

# MATHEMATICS COMMON CORE CURRICULUM UNIT #2 Grade 2\*

## North Smithfield Public Schools

**TITLE OF UNIT:** Use place value and properties of operations to add and subtract **GRADE :** 2

**DATE PRESENTED:** \_\_\_\_\_ **DATE DUE:** \_\_\_\_\_ **LENGTH OF TIME:** @seven weeks

### OVERVIEW OF UNIT:

In this unit students will understand place value and its effect on adding and subtracting problems fluently. Students will explore odd and even numbers in a variety of ways including arrays.

### ESSENTIAL QUESTIONS

- *How might you use mental math/ strategies to solve any given problem?*
- *What equation/model expresses an array?*
- *How can you use a model to decide if a number is even or odd?*
- *How does the position of a number determine its value?*

### STANDARDS: Common Core Math Standards – Grade level domains K-5

Counting and Cardinality <b>CC</b>	Operations and Algebraic Thinking <b>OA</b>	Number and Operations in Base Ten <b>NBT</b>	Number and Operations – Fractions <b>NF</b>	Measurement and Data <b>MD</b>	Geometry <b>G</b>
• • •	□ 2.OA.2,3 □ □	□ 2.NBT. 2, 5,6 □	□ □	□ □ Modeling with Geometry G-MG	□ □

### STANDARDS: Mathematical Practices grades K-12

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

### FOCUS MATHEMATICS STANDARDS:

- Use place value and properties of operations to add and subtract. **2.OA.2**
- Work with equal groups of objects to gain foundations for multiplication **2.OA.3**
- Understand place value. **2.NBT.2**
- Use place value understanding and properties of operations to add and subtract. **2.NBT. 5,6**

### Applied Learning Standards:

problem solving                      communication                      critical thinking                      research                      reflection/ evaluation

### Expectations for Student Learning (High School only):

### ENDURING UNDERSTANDING:

At the end of this unit students will be able to use place value and its' properties to add and subtract fluently. They will use groups of numbers to determine odd and even.

### PRIOR KNOWLEDGE:

- Solve word problems whose sum is less than or equal to 20.
- Understand that addition and subtraction has an inverse relationship.
- Understand place value to the tens place.
- Use their understanding of place value to mentally add or subtract by tens.

### STUDENT OBJECTIVES, SKILLS and/or NEW KNOWLEDGE:

- Doing mathematics involves a variety of processes including problem solving, reasoning, communicating, connecting, and representing.
- Decomposing and recomposing numbers to solve addition and subtraction problems helps students make sense of number relationships.
- Fluency in addition and subtraction within 20 (using various strategies) is critical to understanding addition and subtraction of larger numbers. TUSD
- Addition and subtraction have an inverse relationship. This inverse relationship can be used to find subtraction and/or addition facts. Every subtraction fact has a related addition fact.
- Adding multiple groups of equal size is the foundation for multiplication.

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- Sets of objects can be arranged in a rectangular array.
- Even numbers can be divided into two equal sets, arranged into pairs or counted by twos; odd numbers cannot.
- Looking for a pattern can help solve a problem.
- The position of digits in numbers determines their value.
- Numbers can be used to tell how many.
- Composing and decomposing numbers by place value allows for efficiency for addition and subtraction computation.
- Sometimes it is necessary to compose a unit of the next higher value when adding multi-digit numbers.
- Flexible methods for computation require a strong understanding of the operations of addition and subtraction and their properties.
- Adding and subtracting hundreds or tens is similar to adding or subtracting single digit numbers.
- Flexible methods for computation require a strong understanding of the operations of addition and subtraction and their properties.
- Addition and subtraction problems are properly aligned – ones with ones, tens with tens.

### SUGGESTED PROBLEMS:

#### ASSESSMENT PROBLEMS

##### 2. OA.3 Advanced

<http://www.illustrativemathematics.org/standards/k8> (Red and Blue Tiles)

##### 2. NBT.2

• <http://www.illustrativemathematics.org/standards/k8> (Boxes and Cartons of Pencils, Making 124)

##### 2. NBT.5 Basic

• <http://www.illustrativemathematics.org/standards/k8> (Jamir’s Penny Saving Jar)

##### 2. NBT.5 Advanced

• <http://www.illustrativemathematics.org/standards/k8> (Saving Money 1 and Saving Money 2)

##### 2. NBT.6 Advanced

• <http://www.illustrativemathematics.org/standards/k8> (Toll Bridge Puzzle)

### ACTIVITIES, PRODUCTS, PERFORMANCE, and ASSESSMENTS: see curriculum introduction

- |                                       |                            |  |   |
|---------------------------------------|----------------------------|--|---|
| 1. Application to real world problems | 6. Graphic organizers      | 14. Problem/Performance based/common tasks               | 18. Technology                                    |
| 2. Creating charts/collecting data    | 7. Graphing                | 15. Real-life applications involving graphing            | 19. Summarizing and note-taking                   |
| 3. Collaboration - interpersonal      | 8. Interviews              | 16. Represent numbers                                    | 20. Tests and quizzes                             |
| 4. Conferencing                       | 9. Journals                | 17. Rubrics/checklists (mathematical practice, modeling) | 21. Writing genres Arguments/ opinion Informative |
| 5. Exhibits                           | 10. KWL charts             |  |   |
|                                       | 11. Mathematical Practices |  |   |
|                                       | 12. Modeling ★             |  |   |
|                                       | 13. Oral presentations     |  |   |

### HIGHER ORDER THINKING SKILLS: Web’s Depth of Knowledge 2 – 4 or Bloom’s Taxonomy

#### Web’s Depth of Knowledge

- skill/conceptual understanding
- strategic reasoning
- extended reasoning

#### Bloom’s Taxonomy

- apply
- analyze
- synthesize/create
- evaluate

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**ADDITIONAL RESOURCES:** see curriculum for specifics

- 2.OA.2 *enVisions* SE/TE: Lessons 2-1, 2-2, 2-3, 2-6, 3-1, 3-2, 3-3, 3-4, 3-5
- 2.OA.3. *enVisions*SE/TE: Lesson 5-7
- 2.NBT.2 *enVisions* SE/TE: Lessons 5-4, 6-6, 10-1, 10-5, 10-6, 10-9
- 2.NBT.5 *enVisions* SE/TE: Lessons 1-6, 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 3-1, 3-2, 3-3, 3-4, 3-5, 5-5, 5-7, 6-1, 6-2, 6-3, 6-4, 6-5, 7-1, 7-2, 7-3, 7-4, 7-5, 8-1, 8-2, 8-3, 8-4, 8-5, 8-7, 8-8, 8-9, 9-1, 9-2, 9-3, 9-4, 9-5, 9-6, 9-7, 9-8, 9-9,14-1, 14-2, 14-3
- 2.NBT.6 *enVisions* SE/TE: Lessons 5-5, 8-4, 8-5, 8-6, 8-7, 8-8, 9-6,9-8

### VOCABULARY

#### OA

- |                     |                 |                      |                        |
|---------------------|-----------------|----------------------|------------------------|
| • Addend            | • Difference    | • Mental math        | • Product              |
| • Addition sentence | • Doubles       | • Minuend            | • Regroup              |
| • Area model        | • Equals Even   | • Minus              | • Strategy             |
| • Array             | • Fact families | • More               | • Subtraction sentence |
| • Composing         | • Factor        | • Multiplication Odd | • Subtrahend           |
| • Decomposing       | • Fewer         | • Part               | Sum                    |
| •                   | •               | •                    |                        |

#### NBT

- |           |                         |               |
|-----------|-------------------------|---------------|
| • After   | • Equal to Greater than | • Less than   |
| • Before  | • Greatest              | • Number word |
| • Between | • Least                 | • Pattern     |
| •         |                         |               |

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LESSON PLAN for UNIT \_\_\_\_\_

LESSONS

- Lesson # 1 Summary:
  
- Lesson #2 Summary:
  
- Lesson #3 Summary:

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OBJECTIVES for LESSON # \_\_\_\_\_

- Materials/Resources:**
  
- Procedures:**
  - Lead -in
  
  - Step by step
  
  - Closure
  
- Instructional strategies:** see curriculum introduction
  
- Assessments:** see curriculum introduction
  - **Formative**
  
  
  - **Summative**