

MATHEMATICS COMMON CORE CURRICULUM UNIT #4, Grade 3*

North Smithfield School Department

TITLE OF UNIT: Deeper Understanding of Fractions and Measurement and Data **GRADE :** 3

DATE PRESENTED: _____ **DATE DUE:** _____ **LENGTH OF TIME:** Several weeks

OVERVIEW OF UNIT:

Students will build and compare fractions, as well as, relate the area of geometric shapes to multiplication and addition. Students will read and interpret data and graphs.

ESSENTIAL QUESTIONS

- *How can you compare fractions?*
- *How can different fractions name the same part of a whole?*
- *How can multiplication strategies help you solve other facts*
- *How can a graph be used to interpret and represent data?*
- *How can you use a line plot graph to organize data?*
- *How do you find area of a plane figure?*

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
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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:

- Develop an understanding of fractions as numbers. **3.NF.3**
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition. **3.MD.5**
- Represent and interpret data. **3.MD.3, 4**
- Multiply and divide within 100. **3.OA.7**

Applied Learning Standards:

problem solving communication critical thinking research reflection/ evaluation

ENDURING UNDERSTANDING:

At the end of this unit students will be able to build equivalent fractions and compare fractions. They will apply multiplication strategies to find the area of shapes. Students will generate bar, picture, and line graphs based on a set of data.

PRIOR KNOWLEDGE:

- In Grade 2, students found the total number of objects using rectangular arrays, such as a 5 x 5, and wrote equations to represent the sum.
- Students are to measure lengths using rulers marked with halves and fourths.
- Student should relate using the number line with subtraction from Grade 2.

STUDENT OBJECTIVES, SKILLS and/or NEW KNOWLEDGE:

- Know from memory all products and quotients of one digit numbers.
- Students will study patterns and relationships of multiplication facts and relate it to division.
- Students will use models to compare and find equivalent fractions.
- Graphs can be read to compare and contrast information.
- Students will read and interpret from a picture graph and a bar graph.

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- Students will make a line plot to organize and interpret data.
- Area is the two-dimensional space inside a region.
- Area is the attribute of plane figures and is measured in square units

SUGGESTED PROBLEMS:

STANDARD	WEBSITE	ADDITIONAL INFO (B, A)
3.OA.7	http://www.k-5mathteachingresources.com/support-files/x2-to-x5-arrays.pdf http://www.k-5mathteachingresources.com/support-files/multiplicationnumberwheel.pdf http://www.k-5mathteachingresources.com/support-files/divisionriddlesdoc.pdf http://www.k-5mathteachingresources.com/support-files/division-spin.pdf http://www.k-5mathteachingresources.com/support-files/theproductis3oa7.pdf http://www.k-5mathteachingresources.com/support-files/theansweris3oa7.pdf	Basic Basic Advanced Basic Advanced Advanced
3.NF.3	http://www.illustrativemathematics.org/illustrations/460 http://www.illustrativemathematics.org/illustrations/871 http://www.illustrativemathematics.org/illustrations/1354 http://www.illustrativemathematics.org/illustrations/1353 http://www.illustrativemathematics.org/illustrations/880 http://www.illustrativemathematics.org/illustrations/875 http://www.k-5mathteachingresources.com/support-files/pizza-for-dinner-3nf3a.pdf http://www.k-5mathteachingresources.com/support-files/buildahexag.pdf http://www.k-5mathteachingresources.com/support-files/exploring-equivalent-fractions.pdf http://www.k-5mathteachingresources.com/support-files/creatingequivalentfractions.pdf http://www.k-5mathteachingresources.com/support-files/who-ate-more-3nf3d.pdf http://www.k-5mathteachingresources.com/support-files/compare-and-order.pdf	Basic/Advanced Basic Advanced Basic Basic Basic Basic Advanced Basic Advanced Advanced Basic
3.MD.3	http://www.k-5mathteachingresources.com/support-files/buttonbargraph.pdf http://www.k-5mathteachingresources.com/support-files/buttonpictograph.pdf http://www.k-5mathteachingresources.com/support-files/buttonpictograph.pdf http://www.k-5mathteachingresources.com/support-files/collectingandrepresentingdata.pdf	Basic Basic Advanced Advanced
3.MD.4	http://www.k-5mathteachingresources.com/support-files/measuring-to-the-nearest-half-inch.pdf http://www.k-5mathteachingresources.com/support-files/measuring-to-the-nearest-quarter-inch.pdf http://www.k-5mathteachingresources.com/support-files/measuringstriplineplot.pdf	Basic Basic Advanced
3.MD.5	http://www.khanacademy.org/math/geometry/basic-geometry/perimeter_area_basics/e/area_1 http://www.k-5mathteachingresources.com/support-files/exploringarea.pdf http://www.k-5mathteachingresources.com/support-files/areaonthegeobaord.pdf	Basic Basic Advanced

ACTIVITIES, PRODUCTS, PERFORMANCE, and ASSESSMENTS:

- | | | | |
|---------------------------------------|----------------------------|--|---|
| 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 | | |

- OA.7 use the relationship of multiplication and division to solve problems fluently
- NF.3 reason about fraction sizes
- MD.3 represent and interpret bar and picture graphs
- MD.4 represent and interpret line plots
- MD.5 understand area and relate to multiplication and addition

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

- *enVisionMath*,
 - Topic 8 (3.OA.7)
 - Topics embedded throughout
 - Topic 12-5,12-6 (3.NF.3)
 - Topics 20-2,20-3,20-4 (3.MD.3)
 - Topics 12-7,14-2,20-8 (3.MD.4)
 - Topics 16-5,16-6 (3.MD.5)
- *Newmark Learning Common Core Math Grade 3*,
 - p.p. 55-60 (3.OA.7)
 - p.p. 86-90 (3.NF.3)
 - p.p. 106-115 (3.MD.3)
 - p.p. 101-105 (3.MD.4)
 - p.p. 96-100 (3.MD.2)
 - p.p. 121-130 (3.MD.5)

VOCABULARY

OA

- Doubling
- Multiples
- Square numbers
- Skip counting

NF

- Equal to
- Equivalent
- Greater than >
- Less than <

MD

- Area
- Bar graph
- Data
- Data horizontal
- Equal part
- Fractions
- Graph
- Horizontal
- Intervals
- key
- Line plot
- Number line
- Picture graph
- Plane units
- Scale
- Scale
- Squares
- Survey
- Title
- Title
- Vertical
- x-axis
- y- axis

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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**