MATHEMATICS COMMON CORE CURRICULUM UNIT # 5 Grade 1*
North Smithfield School Department

TITLE OF UNIT: Data and Shapes **GRADE : 1**

DATE PRESENTED: _____**DATE DUE:** _____ **LENGTH OF TIME:** several weeks, quarter, semester

OVERVIEW OF UNIT:

Students will represent and interpret data.
Students will compose and partition shapes.
Students will represent and solve word problems involving addition and subtraction.
Students will add and subtract within 20.
Students will extend the counting sequence.

ESSENTIAL QUESTIONS

- *What questions do we have that data can help us answer?*
- *What kind of data might we collect?*
- *What makes an effective representation of data? How do you know?*
- *How might we organize this data?*
- *What questions can we ask about this data related to number?*
- *What does this data tell us?*
- *Which category has more (less) and how many more (less)?*
- *What are all the new shapes that we can make by combining these smaller shapes?*
- *What are all the shapes that you see in this shape?*
- *What happens to the size of each share when you break a shape into more shares or fewer shares? Why?*
- *Are halves always the same size?*
- *What words or phrases name the share?*
- *What words or phrases name all the shares that make a whole?*
- *What kinds of problems can be modeled and solved using addition and subtraction?*
- *How might different strategies be helpful when solving a problem?*
- *What number comes next? How do you know?*
- *What number comes before? How do you know?*
- *What patterns do you see?*

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

Counting and Cardinality CC	Operations and Algebraic Thinking OA	Number and Operations in Base Ten NBT	Number and Operations – Fractions NF	Measurement and Data MD	Geometry G
☐	☐ 1.OA.1,6	☐ 1.NBT. 1	☐	☐ 1.MD.4	☐ 1.G.2,3
☐	☐	☐	☐	☐	☐

STANDARDS: Mathematical Practices grades K-12

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

FOCUS MATHEMATICS STANDARDS:

- Represent and interpret data (1.MD.4)
- Reason with shapes and their attributes (1.G.2,3)
- Represent and solve word problems involving addition and subtraction. (1.OA.1)
- Add and subtract within 20. (1.OA.6)
- Extend the counting sequence. (1.NBT.1)

Applied Learning Standards:

problem solving communication critical thinking research reflection/ evaluation

Expectations for Student Learning (High School only):

ENDURING UNDERSTANDING:

Students create and interpret graphs with up to 3 categories. Students compose two-& three-dimensional shapes to create a composite shape. Students use shapes to illustrate the fractions of ½ and ¼. Students use properties of addition to create and use increasingly sophisticated strategies based on these properties to solve addition and subtraction problems within 20. Students will be able to read and write numerals to 120 and extend the counting sequence beginning at any number less than 120. Students use properties of addition to create and use increasing sophisticated strategies based on these properties to solve addition and subtraction problems within 20.

*Referenced templates from *Common Core Curriculum Maps, English Language Arts* and *The Understanding By Design Guide to Creating High Quality Units*

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PRIOR KNOWLEDGE:

- Sort items and communicate reasoning for the sort.
- Make composite shapes from smaller shapes.
- In an oral word problem, students can summarize the main idea of the problem and, with teacher guidance, assign numeric values to important information within the word problem.
- Students should be able to count fluently to 25, as well as recognize the word forms of these numbers. In addition, students must have had practice with a variety of skip counting sequences.
- Addition means "put together" and subtraction means "take apart"

STUDENT OBJECTIVES, SKILLS and/or NEW KNOWLEDGE:

- Data can be organized, represented, and interpreted in different ways.
- First Grade students collect and use categorical data (e.g., eye color, shoe size, age) to answer a question.
- Shapes can be composed and decomposed.
- Shapes can be divided into equal size parts called shares.
- Shares are fractional parts of a whole that can be named.
- The more equal shares one creates from a whole the smaller the parts become.
- The size of the share depends on the size of the whole.
- Addition finds the missing whole when given the parts, and subtraction finds a missing part when given the whole and a part.
- Word problem situations can be: add-to, take-from, put-together/take-apart, and compare (see Table 1).
- The unknown in problem situations can be the start number, the change or the result.
- First grade students extend their experiences in Kindergarten by working with numbers to 20 to solve a new type of problem situation: Compare (See Table 1 at end of document for examples of all problem types). In a Compare situation, two amounts are compared to find "How many more" or "How many less".
- Patterns and relationships in addition and subtraction combinations can help build fluency.
- Numbers can be decomposed and recomposed to solve addition and subtraction problems.
- Strategies for addition and subtraction can be more or less efficient in different situations.
- Quantities can be represented by a written numeral.
- Counting can begin at any number and go forward or backward.
- There are patterns in numbers.
- Some patterns of the count sequence make counting predictable.

SUGGESTED PROBLEMS:

1.MD.4 Basic
- http://illuminations.nctm.org/LessonDetail.aspx?ID=L79

1.G.2 Basic
- http://www.illustrativemathematics.org/illustrations/756

1.G.2 Advanced
- http://www.illustrativemathematics.org/illustrations/1164

1.G.3 Basic
- http://illuminations.nctm.org/LessonDetail.aspx?ID=U113 (5 lesson unit)

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1.OA.1 Basic
- http://www.illustrativemathematics.org/illustrations/196 (Parts A and B)

1.OA.1 Advanced
- http://www.illustrativemathematics.org/illustrations/196 (Part C)

1.OA.6 Basic
- http://www.illustrativemathematics.org/illustrations/1169

1.OA.6 Advanced
- http://www.illustrativemathematics.org/illustrations/1084

1.NBT.1 Basic
- http://www.illustrativemathematics.org/illustrations/680 (game)
- http://www.illustrativemathematics.org/illustrations/681
- http://www.illustrativemathematics.org/illustrations/405

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

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

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

ADDITIONAL RESOURCES: see curriculum for specifics

- http://www.readtennessee.org/math/teachers/k-3_common_core_math_standards/first_grade.aspx

VOCABULARY
- Attribute
- Closed-shape
- Cube
- Cylinder
- Equal parts
- Face
- Open shape
- Fourths/fourth of
- Graph
- Halves/half of
- Hexagon
- Open shape
- Shapes
- Sphere
- Square
- Three-dimensional
- Trapezoid
- Triangle
- Two-dimensional
- Vertex/point/corner

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LESSON PLAN for UNIT _____

LESSONS

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

OBJECTIVES for LESSON # _____

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

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