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

GRADE 8

CCSS Domain: Statistics and Probability		**Page(s):** 48
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
8.SP	**Investigate patterns of association in bivariate data.** 1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. 2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. 3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.* 4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	Investigate and/or interpret relationships between two sets of data. Know how to create and interpret scatter plots.

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Extensions		
Less Complex ◀ · · · · · · ◀ · · · · · · ◀ · · · · · · ▶ · · · · · · ▶ · · · · · · ▶		**More Complex**
Collect two related sets data *(For example, student would poll classmates to collect data on height and arm span.).*	Collect and display two sets of data in a scatter plot or two-way table.	Generate statement(s) to identify relationship(s) between two sets of data *(For example, does weather affect mood?).*
Assessment Tasks		
• The student will collect two related sets of data (e.g., poll classmates: favorite sport and favorite team? favorite singer and favorite song? furry animals and long tails.)	• The student will collect and display two sets of data in a scatter plot or two-way table. • The student will collect and display two sets of data in a scatter plot. • The student will collect and display two sets of data on a two-way table.	• The student will generate statement(s) to identify relationship(s) between two sets of data.

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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,

- Collect data to understand the relationship of student personal interests and skills/abilities aligning with career requirements.
- Understand the relationship of personal choices to future career decisions (being on time for jobs, interviews, following directions, etc.).

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

- Collect and display 2 sets of data to develop a budget.
- Collect and use probability skills learned to make decisions about occupational issues (safety practices, hiring practices, etc.).

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

- Basic skills: Understand concepts of statistics and probability (customer trends).
- Managing Information: Use information from data sets to identify relationships (compares the skills of a specific job with their interests and abilities; work schedules and productivity).
- Thinking skills: Select and use appropriate statistical data/graphs to complete a task.
- Managing resources: Collect, display, and/or apply information from various data to track progress towards a goal (occupational and personal goals).
- Managing resources: Make a chart to track earnings.

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CCSS Domain: Expressions and Equations		**Page(s):** 47
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster (develop one Essence)**
8.EE	**Understand the connections between proportional relationships, lines, and linear equations.** 5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. 6. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b	Know how to graph a linear equation and understand the meaning of slope.

Extensions		
Less Complex ◀ ···· ··◀·· ····◀··· ···▶·· ····▶· ····· ▶		**More Complex**
Recognize a graph that represents a linear equation.	Graph a line represented by a linear equation.	Compare the graphs of two or more linear equations.
Assessment Tasks		
• The student will student will recognize a graph that represents a linear equation from a set of given choices.	• The student will graph a line represented by a linear equation. • The student will connect the beginning point to the ending point, by plotting the middle points and connecting the dots, to make a straight line given a linear equation, showing a real world experience (e.g., rate of pay to number of hours worked).	• The student will compare the graphs of two or more linear equations (e.g., determine which graph has a greater slope).

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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,

- Understand how a linear equation can supply information (rate of pay) that can be used in developing a career plan.
- Understand how interest is calculated.

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

- Use knowledge of linear relationships to solve problems (estimating job costs).

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

- Basic skills: Understand concepts of linear graphs (data graphing and data comparisons).
- Thinking skills: Construct a schedule (work to be completed in a given period of time).
- Managing Information: Use information from a graph to make decisions (i.e. compare the price of similar items; using a bus schedule-select the proper bus to take to get to work on time).
- Managing resources: Use graphing skills to make decisions (increase or decrease of amount of a task completed on various days of the week).

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CCSS Domain: Expressions and Equations		**Page(s):** 47
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
8.EE	**Analyze and solve linear equations and pairs of simultaneous linear equations.** 7. Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. 8. Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6. c. Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects *the line through the second pair.*	Be able to solve a system of linear equations algebraically and graphically.

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Extensions		
Less Complex ◀	◀	▶ **More Complex**
Solve one or more simple linear equation(s), given one variable. *(For example, 3 + x = 4, 3 + 1=x).*	Compare two linear equations to answer a given question. *(For example, one babysitter works 5 hours and earns x dollars per hour. She brings home $40. Another babysitter works 4 hours and earns y dollars per hour. He brings home $36. Which babysitter makes more per hour?).*	Graph a set of two linear equations and identify where they intersect.
Assessment Tasks		
• The student will solve one or more simple linear equation(s), given one variable. • The student will solve for the variable at the end of the equation, given a linear equation. (e.g., 3+1=X). • The student will solve for the variable in the stem of equation, given a linear equation, (e.g., 3+X=5).	• The student will compare two linear equations to answer a given question (e.g., Which person makes more money?; Rick's Plumbing charges $50 plus $10 per hour while Tom's Plumbing charges $30 plus $20 per hour. Which plumber will be cheaper?).	• The student will graph a set of two linear equations and identify where they intersect (e.g., Two cars going at two different speeds. Where will an accident occur?).

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,

- Understand how knowledge of expressions and equations may influence careers choices.

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

- Use the ability to solve and graph linear equations to solve problems (which career/job pays more).

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

- Basic skills: Understand concepts of linear expressions/equations (solving for an unknown).
- Thinking skills: Solve equations (ensure equity of employee hours and days worked).
- Managing Information: Use information to develop a graph to make decisions (speed of a car and use of fuel for each car).

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CCSS Domain: Functions		**Page(s):** 47
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
8.F	**Define, evaluate, and compare functions.** 1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. 2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.* 3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*	Solve and compare functions.

Extensions		
Less Complex ◀	◀ ◀ ▶ ▶	**More Complex** ▶
Identify and/or create a numeric pattern based on a given rule.	Complete a function table based on an algebraic equation.	Identify or solve a function in a real world situation. *(For example, which function represents the cost of renting a boat for 3 hours?).*

Assessment Tasks		
• The student will identify and/or create a numeric pattern based on a given rule. • The student will identify a numeric pattern based on a given rule. • The student will create a numeric pattern based on a given rule.	• The student will complete a function table based on an algebraic equation. • The student will complete a function table based on an algebraic equation with one variable (e.g., y=3+x, or y=4x). • The student will complete a function table based on an algebraic equation with more than one variable (e.g., y = 3x+7, y=3x/4).	• The student will identify a function in a real-world situation. • The student will identify the function given choices that matches a real-world situation (e.g., Tom earns $10 for every hour he works. Yesterday, he earned $50. Which function shows this situation?).

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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,

- Understand how a function chart of job requirements can help influence career choices.

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

- Use skills learned to construct and complete a function table about how the application and result of rules can solve problems.

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

- Basic skills: Listen to and understand concepts of functions (how the application of rules results in various outputs).
- Thinking skills: use functions to solve problems in a real-life situation.

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CCSS Domain: Geometry		**Page(s):** 48
CCSS Code	**Cluster (including Standard(s) within the Cluster)**	**Essence of Cluster**
8.G	**Understand congruence and similarity using physical models, transparencies, or geometry software.** 1. Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines. 2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. 3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures, using coordinates. 4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. 5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*	Understand congruent and/or similar non-standard shapes, using transformations.

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Extensions		
Less Complex ◀ ···· ··◀·· ····◀··· ···▶·· ····▶· ·····▶		**More Complex**
Identify similar and/or congruent non-traditional shapes.	Identify a transformation of a non-traditional shape(s). *(For example, which picture represents a dilation?)*	Demonstrate the effect of dilation(s), translation(s), rotation(s), and/or reflection(s) on non-traditional shapes on a coordinate grid(s).
Assessment Tasks		
• The student will identify similar and/or congruent non-traditional shapes. • The student will identify the shape that is similar to a given shape given a set of non-traditional shapes. • The student will identify a shape that is congruent to a given shape given a set of non-traditional shapes.	• The student will identify a transformation given a set of non-traditional shape(s) (rotation, reflection, dilation, translation). • The student will demonstrate the transformation of a non-traditional shape in a real-life situation (e.g., sliding puzzle pieces to fit; reflect movements of dance instructor; flip pancakes; reflect – ink blot art; dilate font size; dilate images by projecting on smart board; rotate shapes to fit on a single piece of paper; rotate pattern pieces to fit on fabric; flip/rotate metro card, ATM, gift card, ID card to scan; flip time card to use reverse side; rotate boxes to fit on shelf; rotate cookie cutter to maximize use of rolled out dough; reversible jacket; placing furniture, following a floor plan).	• Demonstrate the effect of dilation(s), translation(s), rotation(s), and/or reflection(s) on non-traditional shapes on a coordinate grid(s). • Demonstrate the effect of dilation(s) on non-traditional shapes on a coordinate grid(s). • Demonstrate the effect of translation(s) on non-traditional shapes on a coordinate grid(s). • Demonstrate the effect of rotation(s) on non-traditional shapes on a coordinate grid(s). • Demonstrate the effect of reflection(s) on non-traditional shapes on a coordinate grid(s).

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,

- Understand the concepts of congruency (same size and shape) in real-life setting (work spaces).

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

- Use skills learned about congruency and transformations across a variety of settings (designing occupational spaces, residential spaces).

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

- Basic skills: Understand concepts of congruency (using maps).
- Managing Information: Use information about similarities and differences to make decisions (i.e. compares similar and different items).

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