Unit 2: Domain: Numerical Expressions, Patterns, and Relationships

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Marking Period 2**
Length: **2-3 Weeks**
Status: **Published**

Unit Overview

In this unit the students will understand that algebraic expressions can be represented in symbols and in words. The students will also understand that there is an agreed upon order for doing operation in a numerical expression.The students will also know how to evaluate expression for a given value is the same as finding the value of a numerical expression by following the order of operation. The students will add, subtract, multiply, and divide algebraic expression by using models, table, and diagrams. The teacher will use various types of station activities in these areas, and final assess daily in ticket to leaves.

Standards

MA.5.OA.A.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
MA.5.OA.A.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
MA.5.OA.B.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Essential Questions

- How are the values of an algebraic expression and numerical expression found?
- How is using algebraic expression beneficial for solving real-world problems? How are the values of an algebraic expression and numerical expression found? What is the benefits of making pictures, tables and diagrams when using algebraic expressions?
- What is the benefits of making pictures, tables and diagrams when using algebraic expressions?

Application of Knowledge and Skills...

Students will know that...

- a numerical equation is a mathematical "sentence" that says that two things are equal (for example 4

+ 1 = 5) and can be solved

- analyzing pattern tables can generate the rule to that pattern
- in numerical expressions, parentheses ( ), brackets [ ], and braces {} are used to specify the evaluation order.
- the use of reasoning in word problems

Students will be skilled at...

- • relating the strategy used to solve a problem to a written method and explain the reasoning used.
- adding, subtracting, multiplying and dividing expressions using tables
- identifying apparent relationships between corresponding terms
- interpreting numerical expressions without evaluating them
- relating the strategy used to solve a problem to a written method and explaining the reasoning used
- Using bar models to solve word problems
- writing simple expressions that record calculations with numbers.
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Assessments

- Benchmark Tests
- End of the Year Test
- Other visual assessments during the guided practice part of the lesson, students record responses to problems on individual whiteboards. Teacher will monitor for errors, and assist where needed.
- Placement Test: used to test prior knowledge
- Task Cards: used as a reinforcement of a topic
- Topic Math Projects
- Topic Quick Checks: can be given after each section in the topic to check for understanding
- Topic Tests: given after each topic

Activities

Problem of the Day-Present a daily problem that serves as a review from the previous day's lesson.

Vocabulary - Have students create a chart for each new vocabulary word that includes the word's meaning and an example or use vocabulary cards as flash card game

Station activities- Each section has center activities to reinforce skill (leveled)

- Toss and Talk - Toss a die and complete the problem to that number. Explain and discuss with your

partner.

- Display the Digit- Choose a table. Explain how each number in the bottom row is related to the one about it. Find the missing number in the expression. Display each 0-9 tiles exactly once. Take turns with partner.
- Clip and Cover - Pick two numbers and cover answer with paper clip. The person to cover three in a row wins.
- Teamwork - As a team (2-4 students) pick a tile (1-4) and chose from the list of jobs (A-F) to complete. Check each others work. If there is time make up your own word phrases by following steps 1-4.
- Teamwork- Picks tiles (1-9) and jobs (A-D) and explain how to use order of operation and tell the team what the value of the expression. If there is time make your own expression using order operation by making it using mental math or making it challenging.
- Ipad apps - 5 Dice

STEM - Certain sections have Going Digital integrating technology and the use of calculators

- Mixed Problem Solving page 185

Interactive Learning - Interactive learning activities at the beginning of each topic for each lesson using topic such as looking for patterns, being precise, using structure, using tools, making modeling, reasoning, and using tools.

Projects - There is a math project for each topic (Topic 8) - (See Cross-Disciplinary Instruction for projects and page numbers)

Practice work - Communicator practice can be done using Independent work and problem- solving practice problems in each section.

- Play SCOOT for certain sections or review for topic tests
- Make Task cards and use answer sheets for assessment

Ticket to Leave - Quick Checks on each sections

Activities to Differentiate Instruction

General strategies for modification of this curriculum for students with special needs, ELL, and gifted

learners:

- **General strategies:**
  - preferential seating
  - manipulatives
  - modified workbook pages
  - practice or enrich homework pages
- **Center activities** - There are leveled center activities for each section. There is a separate activity for "Intervention", and then "On-Level" and "Advanced" are in spiral book.
- **Leveled practice pages** - There are three leveled (Reteaching, Practice, and Enrichment) sheets that can be used for practice or homework.
- **Math Concept Readers:** These readers allow the student to read the story at different levels- above level, on level, and below level. (also available on line with audio) Complete the Think and Respond and Write Math questions at the conclusion of each book.
- **Assessment**- Using Quick Check Review can determine differentiated instruction levels using sample answers and using the rubric at the Close/ Assess and Differentiate section in the teacher edition.

Content specific modification for students with special needs, ELL, and gifted learners:

- **Topic**
  - **Below level students:**
    - Have students write the following phrase on their papers: a measurement that increases by 2.
    - Tell students that the algebraic phrase for this expression will contain one variable, one operation sign, and one number.
    - Have students underline the word that represents each part. Above the words that indicate the operation, have students write the correct sign. (+) Above the word that indicates the variable, have students write n. Above the number, have students write 2 to make the algebraic expression, n + 2.
  - **Students with special needs:**
    - Some students may have difficulty translating their mathematical thoughts into writing.
    - Construct basic addition, subtraction, multiplication, and division sentences. Use boxes to represent missing numbers in each sentence. Have students find the value of each box (missing number).
    - Gradually move from boxes to letters, explaining that the letters mean the same thing as missing numbers. (Do not use the letters o, t, or l).
  - **ELL**
    - Students may have difficulty relating the words to mathematical processes they know.
    - **Emerging:** Give students words such as "all together" or "more than" and have them name the operation the word relates to.
    - **Expanding:** Make a circle with the symbol for each operation. Have students write words associated with each math operation. For example, "add" and "plus" are associated with the symbol "+".
    - **Bridging:** Give students a word that represents an operation, such as "more than." Have them model a situation that contains the word, such as "Benji has 8 apples more than Tom. Tom has 2 apples."
  - **Advanced/Gifted:**
    - Students who have strong interaction and comprehension skills may be able to go beyond the expression -evaluating examples provided in the topic.
    - Divide the students into groups of four. Have each student write an expression

containing one variable. It may be as long and complicated as they wish, but warn students that they will have to evaluate their own expression.

- Have students share their expressions with the group. Working separately, they evaluate the expressions. A student receives 1 point fo each expression he or she evaluates correctly and 1 point for evaluating his or her own expression correctly.

Integrated/Cross-Disciplinary Instruction

Math Concept Readers: These readers allow the student to read the story "Keeping Records" with activities on page 16-17 in book.

Math Project - The Life of Crabs - Have students research the ages, size, and molting patterns of several types of crabs. Then, help them write an expression that relates the size of the crabs to its age. Make a chart.

Resources

Topic 8 - Numerical Expressions, Patterns, and Relationships

On line Resources available at www.pearsonrealize.com

- Teacher Edition (TE) Textbook
- Student Edition (SE) Textbook
- Tests on line
- Concepts videos
- Math Tools

21st Century Skills

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of

problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.