastery Level	Rounding Tens	Rounding Hundreds	Problem Solving
4	Exemplifying Mastery	6 numbers rounded correctly to the nearest ten.	6 numbers rounded correctly to the nearest hundred.	All or almost all math vocabulary is used correctly.
3	Approaching Mastery	4-5 numbers rounded correctly to the nearest ten.	4-5 numbers rounded correctly to the nearest hundred.	Most math vocabulary is used correctly.
2	Developing Mastery	1-3 numbers rounded correctly to the nearest ten.	1-3 numbers rounded correctly to the nearest hundred.	Some math vocabulary is used correctly.
1	Not Representing Mastery	0 numbers rounded correctly to the nearest ten.	0 numbers rounded correctly to the nearest hundred.	No math vocabulary is used, or it is mostly (50% or more) used in the wrong way.
0	No Understanding	Nothing was turned in, or the work was too messy to read.		

For training or questions regarding this unit,
please contact:

exemplarunit@mdek12.org