Brunette Elementary

Analyzing the Standards

5TH GRADE MATHEMATICS

Standards for Mathematical Practice

5.MP: Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.

1 Make sense of problems and persevere in solving them	**2** Reason abstractly and quantitatively	**3** Construct viable arguments/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

Big Idea: Numerical Reasoning (NR)

place value, multiplying by powers of 10, multiplication and division of multi-digit numbers, fractions, decimal numbers, numerical expressions

5MA.A.5 write, interpret, and evaluate numerical expressions within real-life problems (5.NR.5)

5.a write, interpret, and evaluate simple (up to two operations) numerical expressions involving whole numbers with or without grouping symbols to represent actual situations

5.b write, interpret, and evaluate expressions that represent multi-step scenarios with the use of grouping symbols (e.g. On Monday, Peter baked 10 cookies and then he baked 12 cookies each day for the next 6 days. He dropped 3 cookies. Write an expression to interpret this situation.) **(Extension)**

Overview

Brunette Elementary
Analyzing the Standards

What does this standard mean that a student must know, understand, or be able to do?

Description of the Standard

When learning this standard, students will write, interpret, and evaluate simple, numerical expressions involving whole numbers derived from authentic situations or problems. The expressions students in 5th grade work with should be no more complex than the expressions found in a simple application of the associative and distributive properties. Nested grouping symbols should not be used within expressions at this grade level (GA DOE, Grade 5 Comprehensive Grade Level Overview).

Teacher Resource Video: (coming soon)

Academic Vocabulary:

braces, brackets, equation, evaluate, expression, parentheses

NOTE: This list is not intended as a vocabulary list for students, but as a reference for teachers that may be used to ensure precise language is applied and encouraged by all. (GA DOE, Comprehensive Grade Level Overview)

GADOE Glossary Link GCPS Vocabulary Link

Vertical Progressions

GA DOE K-12 Learning Progression

Prior to 5th Grade	After 5th Grade
• In the early years, students are building foundational knowledge by acquiring a conceptual understanding of number and quantity. This foundational knowledge is essential and will be applied to the algebraic concepts explored in the secondary years. Students must develop a solid foundation in numeracy in K-5 in order to be	• Write, analyze, and evaluate numerical and algebraic expressions (6th) • Identify, generate, and evaluate algebraic expressions (6th) • Identify like terms in an algebraic expression (6th)

prepared for the algebra involved in the study of expressions (GADoE)	

Brunette Elementary
Analyzing the Standards

Numerical Reasoning

Indicator of Achievement

- **5.a** write, interpret, and evaluate simple (up to two operations) numerical expressions involving whole numbers with or without grouping symbols to represent actual situations

(coming soon)

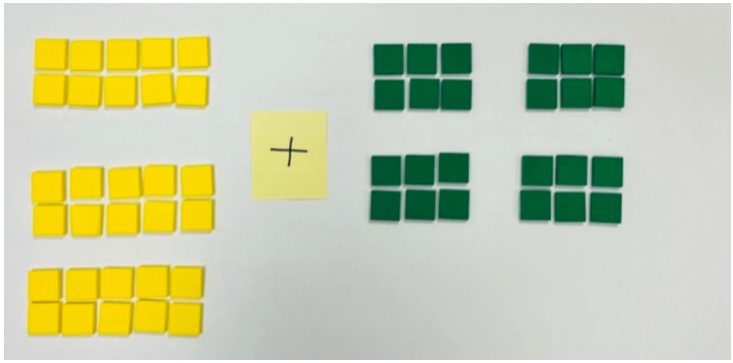
IOA Overview

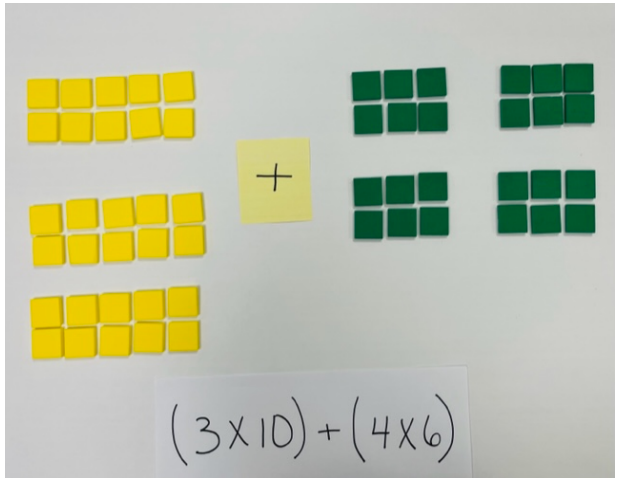
What does this indicator mean that a student must know, understand, or be able to do?

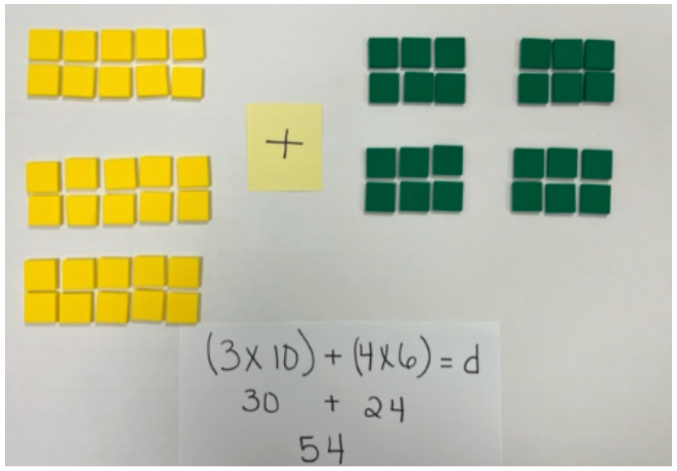
Students write, interpret, and evaluate simple, numerical expressions involving whole numbers. The expressions students in 5th grade work with should be no more complex than the expressions found in a simple application of the associative and distributive properties. Simple expressions should only include two operations. Nested grouping symbols (more than one grouping symbol used within another grouping symbol in an expression) should not be used within expressions at this grade level.

The GADOE embeds AKS 5 with volume and multiplication/division of whole numbers.

Instructional Strategies	Considerations
CONCRETE: Students can use color tiles or base ten blocks for constructing area models and rods for representing numerical values. **Example:** *Karl brought 3 ten-packs of juice boxes to the class party. Joshua brought 4 six-packs of soda to the party. How many drinks did they bring altogether?*	Suggested manipulatives: • color tiles • base ten blocks **AKS 5** has been embedded with volume and multiplication/division of whole numbers







Sample Student Thinking: *First, I built a model of 3 ten-packs of juice and 4 six-packs of soda. Then I wrote an equation to represent the model. My equation is (3 x 10) + (4 x 6) = d. I know that 3 x 10 is 30 and 4 x 6 is 24. Then I added 30 and 24 to get 54. Karl and Joshua brought 54 drinks.*

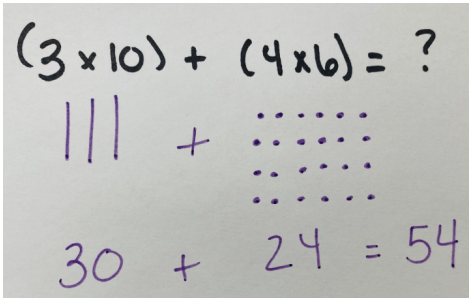
Simple expressions should only include two operations

Grouping symbols used in expressions may include parentheses, brackets, or braces

Nested grouping symbols (more than one grouping symbol used within another grouping symbol in an expression) should not be used within expressions at this grade level.

REPRESENTATIONAL: Students use drawings to represent numerical values.

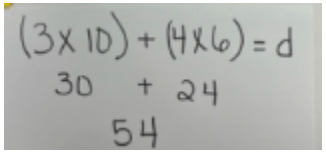
Example: *Karl brought 3 ten-packs of juice boxes to the class party. Joshua brought 4 six-packs of soda to the party. How many drinks did they bring altogether?*



Sample Student Thinking: *I know that I need to find the total number of juice boxes. I need to find 3 packs of ten, which is 3 x 10, then add it to 4 packs of 6, which is 4 x 6. My equation is (3 x 10) + (4 x 6). To solve this problem, I am going to draw a picture. I drew 3 tens to represent 3 groups of ten or 30. I drew 4 groups of 6 as an array with 4 rows and 6 columns, which is 24. 30 + 24 = 54. They brought 54 drinks.*

ABSTRACT: *Students use grouping symbols to represent and solve mathematical situations.*

Example: *Karl brought 3 ten-packs of juice boxes to the class party. Joshua brought 4 six-packs of soda to the party. How many drinks did they bring altogether?*



Sample Student Thinking: *I know that I need to find the total number of juice boxes. I need to find 3 packs of ten, which is 3 x 10, then add it to 4 packs of 6, which is 4 x 6. My equation is (3 x 10) + (4 x 6). I*

know 3 x 10 is 30 and 4 x 6 is 24. 30 + 24= 54. They brought 54 drinks.	

Common Misconceptions

- Students struggle to represent numerical situations using grouping symbols.
- Students ignore grouping symbols when evaluating expressions.

Numerical Reasoning
Indicator of Achievement • **5.b** write, interpret, and evaluate expressions that represent multi-step scenarios with the use of grouping symbols (e.g. On Monday, Peter baked 10 cookies and then he baked 12 cookies each day for the next 6 days. He dropped 3 cookies. Write an expression to interpret this situation.) **(Extension)**
IOA Overview
What does this indicator mean that a student must know, understand, or be able to do? The purpose of this extension IOA is for students to use their creativity, critical thinking, problem-solving, and reasoning skills to determine their own way to apply the understanding of this AKS through various platforms to show the application of skills and concepts in the real world. Students will create their own multi-step problems based in real-life situations involving decimal computation.