

CARLISLE AREA SCHOOL DISTRICT

Carlisle, PA 17013

Math

Grade 5

Date of Board Approval: **August 16, 2007**

CARLISLE AREA SCHOOL DISTRICT

PLANNED INSTRUCTION COVER PAGE

Title of Course: Math Subject Area: Math Grade Level: 5

Course Length: (Semester/Year): Year Duration: 20-25 minutes Frequency: 5 times per cycle

Prerequisites: Not Applicable Credit: Not Applicable Level: Not Applicable

Course Description/Objectives: The district shall provide for attainment of the academic standards per Chapter 4, Section 4.12. Each student shall demonstrate proficiency in the following area: numbers, number systems and number relationships; computation and estimation; measurement and estimation; mathematical reasoning and connections, mathematical problem solving and communication; statistics and data analysis; probability and predictions; algebra and functions; geometry; trigonometry; and concepts of calculus.

Major Text(s)/Resources:

Major Text(s)/Resources:

Harcourt Math 2002

Name of Writing Committee:

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Strand 2.1 Numbers, Number Systems and Number Relationships		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Use expanded notation to represent whole numbers or decimals.	<ul style="list-style-type: none"> Demonstrate whole number place value in the base-ten number system by period and place to the hundred billions. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Use expanded notation to represent whole numbers or decimals.	<ul style="list-style-type: none"> Demonstrate base-ten decimal place value by extending whole number place value concepts through the thousandth place. (M) 		
A. Use expanded notation to represent whole numbers or decimals.	<ul style="list-style-type: none"> Read and write whole numbers to the hundred billions place. (M) Read and write decimals to the thousandth place. (M) (PSSA) 		
A. Use expanded notation to represent whole numbers or decimals.	<ul style="list-style-type: none"> Name the value of a digit in a number and the place it holds (from millions to thousandths). (M) (PSSA) Compare and order whole numbers and decimals (through the thousandths). (M) (PSSA) 		
A. Use expanded notation to represent whole numbers or decimals.	<ul style="list-style-type: none"> Extend the understanding of place value by using expanded notation to represent a whole number and/or decimal (whole numbers less than 10, 000 and decimals to hundredths.) (M) (PSSA) 		

Strand 2.1 Numbers, Number Systems and Number Relationships		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Use expanded notation to represent whole numbers or decimals.	<ul style="list-style-type: none"> Identify the standard and word form of a whole number or decimal when given the expanded form. (M) Represent a given whole number, fraction and decimal with manipulatives and pictures. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
B. Apply number theory concepts to rename a number quantity.	<ul style="list-style-type: none"> Use the basic operations of addition, subtraction, multiplication and division to rename a number. (R) 		
B. Apply number theory concepts to rename a number quantity.	<ul style="list-style-type: none"> Generate equivalent representations of a number quantity by composing and decomposing numbers, using digits, fractions, decimals, percents, ratios, primes, composites, factors, multiples, exponents and equations. (I) 		
B. Apply number theory concepts to rename a number quantity.	<ul style="list-style-type: none"> Rename whole numbers as fractions with varying denominators. (I) Use number properties to represent a quantity. (I) 		
B. Apply number theory concepts to rename a number quantity.	<ul style="list-style-type: none"> Create equivalent forms using fractions, decimals and percents. (M) 		

Strand 2.1 Numbers, Number Systems and Number Relationships		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
C. Demonstrate that mathematical operations can represent a variety of problem situations.	<ul style="list-style-type: none"> Identify and use the inverse operation of addition/subtraction and multiplication/division to solve problems. (R) Articulate the relationship among the four mathematical operations. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Demonstrate that mathematical operations can represent a variety of problem situations.	<ul style="list-style-type: none"> Show how the meaning and effect of each mathematical operation develops in part-to-whole relationships. (R) Use order relations for whole numbers, fractions, and decimals. (R) 		
C. Demonstrate that mathematical operations can represent a variety of problem situations.	<ul style="list-style-type: none"> Use the properties of operations to solve problems. (R) Demonstrate fluency in choosing mathematical operations to solve word problems. (R) 		
C. Demonstrate that mathematical operations can represent a variety of problem situations.	<ul style="list-style-type: none"> Use addition and subtraction to solve problems with whole numbers and decimals. (M) (PSSA) Use multiplication to solve three-digit times three-digit number problems. (M) (PSSA) 		
C. Demonstrate that mathematical operations can represent a variety of problem situations.	<ul style="list-style-type: none"> Use division to solve problems involving whole numbers (two-digit divisors and four-digit dividends). (M) (PSSA) 		

Strand 2.1 Numbers, Number Systems and Number Relationships		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Use or develop regions and/or sets (e.g., circle graph, hundred-blocks) to model fractions and mixed numbers to hundredths (may include reducing the fractions). (PSSA) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Extend whole number operations to fractions and decimals using symbolic representations in addition and subtraction. (M) 		
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Extend whole number operations to fractions and decimals using symbolic representations in multiplication and division. (I) 		
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Use models to relate decimals to fractions that name tenths and hundredths. (I) Draw a model of and express an improper fraction as a mixed number. (I) 		
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Use concrete models to compare fractional parts and represent the same fractional parts. (M) Compare proper fractions to 16ths with like and unlike denominators. (M) (PSSA) 		

Strand 2.1 Numbers, Number Systems and Number Relationships		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Identify equivalent forms of commonly used decimals and fractions at the symbolic level. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Develop an awareness of decimals and fractions as parts of a whole, as parts of a collection, as locations on a number line and specifically for fractions as divisors of whole numbers. (R) 		
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Develop an awareness of percents. (M) Round decimals up to the nearest hundredth. (I) 		
D. Use models to represent fractions and decimals.	<ul style="list-style-type: none"> Recognize equivalent decimal forms to the nearest thousandths. (I) Represent a percent using models. (I) Make change up to \$20.00 using the smallest amount of coins and bills. (M) 		
E. Explain the concepts of prime and composite numbers.	<ul style="list-style-type: none"> List/Identify factors +/- or multiples of a whole number less than or equal to 50. (R) (PSSA) Define a prime number by its critical attributes. (R) 		

Strand 2.1 Numbers, Number Systems and Number Relationships		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
E. Explain the concepts of prime and composite numbers.	<ul style="list-style-type: none"> Define a composite number by its critical attributes. (R) Recognize that 1 is neither prime nor composite. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
E. Explain the concepts of prime and composite numbers.	<ul style="list-style-type: none"> Recognize that 2 is the only even prime number. (M) Use the rules of divisibility and basic facts to factor whole numbers. (M) 		
E. Explain the concepts of prime and composite numbers.	<ul style="list-style-type: none"> Name/Identify prime and composite numbers less than or equal to 100. (M) (PSSA) 		
F. Use simple concepts of negative numbers, such as on a number line, in counting and in temperature.	<ul style="list-style-type: none"> Explore and explain the concept of negative numbers (e.g., a negative number is less than zero.) (M) 		
F. Use simple concepts of negative numbers, such as on a number line, in counting and in temperature.	<ul style="list-style-type: none"> Recognize the value of negative numbers using manipulatives and number lines. (I) Identify negative numbers on a number line (greater than or equal to -20). (M) (PSSA) 		

Strand 2.1 Numbers, Number Systems and Number Relationships		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
F. Use simple concepts of negative numbers, such as on a number line, in counting and in temperature.	<ul style="list-style-type: none"> Use negative numbers in the real-world context of temperature, debts, etc. (M) Compare negative and positive integers and zero. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
F. Use simple concepts of negative numbers, such as on a number line, in counting and in temperature.	<ul style="list-style-type: none"> Determine the unit intervals on a number line or thermometer. (M) Identify negative numbers on a thermometer ($^{\circ}\text{C}$ or $^{\circ}\text{F}$) (M) (PSSA) 		
G. Develop and apply number theory concepts.	<ul style="list-style-type: none"> Identify number theory concepts. (R) Recognize numbers in various ways by applying number theory concepts. (R) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Use relationships between operations to solve problems. (R) • Choose the correct operation(s) to solve a problem (no more than 2 operations). (PSSA) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Identify prime factors, factors, and multiples to solve meaningful problems. (R) • Compute the average for a set of numbers. (R) 		
A. Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Analyze the question to determine the effect a remainder could have on the solution. (R) • Use problem-solving strategies to obtain a solution. (R) 		
A. Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Apply the order of operation when appropriate. (I) • Use estimation strategies to determine if the results are reasonable. (R) 		
A. Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Identify the elements of the problem and their relationship to one another. (R) • Solve real-world problems using addition, subtraction, multiplication, and division. (M) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.	<ul style="list-style-type: none"> • Apply properties to solve problems. (R) • Multiply mentally using multiples of ten by moving the decimal point to the left or right. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
B. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.	<ul style="list-style-type: none"> • Develop algorithms from concrete experiences. (I) • Identify and explain equivalent decimals symbolically. (I) 		
B. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.	<ul style="list-style-type: none"> • Compare and order decimals to the thousandth place. (I) • Convert decimals into equivalent fractions and percents. (M) • Recognize and use the % symbol. (M) 		
B. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.	<ul style="list-style-type: none"> • Solve real-world and mathematical problems using addition, subtraction, and multiplication and division of decimals (answer to hundredths). (R) (PSSA) 		
B. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.	<ul style="list-style-type: none"> • Use appropriate math terminology. (R) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
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B. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.	<ul style="list-style-type: none"> Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Apply properties to solve problems. (R) Demonstrate that multiplying fractions less than one produces a product smaller than the original factors. (I) 		
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Identify prime factors, factors, and multiples to solve meaningful problems that require renaming, reducing and comparing fractions. (I) 		
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Develop algorithms from concrete experiences. (I) Identify and explain equivalent fractions symbolically. (M) Compare and order fractions symbolically. (I) 		
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Calculate the Least Common Multiple of two unlike denominators and use this number theory concept as the lowest common denominator (LCD). (I) 		

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C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Calculate the Greatest Common Factor of the numerator and denominator and use this number concept theory to reduce fractions to lowest terms. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Rename improper fractions as mixed numbers. (I) Rename mixed numbers as improper fractions. (M) 		
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Solve real-world and mathematical problems using addition and subtraction with like and unlike denominators and reduce to lowest terms. (M) (PSSA) 		
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Solve mathematical problems using addition and subtraction of mixed numbers with like and unlike denominators, and reduce to lowest terms. (M) 		
C. Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.	<ul style="list-style-type: none"> Solve real-world and mathematical problems using multiplication of all fractions and reduce to lowest terms. (I) Use appropriate math terminology. (R) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
D. Demonstrate the ability to round numbers.	<ul style="list-style-type: none"> • Use models to represent the process of rounding numbers. (R) • Develop and/or use an algorithm for rounding whole numbers, fractions and decimals. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
D. Demonstrate the ability to round numbers.	<ul style="list-style-type: none"> • Round whole numbers to the nearest million and decimals through hundredths. (M) (PSSA) 		
D. Demonstrate the ability to round numbers.	<ul style="list-style-type: none"> • Round fractions to 0, $\frac{1}{2}$ or 1 and round decimals to the nearest whole number, tenth (R) or hundredth. (I) • Round to estimate sums, differences, products or quotients. (R) 		
D. Demonstrate the ability to round numbers.	<ul style="list-style-type: none"> • Use estimation to solve problems involving whole numbers and/or decimals (up to 2-digit multiples, single-digit division or multiples of 10; whole numbers to thousands and decimals to hundredths.) (PSSA) 		
D. Demonstrate the ability to round numbers.	<ul style="list-style-type: none"> • Use rounding as a mental estimation strategy to determine reasonableness of results. (I) • Round to an indicated place value. (M) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
E. Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Use real-life situations that require estimation and discuss ways to predict results. (I) • Predict the results of a problem involving number operations. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
E. Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Use estimation for deductive and inductive reasoning. (I) 		
E. Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Apply the standard estimation and mental math strategies of Compatible Numbers, Breaking Numbers Apart, Front-End Estimation, and Round Numbers. (M) 		
E. Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers.	<ul style="list-style-type: none"> • Recognize when an estimate is appropriate and justify reasoning. (I) 		
F. Demonstrate skills for using fraction calculators to verify conjectures, confirm computations and explore complex problem-solving situations.	<ul style="list-style-type: none"> • Recognize the components of the fraction calculator. (M) • Use a fraction calculator to perform standard algorithms. (M) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
F. Demonstrate skills for using fraction calculators to verify conjectures, confirm computations and explore complex problem-solving situations.	<ul style="list-style-type: none"> Use a fraction calculator to judge the reasonableness of solutions. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
G. Apply estimation strategies to a variety of problems involving time and money.	<ul style="list-style-type: none"> Round money and time to the nearest dollar and hour. (R) Use rounding, front-end estimation, and compatible numbers to estimate in a variety of problems. (R) 		
G. Apply estimation strategies to a variety of problems involving time and money.	<ul style="list-style-type: none"> Decide if the solution requires an exact or approximate result. (M) Use strategies as a tool for judging reasonableness. (R) 		
H. Explain multiplication and division algorithms.	<ul style="list-style-type: none"> Identify prime factors and multiples. (I) Identify factors. (R) Multiply mentally (e.g., 56×1000, 300×50). (M) 		
H. Explain multiplication and division algorithms.	<ul style="list-style-type: none"> Model multiplication problems with pictures, diagrams, or manipulatives. (R) Model division problems with pictures, diagrams, or manipulatives. (R) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
H. Explain multiplication and division algorithms.	<ul style="list-style-type: none"> Explain the inverse relationship between the two operations. (R) Use the distributive property to explain the multiplication algorithm. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
H. Explain multiplication and division algorithms.	<ul style="list-style-type: none"> Explain algorithms by discussing and listing steps taken while modeling multiplication and division problems. (R) Check and explain answers. (R) 		
H. Explain multiplication and division algorithms	<ul style="list-style-type: none"> Use trial divisors to determine reasonable quotients. (R) Make generalizations from patterns or sets of examples from multiplication and division models. (R) 		
I. Select a method for computation and explain why it is appropriate.	<ul style="list-style-type: none"> Develop and apply a variety of strategies to solve problems and verify and interpret results. (R) 		
I. Select a method for computation and explain why it is appropriate.	<ul style="list-style-type: none"> Decide on the modes of problem representation: real situations, pictures or symbols. (R) 		

Strand 2.2 Computation and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
I. Select a method for computation and explain why it is appropriate.	<ul style="list-style-type: none"> Identify problem types: join, take away, part-whole, compare, total in all groups, number of groups, or number in each group. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
I. Select a method for computation and explain why it is appropriate.	<ul style="list-style-type: none"> Select methods of computing from mental math, estimation, paper/pencil, calculator or other forms of technology. (M) Determine if there is sufficient information to solve a problem. (R) 		
I. Select a method for computation and explain why it is appropriate.	<ul style="list-style-type: none"> Identify missing or extraneous data in a problem. (R) Determine if there is a need for multiple solutions. (R) 		
I. Select a method for computation and explain why it is appropriate.	<ul style="list-style-type: none"> Select a strategy based on reasoning for the greatest ease of computational fluency. (R) Make calculations and check the validity of the results from the context of the problem. (R) 		
I. Select a method for computation and explain why it is appropriate.	<ul style="list-style-type: none"> Share a selected strategy by discussing the advantages of an exact or approximate solutions. (R) Determine if estimation is needed in solving a problem. (M) 		

Strand 2.3 Measurement and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time and temperature.	<ul style="list-style-type: none"> • Explain the structure and use of systems of measurement. (R) • Recognize a need for standard unit of measurement. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time and temperature.	<ul style="list-style-type: none"> • Select units of measurement appropriate to the attribute being measured. (R) • Use the measurement of length and width to determine perimeter, volume, and area. (I) 		
A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time and temperature.	<ul style="list-style-type: none"> • Use cubic units of length to determine volume. (I) • Use square units of length to determine area. (I) 		
A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time and temperature.	<ul style="list-style-type: none"> • Determine the correct metric and customary units/symbols for length, capacity, weight, and temperature, perimeter, and area. (R) (PSSA) 		
A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time and temperature.	<ul style="list-style-type: none"> • Describe the relationship between and among customary and metric units of measurement. (I) • Tell time to the minute using an analog clock. (R) 		

Strand 2.3 Measurement and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time and temperature.	<ul style="list-style-type: none"> Determine an amount of elapsed time in hours and minutes beyond 24. (M) Explain the relationship between minutes, hours and days using digital and analog clocks. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Select and use appropriate instruments and units for measuring quantities such as perimeter, volume, area, weight, time and temperature.	<ul style="list-style-type: none"> Explain the relationship between days, weeks, months and years using a calendar. (R) 		
B. Select and use standard tools to measure the size of figures with specified accuracy, including length, width, perimeter and area.	<ul style="list-style-type: none"> Use a ruler and meter stick as the standard tool for measuring length and width in the customary and metric systems to the nearest eighth of an inch or nearest millimeter. (M) (PSSA) 		
B. Select and use standard tools to measure the size of figures with specified accuracy, including length, width, perimeter and area.	<ul style="list-style-type: none"> Use standard formulas for finding perimeter, area, and volume. (R) (PSSA) Use standard tools for measuring liquid capacity in the customary and metric system. (R) 		
B. Select and use standard tools to measure the size of figures with specified accuracy, including length, width, perimeter and area.	<ul style="list-style-type: none"> Use standard tools for measuring weight in the customary and metric system. (R) Read a thermometer to measure temperature using the Fahrenheit and Celsius scales. (R) 		

Strand 2.3 Measurement and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Select and use standard tools to measure the size of figures with specified accuracy, including length, width, perimeter and area.	<ul style="list-style-type: none"> • Use a variety of customary and metric measurements. (R) • Read negative numbers on a thermometer. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Estimate, refine and verify specified measurements of objects.	<ul style="list-style-type: none"> • Recognize when an estimate is appropriate. (R) • Select and use benchmarks to estimate customary and metric measurements. (I) 		
C. Estimate, refine and verify specified measurements of objects.	<ul style="list-style-type: none"> • Use an organized approach, appropriate estimation strategies and technology to refine and verify measurements. (R) 		
C. Estimate, refine and verify specified measurements of objects.	<ul style="list-style-type: none"> • Estimate which polygon (shown) has a greater perimeter or area. • Estimate and/or compare the area of an irregular figure(s) shown on a grid. (PSSA) 		
C. Estimate, refine and verify specified measurements of objects.	<ul style="list-style-type: none"> • Use standard instruments to estimate and measure length, capacity, weight, and temperature. (M) 		

Strand 2.3 Measurement and Estimation		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
D. Convert linear measurements within the same system.	<ul style="list-style-type: none"> Make conversions between 2 units within the customary and 2 metric systems. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
E. Add and subtract measurements. Solve problems involving weight, time, temperature, length, capacity, mass or money.	<ul style="list-style-type: none"> Convert all numerical measurements to the same units within the same system, metric and customary (Metric: mm, cm, m, km; ML, L; g, kg. Customary: cup, pint, quart, gallon, in, ft, yd; lb). (M) (PSSA) 		
E. Add and subtract measurements. Solve problems involving weight, time, temperature, length, capacity, mass or money.	<ul style="list-style-type: none"> Add or subtract number measurements using common units (including but not limited to inches and feet; hours and minutes.) (M) (PSSA) 		

Strand 2.4 Mathematical Reasoning and Connections		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Compare quantities and magnitudes of numbers.	<ul style="list-style-type: none"> Order a set of integers, fractions, decimals, and/or percents. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Compare quantities and magnitudes of numbers.	<ul style="list-style-type: none"> Use $>$, $<$, and $=$ when comparing quantities (whole numbers through 9 digits, fractions, decimals, percents). (M) (PSSA) 		
B. Use models, number facts, properties and relationships to check and verify predictions and explain reasoning.	<ul style="list-style-type: none"> Analyze mathematical situations using manipulatives, technology, patterns, relationships and proportional reasoning. (R) 		
B. Use models, number facts, properties and relationships to check and verify predictions and explain reasoning.	<ul style="list-style-type: none"> Use a rule or generalization to determine if it verifies the prediction. (R) 		
B. Use models, number facts, properties and relationships to check and verify predictions and explain reasoning.	<ul style="list-style-type: none"> Justify answers and mathematical strategies as reasonable using objects, drawings, lists, graphs, charts and tables. (R) 		

Strand 2.4 Mathematical Reasoning and Connections		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Use models, number facts, properties and relationships to check and verify predictions and explain reasoning.	<ul style="list-style-type: none"> Use models, number facts, properties and relationships to check and verify predictions and explain reasoning. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Draw inductive and deductive conclusions within mathematical contexts.	<ul style="list-style-type: none"> Draw logical conclusions about mathematical situations. (R) Recognize patterns based on data. (R) 		
C. Draw inductive and deductive conclusions within mathematical contexts.	<ul style="list-style-type: none"> Make predictions from available information. (R) Draw inductive and deductive conclusions within mathematical contexts. (M) 		
D. Distinguish between relevant and irrelevant information in a mathematical problem.	<ul style="list-style-type: none"> Identify information that is relevant to solving a problem. (R) Identify missing information needed to obtain a solution. (R) Identify excess information not needed. (R) 		
E. Interpret statements made with precise language of logic.	<ul style="list-style-type: none"> Interpret the language used in statements of logic to determine the relationship between variables and mathematical concepts. (M) 		

Strand 2.4 Mathematical Reasoning and Connections		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
F. Use statistics to quantify issues in social studies.	<ul style="list-style-type: none"> Use statistics and other data to demonstrate pros and cons of issues in social studies, science, and other disciplines. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
F. Use statistics to quantify issues in social studies.	<ul style="list-style-type: none"> Use mean, median, mode, and range to explain data. (M) 		

Strand 2.5 Mathematical Problem solving and Communications		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Develop a plan to analyze a problem, identify the information needed to solve the problem, carry out the plan, check whether an answer makes sense and explain how the problem was solved.	<ul style="list-style-type: none"> Analyze the problem by identifying the problem type. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Develop a plan to analyze a problem, identify the information needed to solve the problem, carry out the plan, check whether an answer makes sense and explain how the problem was solved.	<ul style="list-style-type: none"> Determine if a single solution, multiple solutions or an estimated solution is required. (R) Prioritize data. (R) 		
A. Develop a plan to analyze a problem, identify the information needed to solve the problem, carry out the plan, check whether an answer makes sense and explain how the problem was solved.	<ul style="list-style-type: none"> Look for patterns that develop in data. (R) Select an appropriate method of computation. (R) Check solutions. (R) 		
B. Use appropriate mathematical terms, vocabulary, language symbols and graphs to explain clearly and logically solutions to problems.	<ul style="list-style-type: none"> Explain the relationship of manipulatives, pictures, diagrams and symbols to mathematical ideas. (R) 		
B. Use appropriate mathematical terms, vocabulary, language symbols and graphs to explain clearly and logically solutions to problems.	<ul style="list-style-type: none"> Represent data in a list, table or graph to communicate mathematical ideas. (R) Maintain a list of mathematical terms with definitions. (R and I) 		

Strand 2.5 Mathematical Problem solving and Communications		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Use appropriate mathematical terms, vocabulary, language symbols and graphs to explain clearly and logically solutions to problems.	<ul style="list-style-type: none"> Discuss, read and write about mathematical ideas using appropriate symbols and terminology. (R and I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
B. Use appropriate mathematical terms, vocabulary, language symbols and graphs to explain clearly and logically solutions to problems.	<ul style="list-style-type: none"> Use appropriate mathematical terms, vocabulary, language symbols and graphs to explain clearly and logically solutions to problems. (M) 		
C. Show ideas in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams and models.	<ul style="list-style-type: none"> Use equations, charts, tables, graphs, pictures, and drawings to model and solve problems. (M) 		
D. Connect, extend and generalize problem solutions to other concepts, problems and circumstances in mathematics.	<ul style="list-style-type: none"> Develop generalizations of the results obtained and apply them in other problem-solving situations. (R) Formulate problems from everyday and mathematical situations. (R) 		
D. Connect, extend and generalize problem solutions to other concepts, problems and circumstances in mathematics.	<ul style="list-style-type: none"> Connect, extend and generalize problem solutions to other concepts, problems and circumstances in mathematics. (M) 		

Strand 2.5 Mathematical Problem solving and Communications		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
E. Select, use and justify the methods, materials and strategies used to solve problems.	<ul style="list-style-type: none"> Use a variety of methods to explain strategies and materials used to solve problems, including words, numbers, symbols, charts, graphs, diagrams and models. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
F. Use appropriate problem-solving strategies	<ul style="list-style-type: none"> Select a problem- solving strategy based on the context of the situation (e.g., “Guess and Check”, “Look for a Pattern”, “Simplify the Problem”, “Draw a Picture”, “Make a Systematic List”, and “Working Backwards”). (R) 		

Strand 2.6 Statistics and Data Analysis		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Organize and display data using pictures, tallies, tables, charts, bar graphs and circle graphs.	<ul style="list-style-type: none"> • Generate data using questionnaires and surveys. (M) • Use a tally chart to organize data that shows quantity. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Organize and display data using pictures, tallies, tables, charts, bar graphs and circle graphs.	<ul style="list-style-type: none"> • Create graphs including the critical attributes of each representation: headings, x-axis, y-axis, labels, and scales. (R) (PSSA) 		
A. Organize and display data using pictures, tallies, tables, charts, bar graphs and circle graphs.	<ul style="list-style-type: none"> • Generate a table to display data for organizing, controlling errors and identifying patterns. (I) (PSSA) 		
A. Organize and display data using pictures, tallies, tables, charts, bar graphs and circle graphs.	<ul style="list-style-type: none"> • (Optional) Use a spreadsheet to organize and order data, perform computations and create a variety of representations of the data. (I) 		
A. Organize and display data using pictures, tallies, tables, charts, bar graphs and circle graphs.	<ul style="list-style-type: none"> • Create line graphs and circle graphs. (M) (PSSA) • Create a circle graph (include a center point and tic marks-data can be based on a 100 using percent. 		

Strand 2.6 Statistics and Data Analysis		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Describe data sets using mean, median, mode and range.	<ul style="list-style-type: none"> Determine the mean, median, mode, and range for a set of data using a standard algorithm. (M) (PSSA) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Sort data using Venn diagrams.	<ul style="list-style-type: none"> Show similarities and differences between sets of data involving 3 attributes using Venn diagrams. (M) (PSSA) Compare multiple sets of data using Venn diagrams. (I) (PSSA) 		
D. Predict the likely number of times a condition will occur based on analyzed data.	<ul style="list-style-type: none"> Make a prediction of the number of times a condition may occur using terms that include: likely (>50%), unlikely (<50%), certain (100%), equally likely and impossible. (I) 		
D. Predict the likely number of times a condition will occur based on analyzed data.	<ul style="list-style-type: none"> Predict the likely number of times a condition will occur based on analyzed data. (M) 		
E. Construct and defend simple conclusions based on data.	<ul style="list-style-type: none"> Propose and justify conclusions and predictions that are based on data. (M) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Perform simulations with concrete devices to predict the chance of an event occurring.	<ul style="list-style-type: none"> Explain that probability is a measure of the likelihood that an event will happen. (R) Define the event as an outcome. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Perform simulations with concrete devices to predict the chance of an event occurring.	<ul style="list-style-type: none"> Define sample space as a list of all possible outcomes. (R) Perform simulations with concrete devices (e.g., dice, spinner, etc.) to predict the chance of an event occurring. 		
A. Perform simulations with concrete devices to predict the chance of an event occurring.	<ul style="list-style-type: none"> Explain that the measure of probability can be expressed by a number from 0 to 1. (M) Construct a table or list of all possible outcomes for an event. (M) 		
A. Perform simulations with concrete devices to predict the chance of an event occurring.	<ul style="list-style-type: none"> Analyze the results of the possible outcomes listed when using concrete devices. (M) 		
B. Determine the fairness of the design of a spinner.	<ul style="list-style-type: none"> Provide a spinner's sample space. (R) Calculate the probability for each outcome in the sample space and express as a fraction. (M) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Determine the fairness of the design of a spinner.	<ul style="list-style-type: none"> Determine the fairness of the spinner if the probability produced equally likely outcomes. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
B. Determine the fairness of the design of a spinner.	<ul style="list-style-type: none"> Determine the unfairness of the spinner if the probability produced unlikely outcomes. (R) 		
B. Determine the fairness of the design of a spinner.	<ul style="list-style-type: none"> Conduct an experiment and use the results to make a prediction about the spinner's fairness. (M) 		
C. Express probabilities as fractions and decimals.	<ul style="list-style-type: none"> Determine the probability of an outcome (e.g., coin toss, roll of a number cube) and express as a fraction. (PSSA) 		
C. Express probabilities as fractions and decimals.	<ul style="list-style-type: none"> Represent probability numerically as a ratio, decimal, and percent. (M) Convert the probability fraction to an equivalent decimal and percent. (M) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
C. Express probabilities as fractions and decimals.	<ul style="list-style-type: none"> Use the context of the probability application to determine the numerical representation (fraction/ratio, decimal, percent). (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
D. Compare predictions based on theoretical probability and experimental results.	<ul style="list-style-type: none"> Define theoretical probability as the predicted probability based on data found in the sample space. (I) 		
D. Compare predictions based on theoretical probability and experimental results.	<ul style="list-style-type: none"> Calculate the theoretical probability for each outcome and express as a fraction/ratio, decimal, percent. (I) Organize the theoretical probability data using a table. (I) 		
D. Compare predictions based on theoretical probability and experimental results.	<ul style="list-style-type: none"> Define experimental results as data generated by completing a trial or experiment. (I) 		
D. Compare predictions based on theoretical probability and experimental results.	<ul style="list-style-type: none"> Record experimental data for each trial using a table. (I) Observe what happens to the data as the number of flips increases. (I) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
D. Compare predictions based on theoretical probability and experimental results.	<ul style="list-style-type: none"> Compare predictions with the theoretical and experimental results. (I) Use probability data to justify conclusions. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
D. Compare predictions based on theoretical probability and experimental results.	<ul style="list-style-type: none"> Compare predictions based on theoretical probability and experimental results. (M) 		
E. Calculate the probability of a simple event.	<ul style="list-style-type: none"> Conduct a probability investigation using a spinner, die, coin, etc. (R) 		
E. Calculate the probability of a simple event	<ul style="list-style-type: none"> Use data to develop and justify the reasonableness of the probability calculations. (M) Calculate the probability of a simple event. (M) 		
F. Determine patterns generated as a result of an experiment.	<ul style="list-style-type: none"> Recognize patterns found in data using tables, tree diagrams or graphs. (I) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
F. Determine patterns generated as a result of an experiment.	<ul style="list-style-type: none"> Recognize that an increase in the number of experimental trials generates probability data closer to the theoretical predictions. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
F. Determine patterns generated as a result of an experiment.	<ul style="list-style-type: none"> Determine patterns generated as a result of an experiment. (M) 		
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> Explain that probability problems that use the word “and” involve an event made up of two separate events where the outcome of the second event is dependent on the (CONTINUED) 		
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> first (e.g., Using a jar of 4 red and 6 blue marbles, calculate the probability of Bob drawing a blue marble and Mary drawing a red one.). (M) 		
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> Calculate the probability of events involving “and” by multiplying the probability of each event. (M) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> Explain that probability problems that use the word “or” involve two independent events when only one or the other event will occur (CONTINUED) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> (e.g., Using a jar of 4 red and 6 blue marbles, calculate the probability of Bob drawing a blue marble or a red marble.). (M) 		
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> Calculate the probability of events involving “or” by adding the probabilities of each event. (M) 		
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> Understand probability problems that use the word “not” involve a separate event made up of two or more events where the outcome of the second event is dependent on the first (CONTINUED) 		
G. Determine the probability of an event involving “ and ”, “ or ” or “ not ”.	<ul style="list-style-type: none"> (e.g., Using a jar of 4 red and 6 blue marbles, calculate the probability of Bob “not” drawing a blue marble.). (M) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
G. Determine the probability of an event involving “and”, “or” or “not”.	<ul style="list-style-type: none"> Calculate the probability of events involving “not” by subtracting the probabilities of each event. (M) Determine the probability of an event involving “and”, “or”, or “not.” (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
H. Predict and determine why some outcomes are certain, more likely, less likely, equally likely or impossible.	<ul style="list-style-type: none"> Compare the likelihood of events in terms of certain, more likely, less likely, equally likely, or impossible based on the theoretical probability of the sample space. (M) (PSSA) 		
H. Predict and determine why some outcomes are certain, more likely, less likely, equally likely or impossible.	<ul style="list-style-type: none"> Use appropriate information and logical reasoning to determine the chance an outcome will occur. (M) 		
I. Find all possible combinations and arrangements involving a limited number of variables.	<ul style="list-style-type: none"> Explain combination as two or more events occurring together and when order is not important. (I) 		
I. Find all possible combinations and arrangements involving a limited number of variables.	<ul style="list-style-type: none"> Explain arrangement as a special way of organizing or ordering variables or concepts. (I) 		

Strand 2.7 Probability and Predictions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
I. Find all possible combinations and arrangements involving a limited number of variables.	<ul style="list-style-type: none"> Determine as many possible outcomes of combinations and arrangements using data from lists, tables, graphs, and tree diagrams. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
I. Find all possible combinations and arrangements involving a limited number of variables.	<ul style="list-style-type: none"> Find all possible combinations and arrangements involving a limited number of variables. (I) (PSSA) 		
J. Make a tree diagram and list the elements in the sample space.	<ul style="list-style-type: none"> Use a tree diagram as a means of representing combinations of two or more events. (I) 		
J. Make a tree diagram and list the elements in the sample space.	<ul style="list-style-type: none"> Use a tree diagram to determine the probability of multiple event outcomes. (I) Make a tree diagram and list the elements in the sample space. (M) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Determine the pattern in a given set of numbers and extend the numbers in the pattern (to at least 3 or more numbers. (R) (PSSA) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Determine a geometric pattern and extend it to 3 repetitions. (PSSA) 		
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Explain the pattern used in a set of numbers and what the next number in the pattern would be and why. (M) 		
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Create and describe a pattern of numbers or a geometric pattern (to 3 repetitions). (I) (PSSA) 		
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Recognize patterns using tables, words, calculators, equations and graphs to generalize about a mathematical idea. (I) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Use concrete objects to make generalizations about determining all possible pattern combinations. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Use invented notation, standard symbols or variables to express a pattern, generalization or mathematical situation. (I) 		
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Identify patterns and functions from statistical data and predict future outcomes. (I) 		
A. Recognize, reproduce, extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically and graphically, using a variety of materials.	<ul style="list-style-type: none"> Discover patterns used throughout all realms of mathematics and verbally describe the patterns. (I) 		
B. Connect patterns to geometric relations and basic number skills.	<ul style="list-style-type: none"> Discover and identify patterns used in geometry such as lines of symmetry. (M) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Connect patterns to geometric relations and basic number skills.	<ul style="list-style-type: none"> Discover and identify patterns used in geometry such as faces, vertices and edges of space figures, angle measurements of polygons, circumference and pi, etc. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
B. Connect patterns to geometric relations and basic number skills.	<ul style="list-style-type: none"> Identify, create, describe and generalize about geometric patterns and their numerical equivalents (CONTINUED) 		
B. Connect patterns to geometric relations and basic number skills.	<ul style="list-style-type: none"> (e.g., triangular numbers, perfect squares, exponents, powers of ten, sequencing, manipulatives) and express each mathematically in words and symbols. (I) 		
C. Form rules based on patterns.	<ul style="list-style-type: none"> Create and analyze rules based on patterns. (R) 		
C. Form rules based on patterns.	<ul style="list-style-type: none"> Use the correct order of operation when solving an equation. (Use the mnemonic device: <u>P</u>lease <u>E</u>xcuse <u>M</u>y <u>D</u>ear <u>A</u>unt <u>S</u>ally.) (I) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
C. Form rules based on patterns.	<ul style="list-style-type: none"> Solve for a missing number (blank, question mark, variable in an equation involving a single operation). (PSSA) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Form rules based on patterns.	<ul style="list-style-type: none"> Combine like terms when solving an equation. (I) 		
C. Form rules based on patterns.	<ul style="list-style-type: none"> Demonstrate that adding, subtracting, multiplying, and dividing the same value to each side of an equation is essential to maintain its equality. (I) 		
C. Form rules based on patterns.	<ul style="list-style-type: none"> Identify and use an equation's inverse operation to solve for the numerical value of the variable found in the equation. (I) (PSSA) 		
C. Form rules based on patterns.	<ul style="list-style-type: none"> Create a new equation, using the inverse operation, with all known numbers and operations equaling the variable. (I) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
C. Form rules based on patterns.	<ul style="list-style-type: none"> • Write a rule for a function table. (I) (PSSA) • Form rules based on patterns (e.g., an equation that relates pairs in a sequence). (I) (PSSA) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
D. Use concrete objects and combinations of symbols and numbers to create expressions that model mathematical situations.	<ul style="list-style-type: none"> • Recognize the fraction bar is also a symbol for division. (M) 		
D. Use concrete objects and combinations of symbols and numbers to create expressions that model mathematical situations.	<ul style="list-style-type: none"> • Investigate and describe a variable as a symbol that represents an unknown number in an expression. (M) 		
D. Use concrete objects and combinations of symbols and numbers to create expressions that model mathematical situations.	<ul style="list-style-type: none"> • Explain that an expression is a mathematical statement that may use numbers, variables or both. (M) 		
D. Use concrete objects and combinations of symbols and numbers to create expressions that model mathematical situations	<ul style="list-style-type: none"> • Convert word problems to equations and key words to symbols of operation to solve a real-world problem. (I) (PSSA) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
E. Explain the use of combinations of symbols and numbers in expressions, equations and inequalities.	<ul style="list-style-type: none"> Use manipulatives and combinations of symbols and numbers to create expressions that model mathematical situations. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
E. Explain the use of combinations of symbols and numbers in expressions, equations and inequalities.	<ul style="list-style-type: none"> Demonstrate the use of order of operations. (Use mnemonic device: <u>P</u>lease <u>E</u>xcuse <u>M</u>y <u>D</u>ear <u>A</u>unt <u>S</u>ally.) (I) 		
E. Explain the use of combinations of symbols and numbers in expressions, equations and inequalities.	<ul style="list-style-type: none"> Substitute values for variables in a formula and evaluate solutions. (M) Express mathematical relationships using equations and inequalities. (I) 		
E. Explain the use of combinations of symbols and numbers in expressions, equations and inequalities.	<ul style="list-style-type: none"> Use variable notation and equations to represent thinking. (I) 		
F. Describe a realistic situation using information given in equations, inequalities, tables or graphs.	<ul style="list-style-type: none"> Describe and develop a real-world problem based on given equations, inequalities, tables, or graphs. (R) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
G. Select and use appropriate strategies, including concrete materials, to solve number sentences and explain the method of solution.	<ul style="list-style-type: none"> Construct and solve number sentences using a variable to represent an unknown number. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
G. Select and use appropriate strategies, including concrete materials, to solve number sentences and explain the method of solution.	<ul style="list-style-type: none"> Develop probable strategies to represent and solve problems including the use of manipulatives. (R) Use operation and number properties to solve equations. (R) 		
G. Select and use appropriate strategies, including concrete materials, to solve number sentences and explain the method of solution.	<ul style="list-style-type: none"> Apply the strategy of “Combining Like Terms” to solve an equation with greater fluency. (I) 		
H. Locate and identify points on a coordinate grid system. (PSSA)	<ul style="list-style-type: none"> Recognize that the coordinate grid is another means of representing data in a useful and beneficial way. (R) 		
H. Locate and identify points on a coordinate grid system. (PSSA)	<ul style="list-style-type: none"> Identify the critical attributes of the coordinate grid: horizontal or <i>x-axis</i> and vertical or <i>y-axis</i> using appropriate scaling. (R) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
H. Locate and identify points on a coordinate grid system. (PSSA	<ul style="list-style-type: none"> Identify an ordered pair as two numbers listed in a set of parentheses; the first number or coordinate identifies a point on the <i>x-axis</i> while the second coordinate identifies a point on the <i>y-axis</i>. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
H. Locate and identify points on a coordinate grid system. (PSSA	<ul style="list-style-type: none"> Locate, plot and/or identify points on a coordinate grid (e.g. a minimum of Quadrant 1 using intervals of 1-up to 20 x 20 grid. 		
I. Generate functions from tables of data and relate data to corresponding graphs and functions	<ul style="list-style-type: none"> Identify function as an important relationship between variables expressed in a table, graph or formula. (I) Identify numeric patterns from tables and graphs as ordered pairs. (I) 		
I. Generate functions from tables of data and relate data to corresponding graphs and functions	<ul style="list-style-type: none"> Demonstrate how manipulating one variable in the pair creates the exact same change in the corresponding variable. (I) 		
I. Generate functions from tables of data and relate data to corresponding graphs and functions	<ul style="list-style-type: none"> Determine that the relationship between an ordered pair demonstrates how one variable is able to determine the value of the other. (I) 		

Strand 2.8 Algebra and Functions		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
I. Generate functions from tables of data and relate data to corresponding graphs and functions	<ul style="list-style-type: none"> Organize and extend the analysis of the data using a graph or table. (I) Determine that the graph or table of the ordered pairs clearly indicates rates of change. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
I. Generate functions from tables of data and relate data to corresponding graphs and functions	<ul style="list-style-type: none"> Generate and solve simple functions by identifying and applying addition, subtraction, multiplication and division patterns. (M) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Give formal definitions of geometric figures.	<ul style="list-style-type: none"> • Create a list of geometric figures. (R) • Identify, compare and analyze attributes of one-, two-, and three-dimensional figures and use vocabulary to describe the attributes. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Give formal definitions of geometric figures.	<ul style="list-style-type: none"> • Identify the critical attributes of plane figures (trapezoid, rhombus, parallelogram, scalene, isosceles, equilateral). (M) 		
A. Give formal definitions of geometric figures.	<ul style="list-style-type: none"> • Identify plane figures with three or more sides by name including: triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons, nonagons, and decagons. (M) 		
A. Give formal definitions of geometric figures.	<ul style="list-style-type: none"> • Create models of geometric figures. (R) • Locate geometric figures in the environment. (R) 		
A. Give formal definitions of geometric figures.	<ul style="list-style-type: none"> • Classify polygons based on the number of sides and degrees. (M) • Analyze the relationship between the number of sides in a polygon and total number of degrees of all the angles. (I) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Give formal definitions of geometric figures.	<ul style="list-style-type: none"> Identify the critical attributes of polyhedron and other three-dimensional figures, including faces, vertices, and edges (cubes, rectangular, prisms, and pyramids) (R) (PSSA) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
B. Classify and compare triangles and quadrilaterals according to sides or angles.	<ul style="list-style-type: none"> Identify/classify/compare triangles and quadrilaterals according to sides (length, parallel or perpendicular) and angles. (CONTINUED) 		
B. Classify and compare triangles and quadrilaterals according to sides or angles.	<ul style="list-style-type: none"> (e.g., quadrilaterals: square, rectangle, rhombus, parallelogram, and trapezoid; triangles: equilateral, scalene, isosceles, acute, obtuse, and right. (PSSA) 		
B. Classify and compare triangles and quadrilaterals according to sides or angles.	<ul style="list-style-type: none"> Identify and analyze the critical attributes of each geometric figure (number of sides and angles and measurement of sides and angles) by observing the similarities and differences. (M) (PSSA) 		
B. Classify and compare triangles and quadrilaterals according to sides or angles.	<ul style="list-style-type: none"> Classify angles as right, straight, acute or obtuse as determined by degrees of measurement. (M) Identify angle types by comparing estimates with actual measurements. (M) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
B. Classify and compare triangles and quadrilaterals according to sides or angles.	<ul style="list-style-type: none"> Draw, measure and classify angles using a protractor and label the measurement in degrees. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
B. Classify and compare triangles and quadrilaterals according to sides or angles.	<ul style="list-style-type: none"> Recognize that the sum of all angles in a triangle must equal 180°. (M) Recognize that the sum of all angles in a quadrilateral must equal 360°. (M) 		
C. Identify and measure circles, their diameters and their radii.	<ul style="list-style-type: none"> Draw circles given the dimension of the diameter using a compass. (I) Define a circle. (R) 		
C. Identify and measure circles, their diameters and their radii.	<ul style="list-style-type: none"> Identify the critical attributes of a circle: diameter, radius, and chord. (M) (PSSA) 		
C. Identify and measure circles, their diameters and their radii.	<ul style="list-style-type: none"> Determine the relationship between the diameter and radius of a circle and compute the diameter given the radius or vice versa. (M) (PSSA) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
C. Identify and measure circles, their diameters and their radii.	<ul style="list-style-type: none"> Discover and express the numerical value of π. (I) Identify the appropriate symbol for π. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
C. Identify and measure circles, their diameters and their radii.	<ul style="list-style-type: none"> Develop models to calculate circumference and area of a circle. (I) Measure the circumference of everyday objects using the standard formula: $C = \pi \times d$ or $C = \pi 2r$. (I) 		
C. Identify and measure circles, their diameters and their radii.	<ul style="list-style-type: none"> Measure the area of a circle and everyday objects using the formula $A = \pi r^2$. (I) Identify circles in the real world. (R) 		
D. Describe in words how geometric shapes are constructed.	<ul style="list-style-type: none"> Describe in words how geometric shapes are constructed. (M) 		
E. Construct two- and three-dimensional shapes and figures using manipulatives, geoboards and computer software.	<ul style="list-style-type: none"> Build and create geometric objects using manipulatives, geoboards, and technology. Students may also use coordinate grids, nets, and measurement tools. (R) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
E. Construct two- and three-dimensional shapes and figures using manipulatives, geoboards and computer software.	<ul style="list-style-type: none"> Construct two- and three-dimensional shapes and figures using manipulatives, geoboards and computer software. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
F. Find familiar solids in the environment and describe them.	<ul style="list-style-type: none"> Locate and describe familiar solids in the real world. (M) 		
G. Create an original tessellation.	<ul style="list-style-type: none"> Analyze and generalize geometric patterns, such as tessellations and sequences of shapes. (M) 		
G. Create an original tessellation.	<ul style="list-style-type: none"> Create an original tessellation. (M) Recognize tessellations in the real world. (M) 		
H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.	<ul style="list-style-type: none"> Introduce area of triangles and other quadrilaterals. (I) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.	<ul style="list-style-type: none"> Use and make models to develop formulas and understand relationships between formulas for the area of squares and rectangles. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.	<ul style="list-style-type: none"> Master area and perimeter of square, rectangles. (R) Use and make models to develop strategies for measuring the area and circumference of a circle. (I) 		
H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.	<ul style="list-style-type: none"> Verbalize the difference between area of a triangle versus area of a quadrilateral. (I) Identify the height of a polygon as the line perpendicular to the base. (M) 		
H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.	<ul style="list-style-type: none"> Calculate all possible areas for a rectangle of a given perimeter. (M) Determine all possible perimeters for a rectangle of a given area. (M) 		
H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.	<ul style="list-style-type: none"> Discuss real-life situations in which calculating area and perimeter is essential. (R) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
H. Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles.	<ul style="list-style-type: none"> • Use appropriate units of measurement. (R) • Calculate perimeter and area of a triangle. (M) • Calculate perimeter and area of a circle. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
I. Represent and use the concepts of line, point and plane.	<ul style="list-style-type: none"> • Identify, draw, name and classify these concepts by attributes: planes, points, lines, line segments and rays. (R) (PSSA) 		
I. Represent and use the concepts of line, point and plane.	<ul style="list-style-type: none"> • Use symbols to identify each concept (point, line segment, line, ray, angle, plane, parallel, and perpendicular).(M) 		
I. Represent and use the concepts of line, point and plane.	<ul style="list-style-type: none"> • Identify and draw horizontal, vertical, parallel, perpendicular and intersecting lines. (M) • Identify geometric relationships between points, lines, line segments, rays and planes. (M) 		
J. Define the basic properties of squares, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles, triangles, cubes, prisms, spheres and cylinders.	<ul style="list-style-type: none"> • Define the basic properties of a polyhedron by its critical attributes. (M) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
J. Define the basic properties of squares, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles, triangles, cubes, prisms, spheres and cylinders.	<ul style="list-style-type: none"> Define the basic properties of a polygon. (R) Identify a pyramid or prism by the shape and number of its bases. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
K. Analyze simple transformations of geometric figures and rotations of line segments.	<ul style="list-style-type: none"> Explore transformations of geometric figures using models, pictures and other representations. (M) 		
K. Analyze simple transformations of geometric figures and rotations of line segments.	<ul style="list-style-type: none"> Describe or draw the results of flipping, rotating, sliding and reflecting two-dimensional figures using visualization. (R) (PSSA) 		
K. Analyze simple transformations of geometric figures and rotations of line segments.	<ul style="list-style-type: none"> Distinguish whether a slide, flip, turn, or a combination of the three has been performed when given two figures to analyze. (M) (PSSA) 		
L. Identify properties of geometric figures.	<ul style="list-style-type: none"> Define the geometric properties of diagonal, chord, radius, and diameter. (M) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
L. Identify properties of geometric figures.	<ul style="list-style-type: none"> Define the geometric properties of parallel, perpendicular, similar, congruent, symmetry, face, edge, vertex, angle, etc. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
L. Identify properties of geometric figures.	<ul style="list-style-type: none"> Recognize the properties of geometric figures and use the appropriate symbols including point, line, line segment, parallel lines, perpendicular lines, ray, (CONTINUED) 		
L. Identify properties of geometric figures.	<ul style="list-style-type: none"> diagonals, triangles, angles, congruency, similarity, symmetry, etc. (M) 		
L. Identify properties of geometric figures.	<ul style="list-style-type: none"> Recognize lines of symmetry in the real world. (R) Draw and identify lines of symmetry in a two-dimensional figure. (PSSA) 		
L. Identify properties of geometric figures.	<ul style="list-style-type: none"> Describe relationships among geometric figures in terms of congruence, similarity or parallel/perpendicular sides. (R) 		

Strand 2.9 Geometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
L. Identify properties of geometric figures.	<ul style="list-style-type: none"> Recognize similar and congruent figures that have undergone a slide, flip, or turn. (R) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	

Strand 2.10 Trigonometry		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Identify and compare parts of right triangles, including right angles, acute angles, hypotenuses and legs.	<ul style="list-style-type: none"> Identify an obtuse angle. (M) Identify a right angle and acute angle. (R) Draw and measure a right angle, acute angle and obtuse angle. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Identify and compare parts of right triangles, including right angles, acute angles, hypotenuses and legs.	<ul style="list-style-type: none"> Define and identify a right triangle by its critical attributes: three sides, three angles (one right angle and two acute angles), a hypotenuse and two legs. (M) (PSSA) 		
A. Identify and compare parts of right triangles, including right angles, acute angles, hypotenuses and legs.	<ul style="list-style-type: none"> Determine the angle measurements of a right triangle with one given acute angle measurement. (M) Locate right triangles in the real world. (R) 		
B. Create right triangles on a geoboard.	<ul style="list-style-type: none"> Create right triangles on a geoboard. (M) 		

Strand 2.11 Concepts of Calculus		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
A. Make comparisons of numbers such as more, less, same, least, most, greater than and less than.	<ul style="list-style-type: none"> Compare and order a set of three integers, fractions, decimals or percents from greatest to least or least to greatest. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
A. Make comparisons of numbers such as more, less, same, least, most, greater than and less than.	<ul style="list-style-type: none"> Use the appropriate symbol for greater than, less than or equal when comparing integers, fractions, decimals or percents. (M) 		
B. Identify least and greatest values represented in bar and circle graphs.	<ul style="list-style-type: none"> Plot values on a graph. (I) Identify the quantity of the least and greatest value plotted on a circle and line graph. (M) 		
B. Identify least and greatest values represented in bar and circle graphs.	<ul style="list-style-type: none"> Analyze the graph including the greatest and least values to draw conclusions. (M) 		
C. Identify maximum and minimum.	<ul style="list-style-type: none"> Identify the maximum or largest value in a set of data. (R) Identify the minimum or smallest value in a set of data. (R) 		

Strand 2.11 Concepts of Calculus		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
C. Identify maximum and minimum.	<ul style="list-style-type: none"> Identify the maximum and minimum values on a graph. (R) Determine how the minimum and maximum values compare to the mean, median, and/or mode of a set of data. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
D. Describe the relationship between rates of change and time.	<ul style="list-style-type: none"> Identify and describe real-world situations with constant or varying rates of change and compare each type. (I) 		
D. Describe the relationship between rates of change and time.	<ul style="list-style-type: none"> Use a line or scatter-plot graph to describe the relationship between the x- and y-coordinates including how one affects the other (continued) 		
D. Describe the relationship between rates of change and time.	<ul style="list-style-type: none"> (e.g., the x-axis represent the distance three children live from school and the y-axis represent the time it takes the three children to walk to school). (I) 		
D. Describe the relationship between rates of change and time.	<ul style="list-style-type: none"> Use two variables, time and rate of change to plot data on a line or scatter-plot graph (e.g., a graph for a science experiment). (I) 		

Strand 2.11 Concepts of Calculus		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
D. Describe the relationship between rates of change and time.	<ul style="list-style-type: none"> Solve problems involving a constant rate of change (e.g., Words problems, graphs or data tables.) Describe the relationship between rates of change and time. (M) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
E. Estimate areas and volumes as the sums of areas of tiles and volumes of cubes.	<ul style="list-style-type: none"> Estimate the area or volume of a figure and explain the strategy or method used to obtain the reasonableness of the estimate. (I) 		
E. Estimate areas and volumes as the sums of areas of tiles and volumes of cubes.	<ul style="list-style-type: none"> Estimate areas and volumes as the sums of areas of tiles and volumes of cubes. (M) 		
F. Describe the relationship between the size of the unit of measurement and the estimate of the areas and volumes.	<ul style="list-style-type: none"> Use familiar benchmarks to select an appropriate customary or metric unit of measurement. (R) 		
F. Describe the relationship between the size of the unit of measurement and the estimate of the areas and volumes.	<ul style="list-style-type: none"> Determine the appropriate customary and/or metric unit of measurement to use when estimating the area or volume of a figure. (M) 		

Strand 2.11 Concepts of Calculus		Subject Area: Math	Grade: 5
PA Academic Standards	Performance Indicators	Assessment	
F. Describe the relationship between the size of the unit of measurement and the estimate of the areas and volumes.	<ul style="list-style-type: none"> Describe the relationship between the size of the measurement unit used and the area or volume estimate of the figure. (I) 	Teacher made tests and quizzes Chapter tests and quizzes Curriculum-based assessments Standardized tests Demonstrations Performance assessments Portfolios Research papers Essays Oral presentations Multi-medial presentations Experiments PSSA Assessment (PSSA) – Grade 5	
F. Describe the relationship between the size of the unit of measurement and the estimate of the areas and volumes.	<ul style="list-style-type: none"> Recognize that the larger the unit, the smaller the number of units used to fill an area or volume and vice versa. (M) 		

Adaptations/Modifications for Students with I.E.P.s

Adaptations or modifications to this planned course will allow exceptional students to earn credits toward graduation or develop skills necessary to make a transition from the school environment to community life and employment. The I.E.P. team has determined that modifications to this planned course will meet the student's I.E.P. needs.

Adaptations/Modifications may include but are not limited to:

INSTRUCTION CONTENT

- Modification of instructional content and/or instructional approaches
- Modification or deletion of some of the essential elements

SETTING

- Preferential seating

METHODS

- Additional clarification of content
- Occasional need for one to one instruction
- Minor adjustments or pacing according to the student's rate of mastery
- Written work is difficult, use verbal/oral approaches
- Modifications of assignments/testing
- Reasonable extensions of time for task/project completion
- Assignment sheet/notebook
- Modified/adjusted mastery rates
- Modified/adjusted grading criteria
- Retesting opportunities

MATERIALS

- Supplemental texts and materials
- Large print materials for visually impaired students
- Outlines and/or study sheets
- Carbonless notebook paper
- Manipulative learning materials
- Alternatives to writing (tape recorder/calculator)