Southern York County School District Instructional Plan

Name:	Dates: August
Course/Subject: Making Connections – Foundations for Algebra, Year 1	Chapter 1 – Introduction and Representation

Stage 1 – Desired Results

PA Standard(s)/Assessment Anchors Addressed: 2.1.8B, 2.2.8.A, 2.5.8A-D, 2.6.8A, 2.6.8E

Understanding(s): *Students will understand . . .*	Essential Question(s):
1. Working in a team enables more accomplishment. 2. When facing a challenging problem, look to break the problem down into subparts. 3. Multiplication tables are used to determine factor pairs. 4. Measures of central tendency are useful in analyzing a data set.	▪ Why is it important to develop good organizational skills? ▪ How does working as a team help overcome obstacles? ▪ What is an effective approach (start) to a problem that is not familiar? ▪ How can I represent quantities in multiple forms? ▪ How can I describe data using measures of central tendency?
Learning Objectives: *Students will know . . .* ▪ How and when to employ order of operations ▪ That equality is a special case of comparison ▪ The meaning of prime, composite, odd and even	*Students will be able to:* ▪ Look for multiple ways to solve a problem involving a proportional relationship. ▪ Work in study teams to solve problems ▪ Decompose quantities into sums of multiple parts ▪ Collect data and display the data in a stem-and-leaf plot and a histogram. ▪ Find mean, median, mode and range of a set of data.

Name:	Dates: September
Course/Subject: Making Connections – Foundations for Algebra, Year 1	Chapter 2 – Length and Integers

Stage 1 – Desired Results

PA Standard(s)/Assessment Anchors Addressed: 2.1.8B, 2.1.8F, 2.2.8A, 2.2.8B, 2.2.8E, 2.4.8D

Understanding(s): *Students will understand . . .*	Essential Question(s):
1. Length on a number line to help them add and multiply positive and negative integers. 2. Strategies for grouping operations within number expressions in order to simplify them accurately. 3. Strategies for representing and finding unknown lengths.	▪ What is a length? ▪ What is a unit? ▪ How can I measure accurately? ▪ How can I divide a unit into equal parts? ▪ What is a reasonable estimate?

4. The concept of opposites and "zero pairs." 5. Multiplication as repeated addition.	
Learning Objectives: *Students will know . . .* ▪ Length, units and how to measure by iterating units. ▪ How to measure accurately, with and without tools ▪ Multiple ways to name partial units using fractions. ▪ How differently sized units affect a resulting measurement. ▪ Equivalent measurements of length. ▪ Relative size of fractions. ▪ Parentheses can be used to group integers.	*Students will be able to:* ▪ Measure length with a variety of tools. ▪ Name partial units of length with equivalent fractions. ▪ Build (compose) and take apart (decompose) numbers and lengths. ▪ Add and multiply positive and negative integers. ▪ Simplify expressions with multiple operations by identifying and evaluating groups. ▪ Estimate lengths with inches and centimeters.

Name:	**Dates: October**
Course/Subject: Making Connections – Foundations for Algebra, Year 1	**Chapter 3 - Arithmetic Strategies and Area**
Stage 1 – Desired Results	
PA Standard(s)/Assessment Anchors Addressed: 2.1.8B, 2.1.8F, 2.2.8A, 2.2.8B, 2.2.8E, 2.3.8A, 2.3.8D	
Understanding(s): *Students will understand . . .* 1. Our number system and explore multiple strategies for addition and subtraction. 2. Why standard units are useful. 3. The relationship between perimeter and area. 4. Multiplication is an operation used in computing area. 5. How subtraction of integers connects to adding and multiplying integers. 6. Strategies for mental additions and subtraction of integers.	**Essential Question(s):** ▪ What strategy can I use? ▪ How can I calculate it? ▪ What is another way to show it? ▪ How can I measure area? ▪ How do area and perimeter change?
Learning Objectives: *Students will know . . .* ▪ How to measure area using a variety of units. ▪ Place value of numbers. ▪ To use correct vocabulary when referring to numbers. ▪ Standard units of measure. ▪ How the place value of digits in factors affect a product.	*Students will be able to:* ▪ Calculate sums and products efficiently with a variety of strategies. ▪ Define and measure the area of rectangles and shapes that can be broken into rectangles. ▪ Make sense of the standard algorithms for addition, subtraction and multiplication ▪ Use a generic rectangle to multiply, both on paper and mentally. ▪ Make reasonable estimates of complicated products mentally.

	▪ Subtract and multiply integers.
Name:	**Dates: November**
Course/Subject: Making Connections – Foundations for Algebra, Year 1	**Chapter 4 – Data and Portions**

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PA Standard(s)/Assessment Anchors Addressed: 2.4.8A, 2.4.8B, 2.5.8A-D, 2.6.8A, 2.8.8G, 2.8.8J, 2.11.8A

Understanding(s): *Students will understand . . .*	**Essential Question(s):**
1. Graphs establish relationships between data for us to interpret. 2. Portions of wholes as percents, decimals and fractions. 3. How to fix scaling errors. 4. The fewer iterations of a tool that are needed, the more accurate the measurement is likely to be. 5. The effects of changing data sets on mean, median, mode and range.	▪ How can I measure accurately? ▪ How can I describe the data? ▪ How can the portion be represented? ▪ What is another way to show it? ▪ How can I express it in words? ▪ What do they have in common?
Learning Objectives: *Students will know . . .*	*Students will be able to:*
▪ Efficient ways to move between equivalent representations of the portions. ▪ How to choose appropriate scales, draw axes, and plot points. ▪ How to compare variance to draw conclusions about relative accuracy of measurement tools. ▪ The connections between fractions and percents as they relate to decimals and decimal language. ▪ Place value through decimal notation. ▪ How to convert fractions, decimals and percents.	▪ Plot points and read useful information from graphs. ▪ Choose appropriate scales and set up useful graphs for data. ▪ Describe and analyze data using measures of central tendency such as mean, median and mode. ▪ Interpret data by studying its variance. ▪ Use percents, decimals and fractions to describe a portion of a whole. ▪ Represent portions as percents, decimals, and fractions with pictures, symbols, and words. ▪ Find the decimal form of a number when it is given as a percent or fraction.

Name:	**Dates: December**
Course/Subject: Making Connections – Foundations for Algebra, Year 1	**Chapter 5 – Geometry and Probability**

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PA Standard(s)/Assessment Anchors Addressed: 2.1.8A, 2.3.8C, 2.6.8B, 2.7.8, 2.9.8

Understanding(s):	**Essential Question(s):**

Students will understand . . .	
1. The connections between the content explored in chapters one through five. 2. The relationship between theoretical and experimental probability. 3. The affects of sample size on the probability of an event. 4. How to compare fractions with unlike denominators through equivalent fractions and conversions to percents.	▪ How can I visualize it? ▪ How can I describe it? ▪ How likely is it? ▪ How are they related? ▪ How do they compare?
Learning Objectives: *Students will know . . .*	*Students will be able to:*
▪ Correct geometric vocabulary of angles and quadrilaterals. ▪ The meaning of probability and how it is expressed mathematically. ▪ The differences between theoretical and experimental probability. ▪ How to measure angles through measuring tools.	▪ Identify shapes by their characteristics and use correct vocabulary to describe and name them. ▪ Revisit graphing points on a coordinate plane as students draw geometric shapes. ▪ Find the theoretical and experimental probability of a given event. ▪ Record a probability in more than one way. ▪ Express fractions as percents.
Name:	**Dates: January**
Course/Subject: Making Connections – Foundations for Algebra, Year 1	**Chapter 6 – Similarity, Multiplying, Fractions and Equivalence**
Stage 1 – Desired Results	
PA Standard(s)/Assessment Anchors Addressed: 2.1.8A, 2.3.8E, 2.5.8, 2.9.8F	
Understanding(s): *Students will understand . . .*	**Essential Question(s):**
1. Using ratios to describe relationships between shapes of different sizes. 2. The relationship between an original image and its enlargements and reductions. 3. How to use ratios in non-geometric contexts to solve problems. 4. Multiplication of decimals through the use of fraction multiplication. 5. Multiplying a number by a factor greater than one results in a product greater than the original number, and multiplying a number by a factor less than one results in a product less than the original number.	▪ How can I change the size but keep the shape the same? ▪ How is it the same or different? ▪ How can I visualize it? ▪ Is there another way to see it?
Learning Objectives:	

Students will know . . .	Students will be able to:
- The kind of growth is needed to maintain a shape. - A useful tool for finding equivalent fractions. - How to multiply fractions and mixed numbers in context. - How to estimate sums of fractions. - How to convert mixed numbers to improper fractions and the reverse. - The multiplicative identity to find equivalent fractions.	- Enlarge and reduce figures while maintaining their shape. - Use ratios to describe relationships between similar shapes. - Calculate a part of another part - Multiply fractions, mixed numbers and decimals. - Convert any fraction to an equivalent percent.

Name:	Dates: February
Course/Subject: Making Connections – Foundations for Algebra, Year 1	**Chapter 7 – Right Prisms and Adding Portions**

Stage 1 – Desired Results

PA Standard(s)/Assessment Anchors Addressed: 2.1.8A, 2.1.8G, 2.2.8B, 2.2.8E, 2.3.8A, 2.5.8, 2.9.8D

Understanding(s): *Students will understand . . .*	Essential Question(s):
1. The traditional algorithm for long division. 2. How to calculate surface area and volume of prisms.	- What can I measure? - Is there another way to see it? - How can I represent it? - How can I rewrite them using like parts? - How can I estimate it?

Learning Objectives: *Students will know . . .*	*Students will be able to:*
- How to estimate area and volume of three- dimensional prisms. - Properties and vocabulary of prisms. - A fraction can be seen as one number divided by another.	- Find the volume of three-dimension shapes. - Find common denominators - Add and subtract fractions, decimals and mixed numbers. - Represent addition and subtraction of fractions using diagrams. - Use mental math strategies to add and subtract fractions, decimals, and mixed numbers. - Estimate sums and differences of fractions.

Name:	Dates: March
Course/Subject: Making Connections – Foundations for Algebra, Year 1	**Chapter 8 – Variables and Dividing Portions**

Stage 1 – Desired Results

PA Standard(s)/Assessment Anchors Addressed: 2.1.8, 2.2.8B&C, 2.8.8

Understanding(s):	Essential Question(s):

Students will understand . . . 1. Patterns can be described with words and algebraic expressions. 2. Expressions can be evaluated algebraically and graphically. 3. How to divide fractions, mixed numbers and decimals.	▪ How can I describe the pattern? ▪ How can I represent it? ▪ How can I use a variable? ▪ What are expressions and equations?
Learning Objectives: *Students will know . . .* ▪ How to describe growth in patterns in multiple ways. ▪ How to generate and compare multiple counting strategies. ▪ How to describe information that can be seen from graphs of relationships. ▪ Variables can be used to represent unknowns in a variety of contexts. ▪ The sum of the angles in any triangle is 180 degrees.	*Students will be able to:* ▪ Use variables to generalize and to represent unknown quantities. ▪ Write multiple expressions to describe a pattern and recognize whether the expressions are equivalent. ▪ Find the value of a variable expression when the value of the variable is known. ▪ Find the solution to equations describing certain situations. ▪ Use graphs to represent all pairs of numbers that make a certain rule true. ▪ Divide with fractions, mixed numbers and decimals.

Name:	**Dates: April**
Course/Subject: Making Connections – Foundations for Algebra, Year 1	**Chapter 9 – Percents, Proportions and Geometry**
Stage 1 – Desired Results	
PA Standard(s)/Assessment Anchors Addressed: 2.1.8D, 2.2.8D&E, 2.3.8B&D, 2.8.8J, 2.9.8	
Understanding(s): *Students will understand . . .* 1. Ratios can be written as percents and used in multiplicative growth applications. 2. The graph of a proportional relationship and how it compares to other kinds of relationships. 3. The relationship between circumference and diameter of a circle; area and radius of a circle.	**Essential Question(s):** ▪ What is the relationship? ▪ How can I see it in a table? ▪ How can I see it on a graph? ▪ What makes a relationship proportional?
Learning Objectives: *Students will know . . .* ▪ How to determine parts, wholes and percentages given different information. ▪ How to calculate percent discounts and sale prices. ▪ How to estimate percents. ▪ The relationship between distance, rate and time. ▪ If a relationship is proportional. ▪ Cross multiplication to find missing information in proportions. ▪ How to calculate area of triangle,	*Students will be able to:* ▪ Calculate percents using mental math strategies. ▪ Recognize proportional relationships in tables and graphs. ▪ Use their knowledge of proportions to make predictions and solve problems. ▪ Calculate areas of circles, triangles, and shapes made up of rectangles, circles and triangles. ▪ Calculate volume of some three-dimensional shapes.

rectangles, circles and composed figures.	
Name:	**Dates: May**
Course/Subject: Making Connections: Foundations for Algebra, Year 1	**Chapter 10 - Probability and Survey Design**

Stage 1 – Desired Results

PA Standard(s)/Assessment Anchors Addressed: 2.4.8, 2.5.8, 2.6.8, 2.7.8

Understanding(s): *Students will understand . . .* 1. How to manipulate specific sample spaces to result in desired theoretical probabilities. 2. How to use probability tables to generate a complete list of possible outcomes of compound events and to calculate probabilities. 3. Methods of sampling and techniques for trying to find a random and representative sample.	**Essential Question(s):** ▪ How can I represent it? ▪ Is there another way to see it? ▪ Does it make sense? ▪ How can we solve it?
Learning Objectives: *Students will know . . .* ▪ How to find the probabilities of compound independent events ▪ How to determine whether pairs of events are dependent or independent. ▪ The differences and relationship between experimental and theoretical probabilities. ▪ The difference between open and closed questions. ▪ How to display results of a survey graphically.	*Students will be able to:* ▪ Use experimental results to make and test conjectures about unknown sample spaces. ▪ Describe how the relationship between experimental and theoretical probabilities for an experiment changes as the experiment is conducted many times. ▪ Calculate probabilities of multiple independent events. ▪ Recognize and minimize bias in some survey questions. ▪ Recognize bias in samples chosen to complete surveys. ▪ Attempt to find random and representative samples to complete a survey. ▪ Interpret results of a survey, including analyzing results for presence of bias.