Draft Mathematics Extensions
for Aligning the New York State Alternate Assessment (NYSAA)
to the Common Core State Standards (CCSS)

GRADE 5

CCSS Domain: Operations and Algebraic Thinking		**Page(s):** 31
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
5.OA	**Write and interpret numerical expressions.** 1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. 2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*	Understand how to read, write, interpret, and evaluate numerical expressions.

Extensions		
Less Complex ◀ ···· ··◀·· ····◀··· ···▶·· ····▶· ····· ▶ **More Complex**		
Identify numerical expressions.	Use and/or evaluate expressions to represent a situation.	Write and/or interpret numerical expressions.
Assessment Tasks		
• The student will identify numerical expressions. • The student will identify a numerical expression from a given set of numerical expressions.	• The student will use and/or evaluate expressions to represent a situation. • The student will evaluate the matching expression from a given word problem representing a real life situation (e.g., sales-shopping, buy one get one coupons).	• The student will write and/or interpret numerical expressions. • The student will write a numerical expression (e.g., hourly wages to fill out time sheet). • The student will select the correct pictorial representation of a given numerical expression (e.g., using a bus schedule, reading maps distances).

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Career Development and Occupational Studies (CDOS) skills crosswalk to the New York State Alternate Assessment (NYSAA) Essence statements and Extensions

Career Development: Knowledge about the world of work, career options, personal skills, and abilities relating to future career decisions. For example,

- Use skills to show the difference between hourly wages of various occupations.
- Relate the benefits of work to its value to society.

Integrated Learning: Application of academic knowledge and skills to school, community and home settings. For example:

- Identify occupations that rely heavily on the use of mathematical expressions.
- Use expressions to explain or quantify a number in real-life situations.

Universal Foundation Skills: Foundation skills and competencies necessary for success in the workplace. For example:

- Use expressions to make decisions and solve problems related to accomplishing a task.

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Mathematics – Grade 5

CCSS Domain: Geometry		**Page(s):** 34
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
5.G	**Classify two-dimensional figures into categories based on their properties.** 3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. 4. Classify two-dimensional figures in a hierarchy based on properties.	Classify two-dimensional figures into categories based on their properties.

Extensions		
Less Complex ◀ ···· ··◀·· ····◀··· ···▶·· ····▶· ····· ▶ **More Complex**		
Identify two-dimensional shapes based on their property(ies).	Sort two-dimensional shapes based on their property(ies), such as number of sides, number of angles or types of angles.	Compare and/or contrast two-dimensional shapes based on their property(ies).
Assessment Tasks		

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• The student will identify two-dimensional shapes based on their property(ies). • The student will identify two-dimensional shapes according to the number of sides (e.g., using road signs). • The student will identify two-dimensional shapes according to the number of angles. • The student will identify two-dimensional shapes according to lines (e.g., parallel, perpendicular).	• The student will sort two-dimensional shapes based on their property(ies) such s number of slides, number of angles or types of angles. • The student will sort two-dimensional shapes based on number of sides (e.g., sorting rectangles, triangles, etc.). • The student will sort two-dimensional shapes based on number of angles. • The student will sort two-dimensional shapes based on types of angles (e.g., rotate 90 degree, 60 degree, etc.).	• The student will compare and/or contract two-dimensional shapes based on their property(ies). • The student will compare two-dimensional shapes based on their number of sides, number of angles or types of angles. • The student will contrast two-dimensional shapes based on their number of sides, number of angles, or types of angles (e.g., tiling, sewing, do it yourself projects, gardening).

Career Development and Occupational Studies (CDOS) skills crosswalk to the New York State Alternate Assessment (NYSAA) Essence statements and Extensions

Career Development: Knowledge about the world of work, career options, personal skills, and abilities relating to future career decisions. For example,

- Use knowledge of aptitude to evaluate whether a career/position is appropriate.

Integrated Learning: Application of academic knowledge and skills to school, community and home settings. For example:

- Use knowledge of geometrical shapes to complete vocational task (stock shelves, assembly work, recycling).
- Use skills learned to design a layout/floor plan (garden, room, work space).
- Know the size and shape of a container to be used when storing or shipping items.
- Identifying shapes in the environment.

Universal Foundation Skills: Foundation skills and competencies necessary for success in the workplace. For example:

- Use knowledge of two dimensional shapes to calculate material needed to complete a task (paint needed to cover a wall).
- Use knowledge of two dimensional shapes to interpret maps and graphs.

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CCSS Domain: Measurement and Data		**Page(s):** 33
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
5.MD	**Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.** 3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units. 4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. 5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	Understand concepts of volume and/or relate volume to multiplication and/or addition. Understand the concept of volume of a solid figure.

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Extensions		
Less Complex ◀		▶ **More Complex**
Identify objects that can have volume. *(For example, student is asked which object can have volume; choices presented to the student include rectangle prism and a rectangle. Correct student response would be the rectangle prism.)*	Recognize the number of unit cubes in solid figure(s) and relate that to the corresponding mathematically calculated volume.	Determine the volume of solid figures with or without manipulatives. *(For example, $V = l \times w \times h$; the volume of the fish tank is 42 unit cubes; volume of a truck bed; volume of a room.)*
Assessment Tasks		
• The student will identify objects that can have volume from a selection of two and three-dimensional objects (e.g., box or rectangular prism and a rectangle). • The student will sort objects into those that have volume and those that do not (e.g., bagging groceries, re-stocking shelves).	• The student will recognize the number of unit cubes in solid figure(s) and relate that to the corresponding mathematically calculated volume. • The student will determine the figure given the volume using unit cubes.	• The student will determine the volume of solid figures with or without manipulatives. • The student will determine the volume of solid figures given length (*l*), width (*w*) and height (*h*) of the figures. • The student will measure to determine length (*l*), width (*w*) and height (*h*) and determine volume of solid figures.

Career Development and Occupational Studies (CDOS) skills crosswalk to the New York State Alternate Assessment (NYSAA) Essence statements and Extensions

Career Development: Knowledge about the world of work, career options, personal skills, and abilities relating to future career decisions. For example,

- Identify specific occupations that must consider volume and describe how it impacts work to be done

Integrated Learning: Application of academic knowledge and skills to school, community and home settings. For example:

- Solve real-life problems involving volume (choosing the correct bowl for cooking).
- Use an understanding of volume in purchasing (buying the right size clothes, amount of food for a meal)
- Use an understanding of volume to assist in determining capacity (packing a lunch box or suitcase, loading a washer

Universal Foundation Skills: Foundation skills and competencies necessary for success in the workplace. For example:

- Math: understand concepts of quantity as they relate to volume (amount of milk in a cup, portions for meals).
- Understand the types of tools used in measuring volume.
- Recognize measures of volume used in different occupations and around the world.

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CCSS Domain: Number and Operations in Base Ten		**Page(s):** 32
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
5.NBT	**Perform operations with multi-digit whole numbers and with decimals to the hundredths.** 5. Fluently multiply multi-digit whole numbers using the standard algorithm. 6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 7. Add, subtract, multiply, and divide decimals to the hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used	Know how to add, subtract, multiply and/or divide multi-digit whole numbers and decimals to the hundredths.

Extensions		
Less Complex ◀		▶ **More Complex**
Add, subtract, multiply, and/or divide single digit whole number(s).	Add, subtract, multiply, and/or divide multi-digit whole number(s) and/or decimal(s) to the tenths.	Add, subtract, multiply, and/or divide multi-digit whole number(s) and decimal(s) to the hundredths.
Assessment Tasks		
• The student will add, subtract, multiply and/or divide single digit whole number(s). • The student will add single-digit whole number(s). • The student will subtract single-digit whole number(s). • The student will multiply single-digit whole number(s). • The student will divide single-digit whole number(s).	• The student will add, subtract, multiply and/or divide multi-digit whole number(s) and/or decimal(s) to the tenths. • The student will add multi-digit whole number(s) and/or decimal(s) to the tenths. • The student will subtract multi-digit whole number(s) and/or decimal(s) to the tenths. • The student will multiply multi-digit whole number(s) and/or decimal(s) to the tenths. • The student will divide multi-digit whole number(s) and/or decimal(s) to the tenths.	• The student will add, subtract, multiply and/or divide multi-digit whole numbers and decimals to the hundredths. • The student will add multi-digit whole numbers and decimals to the hundredths. • The student will subtract multi-digit whole numbers and decimals to the hundredths. • The student will multiply multi-digit whole numbers and decimals to the hundredths. • The student will divide multi-digit whole numbers and decimals to the hundredths.

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Career Development and Occupational Studies (CDOS) skills crosswalk to the New York State Alternate Assessment (NYSAA) Essence statements and Extensions

Career Development: Knowledge about the world of work, career options, personal skills, and abilities relating to future career decisions. For example,

- Determine how mathematical calculations are used in various occupations (cashier).

Integrated Learning: Application of academic knowledge and skills to school, community and home settings. For example:

- Use skills learned across a variety of settings (purchasing multiple items increases cost).
- Integrate mathematical concepts into decision-making when completing a task or project (managing a savings account, making change).

Universal Foundation Skills: Foundation skills and competencies necessary for success in the workplace. For example

- Demonstrate the personal quality of time management, as related to scheduling.
- Use appropriate technology for completing computations (calculator).
- Use data and computational skills to solve real-life problems.

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CCSS Domain: Number and Operations - Fractions		**Page(s):** 32
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
5.NF	**Apply and extend previous understandings of multiplication and division to multiply and divide fractions.** 3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers; e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?* 4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. 5. Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1. 6. Solve real world problems involving multiplication of fractions and mixed numbers; e.g., by using visual fraction models or equations to represent the problem. 7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.1 a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.* b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.* c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions; e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*	Extend knowledge of multiplication and division of whole numbers to multiplication and division of fractions. Use this knowledge in solving problems.

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Extensions		
Less Complex ◀		▶ **More Complex**
Represent a fraction as a division problem. *(For example, use a model to show that ½ is 1 divided by 2. If 1 apple is shared by 2 people each person will get ½ of the apple.)*	Multiply fractions and whole numbers less than 10.	Solve multiplication and/or division of fraction(s) and whole number(s) in real-world problem(s). *(For example, 5 student in Ms. Hawleys' class have ½ of a box of crayons. How many full boxes of crayons do the student have altogether?)*
Assessment Tasks		
• The student will represent a fraction as a division problem (e.g., 1/4 is the same as 1 divided by 4). • The student will represent a fraction as a division problem using a model(s) (e.g., 1 pie is shared between 2 people each person eats ½ of the pie).	• The student will multiply fractions and whole numbers less than 10. • The student will multiply unit fractions by numbers less than 10 (e.g., 1/2(4), 1/4(2)). • The student will multiply proper fractions by whole numbers less than 10 (e.g., 3/4(7), 5/10(4)).	• The student will solve multiplication and/or division of fraction(s) and whole number(s) in real-world problem(s). • The student will solve multiplication of fractions and whole numbers using a word problem representing a real-world situation (e.g., problems involving doubling wages and recipes). • The student will solve division of fractions and whole numbers using a word problem representing a real world situation (e.g., problems involving halving a recipe, wages – grocery store).

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Career Development and Occupational Studies (CDOS) skills crosswalk to the New York State Alternate Assessment (NYSAA) Essence statements and Extensions

Career Development: Knowledge about the world of work, career options, personal skills, and abilities relating to future career decisions. For example,

- Identify occupations that incorporate the use of fractions (baker, carpenter).

Integrated Learning: Application of academic knowledge and skills to school, community and home settings. For example:

- Use skills learned across a variety of settings. (Use hourly wage and weekly schedule to determine pay for a specified period of time.)

Universal Foundation Skills: Foundation skills and competencies necessary for success in the workplace. For example:

- Math: understand concepts of quantity (multiplying/dividing fractions in order to complete a task or recipe).
- Manage resources by applying the concepts of fractions to complete a task efficiently.
- Understand the manipulation of fractions to determine task success and completion.

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