PRACTICE TASK: Shake, Rattle, and Roll Revisited

Approximately 1 Day

STANDARDS FOR MATHEMATICAL CONTENT

MCC2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

MCC2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

STANDARDS FOR MATHEMATICAL PRACTICE

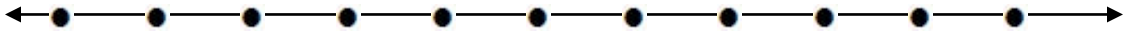
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

******Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

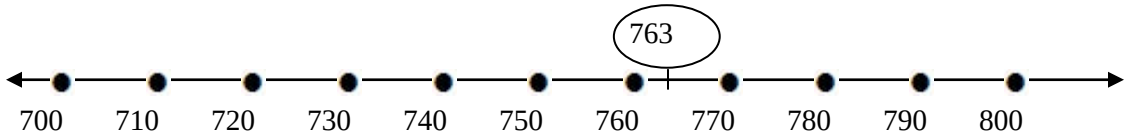
This task is designed to provide addition practice and mental math/estimation skills. You may want to use a book like *Mental Math in the Primary Grades* by Jack Hope, R. Reys, Larry Leutizinger, Barbara Reys, and Robert Reys to practice mental math with the class as a whole group.

Use all available opportunities during the day to incorporate the use of estimation, for example, determining to which multiple of 10, or 100 a given number is nearest. This skill was addressed in the first two tasks of this Unit. (See Where am I on the Number Line and What's My Number). supported with the use of a number line 0-99 chart and/or a hundreds chart. Students should have these tools available for this task. Alternatively, students can create a number line to determine the closest multiple of ten. A student sheet with open number lines could be provided. An example of an open number line is shown below.



For the number 36, students can fill in the numbers around 36, including the two closest multiples of ten as shown below. Then looking at the number line, students can determine the multiple of ten that is the closest to 36. In this case 40 is 4 away, but 30 is 6 away, so 40 is the closest multiple of ten.

For the number 763, students can follow a similar procedure to estimate to the nearest hundred. Students will need to determine the multiple of one hundred that is the closest to 763. In this case 700 is more than 60 away, but 800 is less than 40 away, so 800 is the closest multiple of one hundred.



Estimating skills will help students determine reasonableness of answers, a vital skill for everyday living.

ESSENTIAL QUESTIONS

- What is the difference between place and value?
- If we have two or more numbers, how do we know which is greater?
- What happens to the value of a number when we add or subtract 10 from it? What digits change? What digits stay the same? Why?
- What happens to the value of a number when we add or subtract 100 from it? What digits change, what digits stay the same? Why?
- How does mental math help us calculate more quickly and develop an internal sense of number?

MATERIALS

- Three six-sided dice for each pair of students
- "Shake, Rattle, and Roll" Recording Sheet
- Multiple decks of Addition and Subtraction Instruction cards that have either *add or subtract 10* or *add or subtract 100* on them.

GROUPING

Partner/Small Group Task

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

In this task, students play a game with dice that enables them to build mental math concepts as they practice addition skills and strategies, and determine to which multiple of ten a given number is nearest.

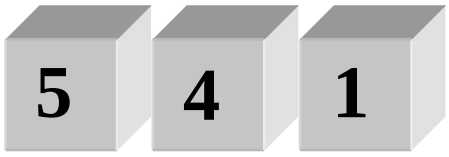
Task Directions
Students will follow the directions below from the "Shake, Rattle and Roll" Recording Sheet.

Let the students know that this is a two player game that will help them practice adding and subtracting 10 and 100 from different numbers. The goal of the game is to be the person with the most points at the end of ten turns.

Directions:

1. The partners need to gather your materials. You will need 3 dice, a recording sheet for each player, and a stack of addition subtraction instruction cards.
2. Players will need to take turns rolling the dice each round
3. Player one rolls the three dice and then both players form the largest possible number.

Example: Rolled a 4, 1, and 5 so students should create the number



Then each player will flip over their own card from the addition/subtraction instructions deck that will instruct them to either add or subtract 10 or 100 from the number they made.

Players record both the original amount and the new amount on the game recording sheet. **Partner must agree on the new numbers generated after following instructions on the addition/subtraction card.**

For round two, player two takes a turn rolling the dice, and following the same procedures explained above. Players take turns for a total of five rounds. After each round, each player compares their numbers. The player with the higher number wins that particular round.

FORMATIVE ASSESSMENT QUESTIONS

- What strategy did you and your partner use to figure out the largest three digit number you could make from your roll?
- Explain how you decided if your partner was right when they were adding or subtracting?

DIFFERENTIATION

Extension

- Ask students to play the game again, but this time roll 4 dice and create numbers using the one thousands place. Make sure to ask students if they think this changes the game? If so, have them explain how.

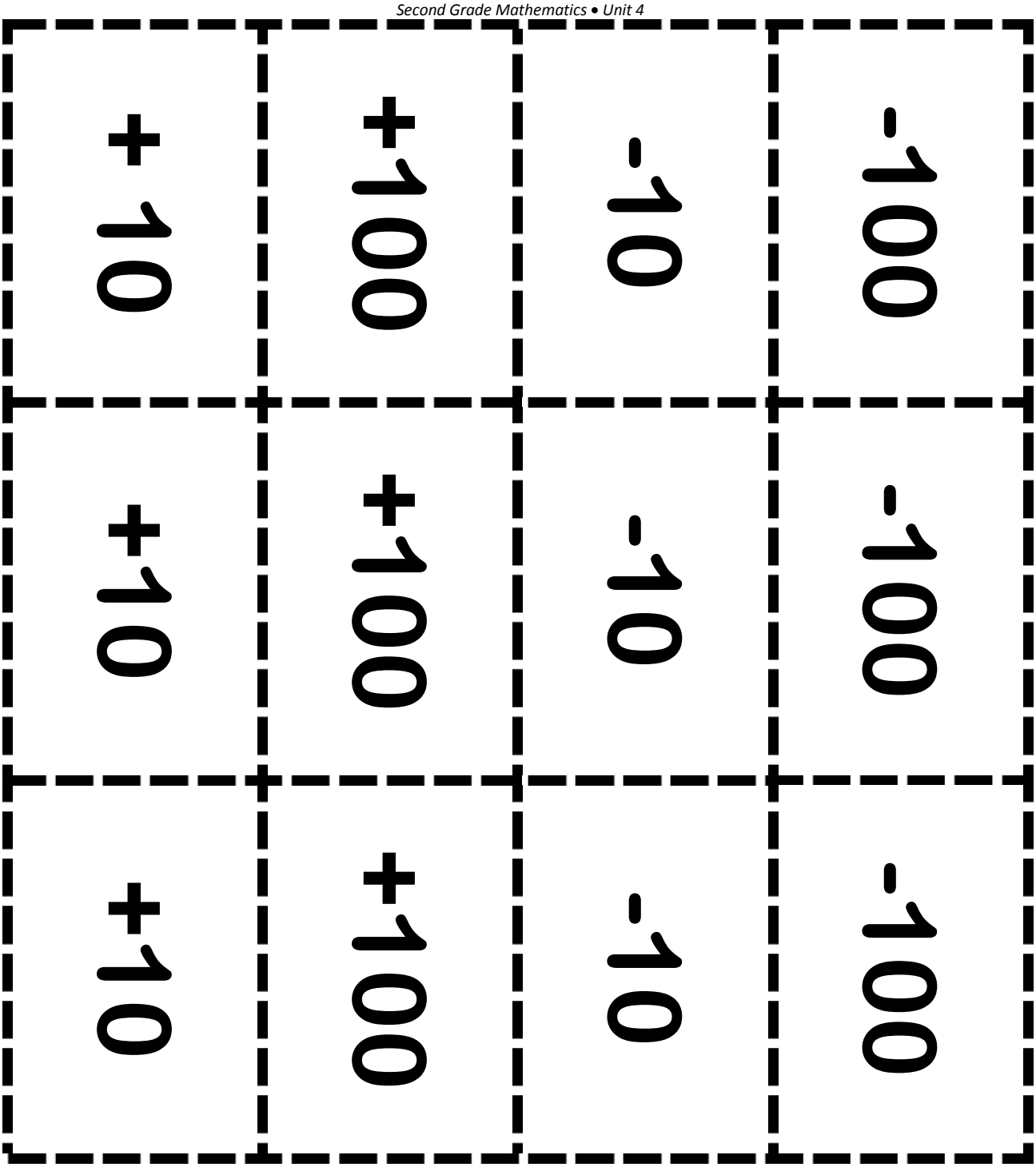
Intervention

- Use number lines, number charts, and models to help students who are having difficulty determining to which multiple of ten their number is nearest. Use counting up/counting back to the nearest multiple of ten, and compare the results to determine to which multiple of ten a number is closest.

- Students can play the game using fewer dice, adjusting the game accordingly. Once students become comfortable with fewer dice, they can challenge themselves by playing the game with the required four dice.

TECHNOLOGY CONNECTION

- http://www.shodor.org/interactivate/activities/EstimatorFour/?version=1.6.0_02&browser=MSIE&vendor=Sun_Microsystems_Inc. A "Four in a Row" game where players get checkers when they quickly and efficiently estimate a sum to two numbers.
- http://www.oswego.org/ocsd-web/games/Estimate/estimate.html Students estimate the number indicated on a number line.



Name _____ Date _____

Shake, Rattle, and Roll

Game Directions

This is a two player game that will help you practice adding and subtracting 10 and 100. The goal of the game is to be the person with the most points at the end of five turns.

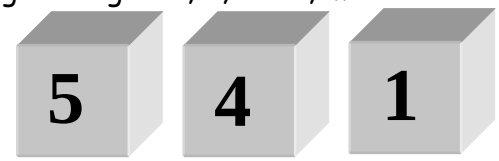
Directions:

1. Play with a partner. You will need 3 dice, a recording sheet for each player, and a set of addition and subtraction instruction cards.

2. Player one rolls the three dice and then each player forms the largest possible number as shown below.

Example:

Using the digits 4, 5, and 1, make the number 541



3. Player one and two record the number on the game recording sheet.

4. Then each player will take a turn drawing one of the addition/subtraction instruction cards from the deck. Each player will need to follow the instructions on their own card! The card will tell you to either add or subtract 10 or 100 from the original number.

5. Each player then records their new number on the recording sheet.

6. **Each partner must agree with the other partner's new number!**

7. After each round, players compare their new numbers. The player with the higher number wins the round.

Player 1 _____

Shake, Rattle, and Roll Game

Round	Die 1	Die 2	Die 3	Actual Number	Add or subtract 10 or 100	New Number	More or Less than Partner	Record a score of ten points if you have a higher number than your partner
1								
2								
3								
4								
5								

Player 2 _____

Shake, Rattle, and Roll Game

Round	Die 1	Die 2	Die 3	Actual Number	Add or subtract 10 or 100	New Number	More or Less than Partner	Record a score of ten points if you have a higher number than your partner
1								
2								
3								
4								
5								