

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 7**

Anchor		Seventh Grade Expectations	Every seventh grader should be able to:	Text pages or supplementary	Date assessed
7A – Numbers and Operations					
1.	Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.	a. Represent numbers in equivalent forms	1. Express whole numbers using exponents, expanded, standard, and scientific notation.		
		b. Compare quantities or magnitudes of numbers.	1. Compare and order real numbers.		
2.	Compute accurately and fluently and make reasonable estimates.	a. Compute accurately with and without use of a calculator	1. Solve problems involving the four basic operations of whole numbers, decimals, fractions, mixed numbers, integers, and rationals. (straight computations and word problems.)		
		b. Apply estimation strategies to a variety of problems.	1. Use the order of operations to simplify numerical expressions.		
3.	Understand meanings of operations, use operations and understand how they relate to each other.	a. Complete calculations by applying order of operations.	1. Find the square and square root of a number. Explain the relationship between the two using perfect squares only.		
			2. Estimate the answer to solve problems involving whole numbers, decimals, fractions, mixed numbers, and percents to determine if computational answers are reasonable.		

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 7**

Anchor	Seventh Grade Expectations	Every seventh grader should be able to:	Text pages or supplementary	Date assessed	
7A – Numbers and Operations					
4.	Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.	a. Represent numbers in equivalent forms.	1. Convert between fractions, decimals, and percents and to equivalent forms.		
		b. Compare quantities or magnitudes of numbers.	1. Solve for a variable in a given proportion.		
			2. Use proportions to determine if two quantities are equivalent.		
		c. Solve problems using ratios, proportions, percents and/or rates.	1. Use proportion to determine scale and create a scale model.		
			2. Determine and/or apply an appropriate scale for reduction or enlargement.		
			3. Interpret and/or apply scales shown on maps, blueprints, models, etc.		
			4. Use proportions to find the missing length of a side in similar figures.		
5. Represent or solve rate problems (e.g., unit rates, simple interest, distance, etc.) Solve for any term in the equation.					
6. Select and use ratios, proportions, and percents to solve problems (e.g. tax, discounts, etc. – straight computation and word problems)					

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 7**

Anchor	Seventh Grade Expectations	Every seventh grader should be able to:	Text pages or supplementary	Date assessed
7B - Measurement				
1.	Demonstrate an understanding of measurable attributes of objects and figures, and the units, systems and processes of measurement.	a. Convert measurements within customary and metric.	1. Convert among all metric measurements (milli-, centi-, deci-, unit (gram meter or liter), deka-, hecto-, and kilo-.	
			2. . Convert customary measurements to two units above or below the given unit (e.g., inches to yards, pints to gallons.)	

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 7**

Anchor	Seventh Grade Expectations	Every seventh grader should be able to:	Text pages or supplementary	Date assessed
7C– Geometry				
1.	Apply appropriate techniques, tools, and formulas to determine measurements.	a. Locate points or describe relationships using the coordinate plane.	1. Identify the properties of the four quadrants.	
		b. Locate and/or describe points on a coordinate plane.	1. Plot and identify ordered pairs of integers on a coordinate plane.	
		c. Identify transformations and symmetry.	1. Identify the types of transformations (reflection, translation, rotation) and symmetry (rotational, bilateral, and radial.).	
		d. Identify and/or apply concepts of transformation or symmetry.	1. Perform transformations (flips, slides, turns) on geometric figures to demonstrate concepts of similarity, congruence, and symmetry.	
		e. Develop, use and/or describe measures of length, perimeter, circumference, area, or volume.	1. Identify, describe and apply formulas for the relationships for the parts of a circle- radius, diameter, and circumference 2. Find the circumference and/area of circles using the approximate 3.14 for pi.	
2.	Analyze characteristics and properties of two- and three-dimensional geometric shapes and demonstrate understanding of geometric relationships	a. Draw, label, measure and/or list properties of angles.	1. Define, identify, and use the properties of complementary and supplementary angles.	
		b. Define and/or apply basic properties of two- and three-dimensional geometric shapes.	1. Identify, classify, and compare attributes of plane figures including regular and irregular polygons.	
			2. Identify and describe similar and congruent polygons and identify their corresponding parts.	
		c. Identify congruence and/or similarity in polygons.	1. Identify corresponding sides and/or angles of similar polygons.	
			2. Identify polygons that are similar or congruent given either tick or angle marks.	
			3. Develop and use strategies to find the perimeter and area of simple and combined figures including triangles and quadrilaterals.	

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 7**

Anchor		Seventh Grade Expectations	Every seventh grader should be able to:	Text pages or supplementary	Date assessed
7D – Algebraic Concepts					
1.	Represent and/or analyze mathematical situations using numbers, symbols, words, tables, and/or graphs	a. Select and/use appropriate strategies to solve or represent number sentences.	1. Simplify expressions involving integers, using the order of operations including all levels of grouping symbols – parentheses, braces, brackets.		
			2. Select and/or use appropriate strategies to solve one- or two-step equations involving integers.		
		b. Create and interpret expressions, equations, or inequalities that model problem situations.	1. Graph simple inequalities on a number line (one variable only: e.g. graph $x > -3$).		
			2. Identify expressions, equations, or inequalities that model mathematical situations.		
2.	Demonstrate an understanding of patterns, relations, and functions.	a. Recognize, reproduce, extend, and/or describe patterns, sequences, and patterns.	1. Form a rule based on a given pattern or illustrate a pattern for a given rule.		
3.	Analyze change in various contexts.	a. Interpret relationships between data tables and corresponding graphs and/or functions.	1. Graph a linear equation on a coordinate graph given an x / y table (T chart).		
			2. Analyze functional relationships to explain how a change in one quantity affects the other quantity.		

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 7**

Anchor		Seventh Grade Expectations	Every seventh grader should be able to:	Text pages or supplementary	Date assessed
7E - Data Analysis and Probability					
1.	Collect, organize, display, and analyze data to answer questions.	a. Interpret and create data displays.	1. Create, analyze, and interpret data shown in bar/double bar graphs, line/double line graphs, circle graphs, scatterplots, histograms, stem-and leaf plots, and box –and whisker plots.		
			2. Use a title, appropriate scale, labels, and key where appropriate.		
			3. Circle graphs must show a center point and tic marks.		
			4. Formulate predictions and/or draw conclusions based on data displays (bar, graphs, circle graphs, and line graphs) or probability tables.		
2.	Select and/or use appropriate statistical methods to analyze data.	a. Describe, compare, and/or contrast data using measures of central tendency.	1. Identify and calculate mean, median, mode, and range for a given set of data.		
			2. Decide which measure of central tendency would be most appropriate in a given situation.		
			3. Make comparisons between two sets of data using measures of central tendency.		
			4. Explain how a change in the set of data will affect the measures of central tendency.		
3.	Understand and/or apply basic concepts of probability or outcomes.	a. Determine or calculate theoretical or experimental probability.	1. Show all possible combinations involving no more than 20 total possible outcomes by applying the counting principle, or constructing a tree diagram or probability table.		
			2. Find the theoretical probability of a simple and/or compound event. (Answer should be written as a fraction in lowest terms.)		
4.	Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.	a. Draw conclusions; make predictions based on data displays.	1. Determine whether the outcomes of an event are equally likely to occur or not equally likely to occur.		
			2. Express the probability and odds of an event in ratio, fraction, decimal, and percent form.		

**DIOCESE OF HARRISBURG
MATHEMATICS CURRICULUM – GRADE 7**