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| **Grade Level** Lesson plans are subject to change daily 9th Foundations of Algebra  | **Teacher/Room**: LPAYNE/BTIPPENS 181 Week of: FEBUARY 8-12 |
| **Unit Vocabulary: UNIT 1 AND UNIT 2** |
| **Instructional Strategies Used:** direct instruction, independent study, interactive instruction |
| **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| **GSE/GPS Standard(s)**:MFANSQ1.a MFANSQ4.b,d Multiplying and dividing in context problems through estimation, creating equal groups and building models.  | **GSE/GPS Standard(s)**:MFANSQ1.a MFANSQ4.b,d Multiplying and dividing in context problems through estimation, creating equal groups and building models. | **GSE/GPS Standard(s)**: MFAAA1. Students will generate and interpret equivalent numeric and algebraic expressions. b. Use area models to represent the distributive property and develop understandings of addition and multiplication (all positive rational numbers should be included in the models). (MGSE3.MD.7) | **GSE/GPS Standard(s)**: MFAAA1. Students will generate and interpret equivalent numeric and algebraic expressions. b. Use area models to represent the distributive property and develop understandings of addition and multiplication (all positive rational numbers should be included in the models). (MGSE3.MD.7) d. Add, subtract, and multiply algebraic expressions. (MGSE6.EE.3, MGSE6.EE.4, MC7.EE.1, MGSE9-12.A.SSE.3) e. Generate equivalent expressions using properties of operations and understand various representations within context. For example, distinguish multiplicative comparison from additive comparison. Students should be able to explain the difference between “3 more” and “3 times”. (MGSE4.0A.2; MGSE6.EE.3, MGSE7.EE.1,2,MGSE9-12.A.SSE.3) | **GSE/GPS Standard(s)**: MFAAA1. Students will generate and interpret equivalent numeric and algebraic expressions. a. Apply properties of operations emphasizing when the commutative property applies. (MGSE7.EE.1) c. Model numerical expressions (arrays) leading to the modeling of algebraic expressions. (MGSE7.EE.1,2; MGSE9-12.A.SSE.1,3) d. Add, subtract, and multiply algebraic expressions. (MGSE6.EE.3, MGSE6.EE.4, MC7.EE.1, MGSE9-12.A.SSE.3) e. Generate equivalent expressions using properties of operations and understand various representations within context. For example, distinguish multiplicative comparison from additive comparison. Students should be able to explain the difference between “3 more” and “3 times”. (MGSE4.0A.2; MGSE6.EE.3, MGSE7.EE.1,2,MGSE9-12.A.SSE.3) f. Evaluate formulas at specific values for variables. For example, use formulas such as A = l x w and find the area given the values for the length and width. (MGSE6.EE.2) |
| **EQ Question:**Can I apply the standards from Module 1? | **EQ Question:**Can I apply the standards from Module 1? | **EQ Question:**1.Which strategies do we have that can help us understand how to multiply a two-digit number? 2.How does understanding partial products (using the distributive property) help us multiply larger numbers?  | **EQ Question:**What are strategies for finding the area of figures with side lengths that are represented by variables? 2. How can area models be used to represent the distributive property?  | **EQ Question:**How can we represent values using variables? 2. How can we determine which terms may be combined when adding or subtracting variable expressions? 3.How can we evaluate variable expressions when the variable is assigned a value?  |
| **Mini Lesson:** Review Module 1**Activating Strategies:**Estimating square rootsLesson: Review WS **Resource/Materials:**Grid paper, tiles, cubes, reviews worksheet. | **Mini Lesson:** Examples of questions **Activating Strategies:**Number talkLesson: TEST Module 1**Resource/Materials:**Grid paper, tiles, cubes, reviews worksheet, Test, Pre-test | **Mini Lesson:** Using algebra tiles**Activating Strategies:**Multiplying strategiesLesson: **Olympic Cola Display****Resource/Materials:**Task, tiles, video,  | **Mini Lesson:** Using algebra tiles**Activating Strategies:**Multiplying strategiesLesson: **Distributing Using Area****Resource/Materials:**Task, tiles, video | **Mini Lesson:** Multiplying area **Activating Strategies:**Area of triangles and rectanglesLesson:Triangles and Quadrilaterals**Resource/Materials:**Task, tiles, video |
| **Differentiation:***Content/Process/Product:**Grouping Strategy: whole and pairs**Assessment:* | **Differentiation:***Content/Process/Product:**Grouping Strategy: whole and pairs**Assessment* | **Differentiation:***Content/Process/Product:**Grouping Strategy: whole and pairs**Assessment* | **Differentiation:***Content/Process/Product:**Grouping Strategy: whole and pairs**Assessment* | **Differentiation:***Content/Process/Product:**Grouping Strategy: whole and pairs**Assessment* |
| **Assessment :***Pre-Test:**Post-Test: Module post test**Formative:**Summative:**Performance Based:* | **Assessment:***Pre-Test: Module 2**Post-Test:**Formative:**Summative:**Performance Based****:*** | **Assessment:***Pre-Test:**Post-Test:**Formative:**Summative:**Performance Based:* | **Assessment:***Pre-Test:**Post-Test:**Formative:**Summative:**Performance Based:* | **Assessment:***Pre-Test:**Post-Test:**Formative:**Summative:**Performance Based:* |
| **Homework:** Worksheet Review | **Homework:** none | **Homework:** Distributive problems with numbers | **Homework:**  Distributive problems with x | **Homework:**none |

Resources and Reflective Notes:

**Wednesday: FORMATIVE ASSESSMENT QUESTIONS (These may be used during Act 3)**

What partial products did you create?

What organizational strategies did you use?

What are the dimensions of your array(s)?

What product/area does your model represent?

**DIFFERENTIATION**

**Extension**

Give students a base-ten block array or a drawing of an array and have them determine the product and its factors.

Have students create their own display, build it with base 10 blocks or connecting cubes, and then trade seats with a neighbor to determine the factors and find the product.

Have students use an array to write/solve division problems.

**Intervention**

Begin with much smaller arrays, such as 2 x 3, 3 x 4, and 2 x 6. Have students describe the dimensions and area of each array. Then connect dimensions and area to the actual multiplication sentence.

Use grid paper and allow students to place the base-ten blocks onto the grid paper first and then to count the grid squares as part of their calculations.

If necessary, allow students to use a times table chart or other cueing device if full mastery of the basic multiplication facts has not yet been attained.

For extra help with multiplication, please open the hyperlink Intervention Table.

**CLOSING/SUMMARIZER**

Use the “Math Mistakes” activity from http://mathmistakes.org/what-is-the-distributive-property/ to review the distributive property.

The Math Mistakes site is about compiling, analyzing and discussing the mathematical errors that students make. The site is edited by **Michael Pershan**, a middle school and high school math teacher from NYC.

Using student work for error analysis can be an effective strategy to increase understanding of a standard. This site (Math Mistakes) provides a way to analyze mistakes without using work from your class or school. You could assign them the role of “teacher” and ask them the following question:

***If this is your class, how do you respond to these student responses?***

After students have time to respond to the prompt in small groups, allow several groups to share their ideas.

**Thursday: FORMATIVE ASSESSMENT QUESTIONS**

*These questions can be used to help further develop understanding of the distributive property.*

What is the relationship between the *product* and *sum* representation of the area model?

How does the area model help to explain the distributive property?

Why do you think this property was named the distributive property?

**DIFFERENTIATION**

**Extension**

Have students create and explain models to demonstrate the sum of four or more positive and negative numbers.

**Intervention**

Have students use models other than those suggested in the lesson to add positive and negative numbers, for example, the stack or row model and hot air balloon model.

For extra help with multiplication problems, please open the hyperlink Intervention Table.

**CLOSING**

Ask students to create a multiplication problem that would be easier to solve using the distributive property. Allow students to share with their neighbor. Select a few to pose to the class.

MODULE 1- VOCABULARY

Array

 Fact Family

 Inverse Operation

 Factors

 Product

 Quotient

 Divisor

 Dividend

 Compatible Numbers

 Fraction

 Numerator

 Denominator

 Area Model

 Power of Ten

 Place Value

 Benchmark Fraction

 Integer

 Zero

 Opposite of a Number

 Rational Number

 Irrational Number

 Approximation

 Decimal Expansion

 Sum

 Difference

 Place Value

 Line Diagram

MODULE 2- VOCABULARY

Equivalent expressions

Distributive property

Algebraic expression

Numeric expression

Area Model

Commutative Property

Associative Property

Identity Properties

Inverse Operations

Variable

Formula

Square Number

Square Root

Pythagorean Theorem

Hypotenuse

Cubic Number

Cube Root

Rational Number

Irrational Number

Exponent