

Southern York County School District Instructional Plan

Name: Fifth Grade	Dates: August/September
Course/Subject: Mathematics	Unit 1: Number Theory
Stage 1 – Desired Results	
<p>PA Core Standards:</p> <ul style="list-style-type: none"> ▪ Develop and/or apply number theory concepts to find factors and multiples CC.2.2.4.A.2 (This is a 4th grade standard!!) <p>Standards of Mathematical Practices:</p> <ul style="list-style-type: none"> ▪ Model with mathematics. ▪ Look for and make use of structure. 	
<p>Understanding(s): <i>Students will understand . . .</i></p> <ol style="list-style-type: none"> 1. That mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations. 2. That numerical quantities, calculations, and measurements can be analyzed by using appropriate strategies and tools. 3. That mathematical relationships among numbers can be represented, compared, and communicated. 	<p>Essential Question(s):</p> <ul style="list-style-type: none"> ▪ How are relationships represented mathematically? ▪ How is mathematics used to compare, represent, and model numbers? ▪ How can mathematics support effective communication? ▪ What tools & strategies can assist us when problem solving?
<p>Learning Objectives: <i>Students will know and be able to....</i></p> <ul style="list-style-type: none"> ▪ Identify places in whole numbers and decimals and express the values of digits in those places. ▪ Find factors of a number ▪ Write number sentences for rectangular arrays. ▪ Use the Commutative Property for Addition & Multiplication. ▪ Find all factors of a number. ▪ Solve and apply multiplication facts & fact extensions. ▪ Apply multiplication/division facts by using rules. ▪ Use divisibility rules to solve problems. ▪ Define and classify numbers based on characteristics of prime, composite, even, & odd. ▪ Convert between various forms of numbers. 	
Name: Fifth Grade	Dates: September/October
Course/Subject: Mathematics	Unit 2: Estimation & Computation
Stage 1 – Desired Results	
<p>PA Core Standards:</p> <ul style="list-style-type: none"> ▪ Apply place value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals CC.2.1.5.B.1 ▪ Extend an understanding of operations with whole numbers to perform operations including decimals CC.2.1.5.B.2. <p>Standards of Mathematical Practices:</p> <ul style="list-style-type: none"> ▪ Make sense of and persevere in solving complex and novel mathematical problems. ▪ Model with mathematics. ▪ Reason abstractly & quantitatively. 	
Understanding(s):	Essential Question(s):

<p>Students will understand . . .</p> <ol style="list-style-type: none"> 1. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations. 2. Numerical quantities, calculations, and measurements can be estimated and analyzed by using appropriate strategies and tools. 3. Data can be modeled & used to make inferences. 	<ul style="list-style-type: none"> ▪ What methods are best suited to solve computational problems? ▪ How can understanding of whole number computation be applied to computation with decimals? ▪ How can we organize data to predict outcomes & communicate the results effectively? ▪ How can estimation help us solve problems & check the reasonableness of our answers?
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<p>Learning Objectives: Students will know and be able to . . .</p> <ul style="list-style-type: none"> ▪ Devise estimation strategies to solve problems ▪ Write numbers in expanded notation. ▪ Compute with multi-digit whole numbers & decimals ▪ Represent sets of data using a variety of landmarks. ▪ Use estimation to check reasonableness of computation ▪ Compare relative size of numbers using place value concepts to the trillions ▪ Write and solve number sentences that model addition and subtraction number stories.
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<p>Name: Fifth Grade</p>	<p>Dates: October/November</p>
<p>Course/Subject: Mathematics</p>	<p>Unit 3: Geometry Explorations</p>

Stage 1 – Desired Results

<p>PA Core Standards:</p> <p>Geometry:</p> <ul style="list-style-type: none"> ▪ Classify two-dimensional figures into categories based on an understanding of their properties CC.2.3.5.A.2. <p>Numbers and Operations:</p> <ul style="list-style-type: none"> ▪ Apply place value concepts to show an understanding of operations & rounding as they pertain to whole numbers & decimals CC.2.1.5.B.1. <p>Standards of Mathematical Practices:</p> <ul style="list-style-type: none"> ▪ Use appropriate tools strategically. ▪ Attend to precision. ▪ Construct viable arguments & critique reasoning of others.

<p>Understanding(s): Students will understand . . .</p> <ol style="list-style-type: none"> 1. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. 	<p>Essential Question(s):</p> <ul style="list-style-type: none"> ▪ How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems? ▪ How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? ▪ How can geometric properties and theorems be used to describe, model, and analyze situations?
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Learning Objectives:***Students will know & be able to . . .***

- Relate circles and relationships among angles to the degree measures of angles.
- Review types of angles, geometric figures, and measure and draw angles.
- How to use geometric tools to explore plane figures
- Analyze & classify polygons based on geometric properties
- Identify side and angle relationships in regular tessellations and compare and classify quadrangles.

Name: Fifth Grade**Dates: November****Course/Subject: Mathematics****Unit 4: Division****Stage 1 – Desired Results****PA Core Standards:**

- Apply place value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals CC.2.1.5.B.1.
- Extend an understanding of operations with whole numbers to perform operations including decimals CC.2.1.5.B.2.

Standards of Mathematical Practices:

- Make sense of and persevere in solving complex and novel mathematical problems.
- Attend to precision.
- Look for & make use of structure.

Understanding(s):***Students will understand . . .***

1. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.
2. Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

Essential Question(s):

- What computation methods are best suited to solve division problems?
- How do we interpret remainders and determine their importance in life situations?
- When is it appropriate to estimate versus calculate?
- How can understanding of mathematical relationships help us solve real-world problems?

Learning Objectives:***Students will know and be able to . . .***

- Use division and multiplication facts
- Apply basic facts to division with 1-digit divisors.
- Use a division algorithm.
- Solve division number stories and interpret remainders.

Name: Fifth Grade**Dates: December****Course/Subject: Mathematics****Unit 5: Fractions, Decimals, Percents**

Stage 1 – Desired Results

PA Core Standards:

- Use the understanding of equivalency to add and subtract fractions (CC.2.1.5.C.1)
- Represent and interpret data using appropriate scale.
- Apply and extend previous understanding of multiplication and division to multiply and divide fractions (CC.2.1.5.C.2).
- Apply place value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals (CC.2.1.5.B.1).

Practice Standards:

- Make sense of problems and persevere in solving them.
- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.
- Look for and express regularity in repeated reasoning.

Understanding(s):

Students will understand . . .

1. Data can be modeled and used to make inferences.
2. Mathematical relationships among numbers can be represented, compared, and communicated.
3. Rounding to certain place values is often necessary when solving problems.

Essential Question(s):

- How does the type of data influence the choice of display?
- How can data be organized and represented to provide insight into the relationship between quantities?
- What is the relationship between fractions, decimals, and percents?

Learning Objectives:

Students will know and be able to . . .

- Solve parts-and-whole problems
- Use mixed number and improper fraction concepts.
- Find equivalent fractions, compare and order fractions and to explore fraction addition.
- Use multiplication and division rules for finding equivalent fractions.
- Rename fractions as decimals.
- Round decimals
- Use a calculator to find decimal equivalents for fractions.
- Use a calculator to convert decimals to percentages.
- Construct bar graphs.
- Construct circle graphs.

Name: Fifth Grade

Dates: January

Course/Subject: Mathematics

Unit 6: Using Data: Addition and Subtraction of Fractions

Stage 1 – Desired Results

PA Core Standards:

- Represent and interpret data using appropriate scale CC.2.4.5.A.2.
- Solve problems involving computation of fractions using information provided in a line plot CC.2.4.5.A.4.
- Use the understanding of equivalency to add and subtract fractions CC.2.1.5.C.1.

Standards of Mathematical Practices:

- Make sense of problems and persevere in solving them.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Understanding(s):

Essential Question(s):

<p>Students will understand . . .</p> <ol style="list-style-type: none"> 1. Data can be modeled and used to make inferences. 2. Measurement attributes can be quantified and estimated using customary and non-customary units. 	<ul style="list-style-type: none"> ▪ Why is displaying and analyzing data so important in our world today? ▪ What are some methods for doing operations of addition and subtraction when working with fractions?
<p>Learning Objectives: Students will know and be able to . . .</p> <ul style="list-style-type: none"> ▪ Organize data using a picture, graph, line plot, table, stem-and-leaf plot or list. ▪ Investigate the relationship between sample size and the reliability of derived results. ▪ Measure to the nearest millimeter, centimeter and inch. ▪ Use data landmarks to draw conclusions about data sets. ▪ Estimate with fractions using benchmarks. ▪ Use common denominators to compare, add and subtract fractions. 	
<p>Name: Fifth Grade</p>	<p>Dates: February</p>
<p>Course/Subject: Mathematics</p>	<p>Unit 7: Exponents & Negative Numbers</p>
<p>Stage 1 – Desired Results</p>	
<p>PA Core Standards:</p> <ul style="list-style-type: none"> ▪ Interpret and evaluate numerical expressions using order of operations. CC.2.2.5.A.1 ▪ Apply place value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals. CC.2.1.5.B.1 ▪ Represent and interpret data using appropriate scale. CC.2.4.5.A.2 ▪ Solve problems involving computation of fractions using information provided in a line plot. CC.2.4.5.A.4 <p>Practice Standards:</p> <ul style="list-style-type: none"> ▪ Make sense of problems and persevere in solving them. ▪ Reason abstractly and quantitatively. ▪ Attend to precision. 	
<p>Understanding(s): Students will understand . . .</p> <ol style="list-style-type: none"> 1. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations. 2. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions. 3. Data can be modeled and used to make inferences. 	<p>Essential Question(s):</p> <ul style="list-style-type: none"> ▪ How do exponents make it easier to use large numbers? ▪ Why and how can we use “order of operation” rules for everyone to follow? ▪ Why and how are negative numbers used in mathematics? ▪ How does the type of data influence the choice of display? ▪ How can data be organized and represented to provide insight into the relationship between quantities?

Learning Objectives:**Students will know and be able to:**

- Understand and apply scientific notation.
- Understand and apply powers of 10.
- Understand and apply exponential notation.
- Add and subtract positive and negative numbers.
- Order and compare positive and negative numbers.
- Use given data to create line graphs.
- Interpret line graphs.
- Identify number sentences as true or false.
- Understand and apply the use parentheses in number sentences.
- Understand and apply order of operations to evaluate expressions and solve number sentences.

Name: Fifth Grade**Dates: February/March****Course/Subject: Mathematics****Unit 8: Fractions and Ratios****Stage 1 – Desired Results****PA Core Standards:**

- **Use the understanding of equivalency to add and subtract fractions. CC.2.1.5.1**
- **Apply and extend previous understandings of multiplication and division to multiply and divide fractions. CC.2.1.5.C.2**

Standards of Mathematical Practices:

- **Make sense of problems and persevere in solving them.**
- **Use appropriate tools strategically.**
- **Look for and express regularity in repeated reasoning.**

Understanding(s):**Students will understand . . .**

1. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.
2. Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

Essential Question(s):

- How do we apply basic operations of mathematics to fractions?
- How is mathematics used to quantify, compare, represent, and model numbers?
- How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations?

Learning Objectives:**Students will know and be able to:**

- Review the use of equivalent fractions in comparisons.
- Develop addition concepts related to mixed numbers.
- Develop subtraction concepts related to mixed numbers.
- Add fractions with unlike denominators.
- Use a calculator to solve fraction problems.
- Find a fraction of a fraction.
- Multiply fractions.
- Multiply fractions and whole numbers.
- Multiply mixed numbers.
- Calculate percents including discounts.
- Find the whole given a fraction or percent of the whole.
- Divide fractions.

Name: Fifth Grade**Dates: March****Course/Subject: Mathematics****Unit 9: Coordinates, Area, Volume, & Capacity**

Stage 1 – Desired Results

PA Core Standards:

- Graph points in the first quadrant on the coordinate plane and interpret these points when solving real world and mathematical problems. CC.2.3.5.A.1
- Apply concepts of volume to solve problems and relate volume to multiplication and to addition. CC.2.4.5.A.5

Standards of Mathematical Practices:

- Model with mathematics.
- Attend to precision.

Understanding(s):

Students will understand . . .

1. Data can be modeled and used to make inferences.
2. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.

Essential Question(s):

- How do we use coordinate grids in the real world?
- How is the formula for area of a rectangle used for other shapes such as triangles and parallelograms?
- How do we use addition and multiplication to explain the concept of volume?
- How can we apply concepts of volume to solve problems?

Learning Objectives:

Students will know and be able to:

- Identify and plot ordered pairs on a coordinate grid.
- Identify the base and height of triangles and parallelograms.
- Understand the concepts of perimeter and area of a figure.
- Use a formula to find the perimeters and areas of triangles and parallelograms.
- Understand the concept of volume.
- Find the volumes of prisms.
- Understand and draw figure reflections.

Name: Fifth Grade

Dates: March/April

Course/Subject: Mathematics

Unit 10: Using Data, Algebra Concepts & Skills

Stage 1 – Desired Results

PA Core Standards:

- Analyze patterns and relationships using two rules CC.2.2.5.A.4
- Represent and interpret data using appropriate scale CC.2.4.5.A.2

Standards of Mathematical Practices:

- Use appropriate tools strategically
- Reason abstractly and quantitatively
- Look for and express regularity in repeated reasoning

Understanding(s):

Students will understand . . .

1. Data can be modeled and used to make inferences.
2. Mathematical relationships among numbers can be represented, compared, and communicated
3. Patterns exhibit relationships that can be extended, described, and generalized
4. Geometric relationships can be described,

Essential Question(s):

- What is algebra and how can it be used?
- How are tables and graphs used to answer questions?
- How can the application of the attributes of the geometric shapes support mathematical reasoning and problem solving?

analyzed, and classified based on spatial reasoning and/or visualizations	
Learning Objectives: <i>Students will know and be able to:</i> <ul style="list-style-type: none"> ▪ Interpret tables, mystery line plots, and graphs ▪ User formulas to find the circumference and area of a circle ▪ Distinguish between circumference and area of a circle ▪ Represent rate problems using a table, graph, and formula ▪ Use algebraic expressions to write rules involving the four basic operations ▪ Develop representational forms for rates ▪ Write and solve algebraic expressions ▪ Solve pan-balance problems 	
Name: Fifth Grade	Dates: April/May
Course/Subject: Mathematics	Unit 11: Volume
Stage 1 – Desired Results	
PA Core Standards: <ul style="list-style-type: none"> ▪ Apply concepts of volume to solve problems and relate volume to multiplication and to addition. CC.2.4.5.A.5. ▪ Solve problems using conversions within a given measurement system. CC.2.4.5.A.1 ▪ Classify two-dimensional figures into categories based on an understanding of their properties. Standards of Mathematical Practices: <ul style="list-style-type: none"> ▪ Look for and make use of structure. ▪ Make sense of problems and persevere in solving them. 	
Understanding(s): <i>Students will understand . . .</i> <ol style="list-style-type: none"> 1. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. 	Essential Question(s): <ul style="list-style-type: none"> ▪ What are geometric solids and how can we use them? ▪ How do we name and describe different geometric solids? ▪ How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? ▪ How can geometric properties and theorems be used to describe, model, and analyze situations?
Learning Objectives: <i>Students will know and be able to . . .</i> <ul style="list-style-type: none"> ▪ Names and properties of geometric solids ▪ Formulas for finding the volume of cylinders, pyramids, and cones ▪ How to find the volume of irregular objects using a water displacement method ▪ Conversions between weight, capacity, and volume ▪ How to find surface area of prisms, cylinders, and pyramids 	
Name: Fifth Grade	Dates: May
Course/Subject: Mathematics	Unit 12: Probability, Ratios, & Rates

Stage 1 – Desired Results

PA Core Standards:

- Use the understanding of equivalency to add and subtract fractions. CC.2.1.5.C.1.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions. CC.2.1.5.C.2.
- Represent and interpret data using appropriate scale.

Standards of Mathematical Practices:

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Model with mathematics.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Understanding(s):

Students will understand . . .

1. Patterns exhibit relationships that can be extended, described and generalized.
2. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.

Essential Question(s):

- How are ratios used to describe mathematical ideas?
- How does using a rate table make some problems easier to solve?
- What is the purpose of factor trees?

Learning Objectives:

Students will know and be able to...

- Identify prime factorization for a number.
- Calculate Greatest Common Factor and Least Common Multiple.
- Solve ratio and rate problems.