PA Core Critical Concepts 1

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.1.4.B.1		Apply place-value concepts to show an understanding of multi-digit whole numbers.	Demonstrate an understanding that in multi-digit whole numbers (thru 1,000,000) a digit in one place represents ten times what it represents in the place to its right. Ex. Recognize in the number 770, the 7 in the hundreds place is 10x the 7 in the tens place.	Students will be able to model the 10-to-1 relationship among - value positions in the base-ten number system.	GoMath! 2015	digit place value period standard form
			Read and write whole numbers in expanded, standard, and word form thru 1,000,000.00	Students will be able to read and write whole numbers in standard form, word form, and expanded form.		word form expanded form
			Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using >, <, =	Students will be able to compare and order whole numbers based on the value of the digits in each number.		estimate sum
			Round multi-digit whole numbers (through 1,000,000) to any place.	Students will be able to round a whole number to any place.		difference regroup
2.1.4.B.2		Use place value understanding and properties of operations to perform multi-digit arithmetic.	Add/subtract multi-digit whole numbers (limit sums and subtrahends through 1,000,000)	Student will be able to add and subtract whole numbers.		inverse operations
			Multiply a whole number of up to four digits by a 1-digit whole number and multiply 2 two-digit numbers.	Students will be able to recite multiplication facts from memory with fluency.		number line factor
				Students will be able to compute multiplication problems using a variety of methods.	Harcourt (old) Text: Ch. 10 Lesson 2	product array

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2.2.4.A.1		Represent and solve problems using the 4 operations.	Estimate the answer to addition, subtraction, and multiplication problems using whole numbers thru 6 digits (for multiplication, no more than 2-digit x 1-digit, excluding powers of 10) Interpret a multiplication equation as a comparison; represent verbal statements of multiplicative comparisons as multiplication equations. Ex. Interpret 35 = 5 x 7 as a statement that 35 is 5x as many as 7 and 7x as many as 5. Ex. Know that the statement 24 is 3x as many 8 can be represented by the equation 24 = 3 x 8 or 24 = 8 x 3. Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison. Ex. Know that 3 x 4 can be used to represent that Student A has 4 objects & Student B has 3x as many objects, not just 3 more objects.	Students will be able to use estimation to determine whether solutions to addition, subtraction, and multiplication problems are reasonable. Students will be able to relate multiplication equations and comparison statements. Students will be able to solve problems involving multiplicative comparison and additive comparison. Students will be able to recite from memory and with fluency, basic multiplication facts.	GoMath! 2015	commutative property associative property distributive property identity property order of operations number sentence equation expression equivalent variable division

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			Solve multi-step word problems posed w/ whole numbers using the 4 operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number; represent these problems using equations w/ a symbol or letter standing for the unknown quantity.	Students will be able to use a variety of methods to solve multi-step problems. Students will be able to make sense of problems and perseveres in solving them.	GoMath! 2015	divisible dividend divisor quotient remainder
2.1.4.B.2		Use place value understanding and properties of operations to perform multi-digit arithmetic.	Divide up to 4-digit dividends by 1-digit divisors w/answers written as whole number quotients and remainders.	Students will be able to compute division problems using a variety of methods.		fact family multiple
2.2.4.A.2		Develop and/or apply number theory concepts to find factors and multiples.	Find all factor pairs for a whole number in the interval 1-100; recognize that a whole number is a multiple of each of its factors; determine whether a given whole number in the interval 1-100 is a multiple of a given 1-digit number; determine whether a given whole number (1-100) is prime or composite.	Students will be able to find factors and multiples of any given number. Students will be able to determine whether a number is prime or composite.		common factor common multiple composite number
2.2.4.A.4		Generate and analyze patterns using one rule.	Generate a number or shape pattern that follows a given rule; identify apparent features of the pattern that were not explicit in the rule itself. Ex. Given the rule "add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms alternate between odd and even numbers.	Students will be able to generate a number pattern and describe features of the pattern.		prime number pattern rule function

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Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
			Determine the missing elements in a function table (limit to +, -, x and to whole numbers or money). Determine the rule for a function given a table (limit to +, -, x and to whole numbers)	Students will be able to determine the missing element in a function table. Students will be able to determine a rule for a function table.	Coach Math Lesson 29 Harcourt (old) Text: Ch. 4 Lesson 5 Ch. 9 Lesson 6	
				Recommended Time Frame = 60 days		

PA Core Critical Concepts 2

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.3.4.A.1		Draw lines and angles and identify these in 2-dimensional figures.	Draw lines, points, line segments, rays, angles, (right, acute, obtuse) and perpendicular and parallel lines; identify these in 2-dimensional figures.	Students will be able to identify and draw points, lines, line segments, rays, angles, parallel lines and perpendicular lines.	GoMath! 2015	line/ray endpoint line segment
2.3.4.A.2		Classify 2-dimensional figures by properties of their lines and angles.	Classify 2-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size; recognize right triangles as a category, and identify right angles.	Students will be able to sort and classify triangles by their angles and quadrilaterals.		point/vertex degree/angle acute angle
2.4.4.A.1		Solve problems involving measurement and conversions from a larger unit to a smaller unit.	Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length); whole numbers only; **Formulas will be provided.**	Students will be able to apply the area and perimeter formula to real world mathematics problems.		obtuse angle right angle straight angle
2.2.4.A.4		Generate and analyze patterns using one rule.	Generate a number or shape pattern that follows a given rule; identify apparent features of the pattern that were not explicit in the rule itself. Ex. Given the rule "increase the number of sides by 1" and starting q/ a triangle, observe that the tops o the shapes alternate between a side and a vertex.	Students will be able to generate a shape pattern and describe the features of the pattern.	Coach Math Lesson 27	adjacent angles parallel lines intersecting lines perpendicular lines acute triangle trapezoid

PA Core Critical Concepts 2

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.3.4.A.3		Recognize symmetric shapes and draw lines of symmetry.	Recognize a line of symmetry for a 2-dimensional figure as a line across the figure such that the figure can be folded along the line into mirroring parts; identify line-symmetric figures and draw lines of symmetry (up to 2 lines of symmetry.)	Students will be able to identify and draw lines of symmetry in two-dimensional figures.	GoMath! 2015	formula area plane line of symmetry
2.4.4.A.6		Measure angles and use properties of adjacent angles to solve problems.	Measure angles in degrees (whole numbers only) using a protractor; with the aid of a protractor, sketch angles of specified measures. Solve addition/subtraction problems to find unknown angles on a diagram in real-world and mathematical problems (angles must be adjacent and non-overlapping).	Students will be able to use protractors to measure and draw angles. Students will be able to use addition and subtraction to find unknown angles.	base protractor polygon triangle rectangle square horizontal vertical diagonal	quadrilateral pentagon hexagon heptagon octagon nonagon decagon Venn Diagram parallelogram rhombus perimeter
			Recommended Time Frame = 60 days			

PA Core Critical Concepts 3

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.4.4.A.2		Translate information from one type of data display to another.	Translate info from one type of display to another (table, chart, bar graph, pictograph)	Students will be able to read and interpret data from displays given.	Coach Math Lesson 32 Coach Math Lesson 33	bar graph pictograph
2.1.4.C.1		Extend the understanding of fractions to show equivalence and ordering.	Recognize and generate equivalent fractions. Compare 2 fractions w/ diff numerators and diff denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 100) using the symbols >, <, = and justify the conclusions.	Students will be able to identify and generate equivalent fractions. Students will be able to compare and order fractions.	GoMath! 2015	tally chart fraction numerator denominator
2.2.4.A.1		Represent and solve problems using the 4 operations.	Solve multi-step word problems posed w/ whole numbers using the 4 operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number; represent these problems using equations w/ a symbol or letter standing for the unknown quantity. Identify the missing symbol (+, -, x, ÷, =, >,<) that makes a number sentence true (single digit divisor only)	Students will be able to use a variety of methods to solve multi-step problems. Students will be able to model with mathematics to solve multi-step problems. Students will be able to identify the missing symbol that will make a number sentence true. Students will be able to recite from memory and with fluency, basic multiplication facts.	Coach Math Lesson 31	unit fraction benchmark equivalent fraction simplest form common denominator mixed number decimal decimal point

PA Core Critical Concepts 3

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.1.4.C.2		Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	Add and subtract fractions w/ a common denominator (denominator limited to 2, 3, 4, 5, 6, 8, 10, 12, 100; answers do not need to be simplified; no improper fractions as final answer) Decompose a fraction or mixed number into a sum of fractions w/ same denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 100) recording the decomposition by an equation.; justify decompositions (e.g. by using a visual fraction model) <u>Ex.</u> 3/8 = 1/8 + 1/8 +1/8 or 3/8 = 1/8 + 2/8 <u>Ex.</u> 2 1/2 = 1+ 1 + 1/2 = 12/12 + 12/12 + 1/12 Add and subtract mixed numbers w/ a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 100; no regrouping w/ subtraction; fractions do not need to be simplified; no improper fractions as final answers) Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 100)	Students will be able to add or subtract fractions referring to parts of the same whole. Students will be able to identify and write equivalent fractions. Students will be able to add and subtract mixed numbers. Students will be able to solve word problems involving adding and subtracting fractions. Students will be able to model with mathematics.	GoMath! 2015	tenth whole hundredth

PA Core Critical Concepts 3

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
			Multiply a whole number by a unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 100; final answers do not need to be simplified or written as a mixed number) Ex. 5 x (1/4) = 5/4	Students will be able to write a fraction as a product of a whole number and a unit fraction.	GoMath! 2015	
			Multiply a whole number by a non-unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 100; final answers do not need to be simplified or written as a mixed number) Ex. 3 x (5/6) = 15/6	Students will be able to multiple a fraction or mix number by a whole number.		
			Solve word problems involving mult of a whole number by a fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 100)	Students will be able to solve word problems involving multiplying fractions and whole numbers.		
2.1.4.C.3		Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g. 19/100)	Add two fractions w/ respective denominators 10 and 100. Ex. Express 3/10 as 30/100 and add 3/10 + 4/100 = 30/100 + 4/100 = 34/100	Students will be able to add fractions with denominators 10 and 100.		
			Use decimal notation for fractions w/ denominators 10 or 100. Ex. Rewrite 0.62 as 62/100 and vice versa	Students will be able to record tenths and hundredths as fractions and decimals.		
			Compare two decimals to hundredths using symbols <, >, = and justify conclusion	Students will be able to compare decimals to hundredths by reasoning about their size.		

PA Core Critical Concepts 3

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.4.4.A.4		Represent and interpret data involving fractions using info provided in a line plot.	Make a line plot to display a data set of measurements in fractions of a unit (e.g. intervals of 1/2, 1/4, 1/8) Solve problems involving addition and subtraction of fractions by using info presented in line plots (line plots must be labeled w/ common denominators such as 1/4, 2/4, 3/4).	Students will be able to create and interpret line plots with fractional data. Students will be able to add and subtract fractions using information on a line plot.	GoMath! 2015	line plot data
				Recommended Time Frame = 60 days		

PA Core Critical Concepts 3

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.1.5.B.2		Extend an understanding of operations with whole numbers to perform operations including decimals.	Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals).	Students will be able to find the sums and differences between decimal amounts in dollars and cents.	Go Math! Practice Book (2012) Getting Ready for Grade 5 **(These lessons are in the teacher planning guide)** Lesson 1 Lesson 2	order of operations expression decimal
2.2.5.A.1		Interpret and evaluate numerical expressions using order of operations.	Use multiple grouping symbols (parentheses brackets, or braces) in numerical expressions and evaluate expressions containing these symbols.	Students will be able to use the order of operations to find the value of expressions	Lesson 3	
2.1.5.B.2		Extend an understanding of operations with whole numbers to perform operations including decimals.	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	Students will be able to use patterns to divide by multiples of 10. Students will be able to divide with up to two-digit divisors.	Lesson 4 Lesson 5	
2.1.5.B.1		Apply place-value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals.	Demonstrate an understanding that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left Read and write decimals to thousandths using base-ten numerals, word form, and expanded form. Round decimal to any place (limit rounding to ones, tenths, hundredths, or thousandths place).	Students will be able to read and write whole numbers through millions. Students will be able to read and write decimals using place value. Students will be able to round decimal amounts, including money amounts, to the nearest whole number or dollar.	Lesson 6 Lesson 7 Lesson 8	

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Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
			Compare two decimals to thousandths based on meanings of the digits in each place using >, =, and < symbols.	Students will be able to compare decimals to the hundredths.	Lesson 9	
			Explain patterns in the number of zeros of the product when multiplying a number by powers of 10 and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	Students will be able to decompose multiples of 10, 100, and 1,000.	Lesson 10	
2.2.5.A.4		Analyze patterns and relationships using two rules.	Generate two numerical patterns using two given rules.	Students will be able to use multiplication to describe patterns.	Lesson 11	
2.1.5.C.1		Use the understanding of equivalency add and subtract fractions.	Add and subtract fractions (including mixed numbers) with unlike denominators. (May include multiple methods and representations.)	Students will be able to add and subtract fractions with unlike denominators.	Lesson 12 Lesson 13	
2.1.5.C.2		Apply & extend previous understandings of multiplication and division to multiply and divide fractions.	Demonstrate an understanding of multiplication as scaling (resizing).	Students will be able to compare the size of the product to the size of each factor when multiplying fractions in real-world situations.	Lesson 14	
			Divide unit fractions by whole numbers and whole numbers by unit fractions.	Students will be able to use repeated subtraction to solve problems involving division with fractions.	Lesson 15	
				Students will be able to write division problems as fractions.	Lesson 16	

PA Core Critical Concepts 3

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.3.5.A.1		Graph points in the first quadrant on the coordinate plane and interpret these points when solving real world and mathematical problems.	Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate & y-coordinate). Limit the coordinate place to quadrant 1.	Students will be able to use ordered pairs to locate points on a grid.	Lesson 17	ordered pair
2.4.4.A.1		Solve problems involving measurement and conversions from a larger unit to a smaller unit.	Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length). Whole numbers only. **The formulas will be provided.**	Students will be able to use tiling to find the area of a rectangle.	Lesson 18	area
2.4.5.A.5		Apply concepts of volume to solve problems and relate volume to multiplication and to addition.	Apply the formulas V = L x W x H and V = B x H for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. **Formulas will be provided.**	Students will be able to find the product of 3 factors. *Prepares students to use volume formula.	Lesson 19	volume
			Find volumes of solid figures composed of two non-overlapping right rectangular prisms.	Students will be able to find the area of the base of a rectangular prism. *Prepares students to find the volume of a rectangular prism.	Lesson 20	rectangular prism base
				Students will be able to recite from memory and with fluency, basic multiplication facts.		

Measurement

Standard	Assessment Anchor	Learning Goals/Concepts	Eligible Content	Student Performance Objectives	Resources/Activities	Terminology
2.4.4.A.1		Solve problems involving measurement and conversions from a larger unit to a smaller unit.	Know relative sizes of measurement units within one system of units including standard units (in, ft, yd, mi, oz, lb, c, pt, qt, gal) and metric units (cm, m, km, g, kg, ml, l) and time (sec, min, hr, day, wk, mo, yr); within a single system of measurement express measurements in a larger unit in terms of a smaller unit; **A Table Of Equivalencies Will Be Provided** Ex. Know that 1kg is 1,000 x as heavy as 1g. Ex. Express the length of a 4-ft snake as 48 in. Use the 4 operations to solve word problems involving distances, intervals of time (such as elapsed time), liquid volumes, masses of objects, money, incl problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Identify time (analog or digital) as the amount of min before or after the hour. Ex. 2:50 is the same as 10 min before 3:00 Ex. Quarter past six is the same as 6:15.		Harcourt Ch 23 Lessons 1-6 Harcourt Ch 24 Lessons 1-5 Harcourt Ch 23 Lesson 6 Harcourt Ch 24 Lesson 5 Terms Continued quarter to | quarter after hour | midnight | noon half past	inch | foot yard | mile ounce | pound cup | pint quart | gallon centimeter meter | gram kilometer millilter | liter analog clock digital clock elapsed time clockwise counterclockwise minute | second