MATHEMATICS COMMON CORE CURRICULUM UNIT #2 Grade 6*
North Smithfield School Department

TITLE OF UNIT: Expressions **GRADE :** 6

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

OVERVIEW OF UNIT:

In this unit, students will read, write, and evaluate numeric and algebraic expressions. They will identify terms of expressions, use properties to find common factors and multiples, and apply number properties when creating equivalent expressions.

ESSENTIAL QUESTIONS

What is the difference between a numeric and algebraic expression?

How is the distributive property helpful?

STANDARDS: Common Core Math Standards – Grade level domains 6-8

Ratios and Proportional Relationships RP	The Number System NS	Expressions and Equations EE	Functions (grade 8) F	Geometry G	Statistics and Probability SP
☐	☐ 6.NS.4	☐ 6.EE.1,2, 3,4	☐	☐	☐
☐	☐	☐	☐	☐	☐
☐	☐				
☐	☐				

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:

- Apply and extend previous understandings of arithmetic to algebraic expressions 6.EE.1,2, 3,4
- Compute fluently with multi-digit numbers and find common factors and multiples. 6.NS.4

Applied Learning Standards:

problem solving communication critical thinking research reflection/ evaluation

Expectations for Student Learning (High School only):

ENDURING UNDERSTANDING:

- Students will be able to explain the difference between numeric and algebraic expressions.
- Students will be able to name each term within an algebraic expression.
- Students will accurately use the properties of operations to generate, identify, and solve equivalent expressions.

PRIOR KNOWLEDGE:

- Students will know how to write and solve numerical expressions of whole numbers, decimals, and fractions (to hundredths) using order of operations.
- Students will know how to decompose factors in multi-digit multiplication (opposite of distributive property).
- Students will be familiar with factors and multiples (from 4th grade).

STUDENT OBJECTIVES, SKILLS and/or NEW KNOWLEDGE:

6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.

6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.

a. Write expressions that record operations with numbers and with letters standing for numbers.

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

b. Identify parts of an expression using mathematical terms (sum, factor, quotient, coefficient); view one or more parts of an expression as a single entity.

c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

6.EE.3 Apply the properties of operations to generate equivalent expressions.

6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

SUGGESTED PROBLEMS:

6.EE.1 Basic
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/532/original/illustrative_mathematics_532.pdf?1343856934

6.EE.2 Basic
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/540/original/illustrative_mathematics_540.pdf?1343856924
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/421/original/illustrative_mathematics_421.pdf?1343856931

6.EE.3 Basic/Advanced
- http://www.opusmath.com/common-core-standards/6.ee.3-apply-the-properties-of-operations-to-generate-equivalent-expressions-for

6.EE.4 Basic
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/542/original/illustrative_mathematics_542.pdf?1343856926
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/461/original/illustrative_mathematics_461.pdf?1343856932

6.NS.4 Basic
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/257/original/illustrative_mathematics_257.pdf?1343856955
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/255/original/illustrative_mathematics_255.pdf?1343856966
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/256/original/illustrative_mathematics_256.pdf?1343856987

6.NS.4 Advanced
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/258/original/illustrative_mathematics_258.pdf?1343856956
- http://s3.amazonaws.com/illustrativemathematics/illustration_pdfs/000/000/259/original/illustrative_mathematics_259.pdf?1343856993

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

- 6.EE.1
  - Write and solve numeric and algebraic expressions (with exponents) for real-world situations.
  - Create a real-world situation to match a numeric or algebraic expression (with exponents).
- 6.EE.2
  - Describe an expression by identifying each term as a single entity.
  - Solve real-world problems using formulas and the order of operations.
- 6.EE.3
  - Use an array to model an algebraic expression.
  - Use properties of operations to explain equivalency.
- 6.EE.4
  - Use properties of operations to construct viable arguments in order to prove equivalency.

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

- 6.NS.4
  - Use prime factorization to find the greatest common factor (GCF).
  - Identify the common factor and use the distributive property to rewrite an expression.

UNIT 2 ASSESSMENT

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
- *Exploration in Core Math , Holt Mc Dougal*
- *Holt Grade 6 Mathematics*

VOCABULARY

6.EE.1
- Base
- Exponent
- Square
- Cube
- Expressions
- Order of operations (PEMDAS)
- Square

6.EE.2
- Algebraic expression
- Coefficient
- Constant
- Formula
- Solution
- Substitution
- Sum, difference, product, and quotient
- Terms
- Variable

6.EE.3
- Associative property
- Commutative property
- Distributive property
- Multiplicative identity property of 1
- Equivalent expression

6.EE.4
- Like terms
- Simplifying

6.NS.4
- Distributive property
- Factors
- Greatest common factor
- Least common multiple
- Numerical expression
- Prime factorization
- Simplify

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

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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