Chapter 15. Curriculum for Grade 8

Part A. Correlation of Objectives with Recommended Textbooks

NUMBER STRAND – Pre-Algebra Grade 8

Alabama Course of Study	TEAM-Math	PH	CMP	SAT-10	AHSGE
1. Use various strategies and operations to solve problems involving real numbers. a Using alternative representations of rational numbers d Using vocabulary associated with sets, including *union* and *intersection* e Determining whether a number is rational or irrational f Demonstrating computational fluency with operations on rational numbers 2. Simplify expressions containing natural number exponents by applying one or more of the laws of exponents. a Writing numbers using scientific notation 3. Use order of operations to evaluate and simplify algebraic expressions. a Applying the substitution principle b Applying the properties of operations on rational numbers to evaluate and simplify algebraic expressions	N1. Use operations involving real numbers, percents, scientific notation, and determine the reasonableness of an answer: a Exponents b Sets c Properties (substitution principle) d Order of operations e Compare and order f Real number line	1:1-7 4:7-9		Simplify expressions containing exponents. Identify numbers expressed in scientific notion. Computation with whole numbers, decimals, fractions, and integers using symbolic notation and in context. Compare and order real numbers. Identify alternative representation of real numbers. Solve problems using estimation strategies. Identify and use order of operational rules. Solve problems using appropriate strategies. Solve problems using numerical reasoning. Solve problems using non-routine strategies. Solve problems using logical reasoning.	I-1 I-2 I-3 I-4
1b. Applying GCF, LCM, and prime and composite numbers, including justification for the reasonableness of results, when working with rational numbers	N2. Apply LCM, GCF, and prime/composite in various contexts: a Simplifying fractions b Simplifying algebraic expressions c Solving real world problems	4:1-4			
	N3. Determine percent of change N4. Apply percents and proportions to real world situations and in multi-step problems	6:5-9		Solve problems involving ratios or proportions.	

1c. Apply proportional reasoning	N5. Apply proportional reasoning to real world situations: a Ratios and rates b Properties c Comparing quantities d Scaling ratios up or down e Similarity	6:2-3 8:5 1:4		Determine measurements indirectly from scale drawings	VII-7 VII-3

ALGEBRA STRAND – Pre-Algebra Grade 8

Alabama Course of Study	**TEAM-Math**	**Prentice Hall**	**CMP**	**SAT-10**	**AHSGE**
4. Graph linear relations by plotting points or by using the slope and y-intercept. a Determining slopes and y-intercepts of lines b Calculating the slope of a linear relation given as a table or graph c Exhibiting conceptual understanding of various uses of variables 5. Solve problems involving linear functions. a Identifying functions from information in tables, sets of ordered pairs, equations, graphs, and mappings b Determining the rule that defines a function c Classifying variables in a function as independent or dependent d Classifying relations as linear or nonlinear by examining tables, graphs, or simple equations	A1. Extend working knowledge of Functions: a Determine the range for a given domain b Introduce and use function notation: f(x) c Patterns d Independent/dependent variables e Apply to real world situations A2. Relations a Linear; slope, and y-intercepts b Nonlinear	8:1-4 13:1-2	*Moving Straight Ahead* Inv. 1-6 *Thinking With Mathematical Models* Inv. 1-4 *Growing, Growing, Growing* Inv. 1-4 *Frogs, Fleas, and Painted Cubes* Inv. 1-5	Solve problems using patterns. Identify equations of linear functions given tables of values, points, or graphs. Identify points on a coordinate grid.	III-1 III-2 IV-2 V-1 V-2 V-4
6. Solve multi-step linear equations, including equations requiring the use of the distributive property. Example: solving $-3(x - 5) - 6x = 2 + 4x$	A3. Solve multi-step equations and inequalities, including the distributive property	2:1-10 3:5-6 7:1-6	*Say It With Symbols* Inv. 1-5	Evaluate expressions. Identify equivalent algebraic expressions and equations. Solve linear equations. Solve linear inequalities. Translate problem situations into symbolic notation.	II-1 II-2 II-3 II-4 V-3 VI-1 VII-8

GEOMETRY STRAND – Pre-Algebra Grade 8

Alabama Course of Study	TEAM-Math	PH	CMP	SAT-10	AHSGE
8. Compare quadrilaterals, triangles, and solids, using their properties and characteristics. a Developing mathematical arguments about the relationships among types of quadrilaterals and triangles b Identifying angle bisectors, perpendicular bisectors, congruent angles, and congruent c c Constructing congruent and similar polygons, congruent angles, congruent segments, and parallel and perpendicular lines	G1. Develop mathematical arguments about the relationships among types of quadrilaterals and triangles: a Identify angle bisectors, perpendicular bisectors, congruent angles, and congruent figures b Constructing congruent and similar polygons, congruent angles, congruent segments, and parallel and perpendicular lines	9:1-3, 7	*Kaleidoscopes, Hubcaps, and Mirror* Inv. 1-4	Solve problems using spatial reasoning. Identify geometric transformations. Classify angles.	VII-1 VII-4
7. Solve problems using the Pythagorean Theorem. a Applying the Triangle Inequality Theorem Example: determining if a triangle can be formed with sides of 1 inch, 2 inches, and 5 inches b Verifying the Pythagorean Theorem c Applying the Pythagorean Theorem to determine if a triangle is a right triangle d Applying the Pythagorean Theorem to find the missing length of a side of a right triangle 3 Calculating distances on the coordinate plane using the Pythagorean Theorem	G2. Derive, justify, and apply the Pythagorean Theorem (distance formula)	11:1-3	*Looking For Pythagoras* Inv. 1-6	Solve problems using the Pythagorean Theorem.	IV –2 VII-2

MEASUREMENT STRAND – Pre-Algebra Grade 8

Alabama Course of Study	TEAM-Math	PH	CMP	SAT-10	AHSGE
	M1. Convert between units of measurement. M2. Convert between units in area and volume	3-7 5-5 Ext: pp. 292-293		Convert between units of measurement.	
9. Determine the measures of special angle pairs, including adjacent, vertical, supplementary, and complementary angles, and angles formed by parallel lines cut by a transversal.	M3. Investigate the measures of special angle pairs formed by two or more lines cut by a transversal including: a Corresponding b Alternate Interior c Alternate Exterior d Consecutive Interior/Exterior	9:1-2			
10. Find the perimeter and area of regular and irregular plane figures. 11. Determine the surface area and volume of rectangular prisms, cylinders, and pyramids. a Estimating surface area and volume of solid figures b Determining the appropriate units of measure to describe surface area and volume c Developing formulas for determining surface area and volume of rectangular prisms, cylinders, and pyramids	M4. Find the perimeter and area of regular and irregular plane figures M5. Develop and apply the surface area and volume of prisms, cylinders, pyramids, and cones	10:1-7,9		Identify the radius, diameter, or chord of a given circle. Solve problems involving perimeter, circumference, area or volume. Solve problems using properties of geometric figures.	IV-1 VII-4
12. Determine the lengths of missing sides and measures of angles in similar and congruent figures. a Apply proportional reasoning. b Using dilations on the coordinate plane to determine measures of similar figures c Finding the ratios of the perimeters and areas of similar triangles, trapezoids, and parallelograms	M6. Apply concept of similar and congruent figures to real world situations, such as indirect measurement	6-3 9-5			VII-7 VII-3

DATA AND PROBABILITY STRAND- Pre-Algebra Grade 8

Alabama Course of Study	**TEAM-Math**	**PH**	**CMP**	**SAT-10**	**AHSGE**
13. Interpret data from populations, using given and collected data. a Representing the data with the most appropriate graph, including box-and-whisker plot, circle graph, and scatterplot c Comparing data sets involving two populations d Determining the measure of center that is the most appropriate for a given situation	D1. Interpret, represent, and compare data sets: a Box-and-whisker plots b Scatter plot c Circle graph d Determine the measure of center that is most appropriate for a given situation	12:1-2 Circle Graph, pp. 487-489 3-3	*Samples and Populations* Inv. 1-4	Determine and use measures of central tendency and dispersion. Analyze data and draw inferences from tables and graphs.	VII-5
b Making predictions by estimating the line of best fit from a scatterplot	D2. Make predictions and estimations for a set of data, including using the line of best fit	8:5-6	*Clever Counting* Inv. 1-3		
14. Determine the theoretical probability of an event. a Calculating the probability of complementary events and mutually exclusive events b Comparing experimental and theoretical probability c Computing the probability of two independent events and two dependent events d Determining the probability of an event through simulation Example: using random numbers to find the probability of a basketball player making six baskets in six attempts if he makes 60 percent of his shots from the court and shoots 20 times during a game	D3. Determine the theoretical probability of events: a Complementary and mutually exclusive events b Two independent or two dependent events D4. Determine the experimental probability of an event through simulation and compare the theoretical probabilities	12:4-9	Inv. 4-5	Determine combinations and permutations. Find the probability of a simple or compound event. Use statistical sampling to make predictions.	VII-6

Part B. Suggested Sequence of Instructions

First Quarter

Unit on Number – Pre-Algebra (8)

TEAM-Math	Alabama Course of Study	PH	CMP	SAT-10	AHSGE
N1. Use operations involving real numbers, scientific notation, and determine the reasonableness of an answer: a Exponents b Sets c Substitution principle d Order of operations e Compare and order f Real number line	1. Use various strategies and operations to solve problems involving real numbers. a Using alternative representations of rational numbers d Using vocabulary associated with sets, including *union* and *intersection* e Determining whether a number is rational or irrational f Demonstrating computational fluency with operations on rational numbers 2. Simplify expressions containing natural number exponents by applying one or more of the laws of exponents. a Writing numbers using scientific notation 3. Use order of operations to evaluate and simplify algebraic expressions. a Applying the substitution principle	1-9 1:1-6, 9 Sets: See Extension :p. 191--Venn Diagram but not vocabulary *union* and *intersection*	After completing 1-9 from Prentice Hall begin *Looking for Pythagoras* After completing *Looking for Pythagoras* begin 4-1 in Prentice Hall	Simplify expressions containing exponents. Identify numbers expressed in scientific notation. Computation with whole numbers, decimals, fractions, and integers using symbolic notation and in context.. Compare and order real numbers. Identify alternative representation of real numbers. Solve problems using estimation strategies. Identify and use order of operational rules. Solve problems using appropriate strategies. Solve problems using numerical reasoning. Solve problems using non-routine strategies. Solve problems using logical reasoning. Solve problems using the Pythagorean Theorem.	I-1 I-2 I-3 I-4
G2. Derive, justify, and apply the Pythagorean Theorem (distance formula)	7. Solve problems using the Pythagorean Theorem. a Applying the Triangle Inequality Theorem Example: determining if a triangle can be formed with sides of 1 inch, 2 inches, and 5 inches b Verifying the Pythagorean Theorem c Applying the Pythagorean Theorem to determine if a triangle is a right triangle d Applying the Pythagorean Theorem to find the missing length of a side	11:1-3	*Looking For Pythagoras* Inv. 1-6		IV-2 VII-2

	of a right triangle e Calculating distances on the coordinate plane using the Pythagorean Theorem				
N2. Apply LCM, GCF, and prime/composite in various contexts: a Simplifying fractions b Simplifying algebraic expressions c Solving real world problems	1b.. Applying GCF, LCM, and prime and composite numbers, including justification for the reasonableness of results, when working with rational numbers	4:1-4,7-9			

Second Quarter

Unit on Ratio, Proportion and Percent- Grade 8

TEAM-Math	Alabama Course of Study	PH	CMP	SAT-10	AHSGE
N3 Determine percent of change N4. Apply percents and proportions to real world situations and in multi-step problems		6:5-9		Solve problems involving ratios or proportions.	
N5 Apply proportional reasoning to real world situations: a Ratios and rates b Properties c Comparing quantities d Scaling ratios up or down e Similarity M6 Apply concept of similar and congruent figures to real world situations,such as indirect measurement	1c. Applying proportional reasoning 12. Determine the lengths of missing sides and measures of angles in similar and congruent figures. a Determine the length of missing sides and measure of angles in similar and congruent figures. b Using dilations on the coordinate plane to determine measures of similar figures c Finding the ratios of the perimeters and areas of similar triangles, trapezoids, and parallelograms	6:2-3 9:5 11:4		Determine measurements indirectly from scale drawings	VII-7 VII-3

Unit on Solving Equations – Grade 8

TEAM-Math	Alabama Course of Study	PH	CMP	SAT-10	AHSGE
A3 Solve multi-step equations and inequalities, including the distributive property N1c Properties of Numbers	6. Solve multi-step linear equations, including equations requiring the use of the distributive property. Example: solving $-3(x-5)-6x=2+4x$ 3b Applying the properties of operations on rational numbers to evaluate and simplify algebraic expressions	2:1-10 3:5-6 7:1-3,5-6	*Say It With Symbols* Inv. 1-5	Evaluate expressions. Identify equivalent algebraic expressions and equations. Solve linear equations. Solve linear inequalities. Translate problem situations into symbolic notation.	II-1 II-2 II-3 II-4 V-3 VI –1

Third Quarter

Unit on Graphing- Grade 8

TEAM-Math	Alabama Course of Study	PH	CMP	SAT-10	AHSGE
A1 Extend working knowledge of Functions: a Determine the range for a given domain b Introduce and use function notation: f(x) c Patterns d Independent/dependent variables e Apply to real world situations A2 Relations a Linear; slope, and y-intercepts b Nonlinear	4. Graph linear relations by plotting points or by using the slope and y-intercept. a Determining slopes and y-intercepts of lines b Calculating the slope of a linear relation given as a table or graph d Exhibiting conceptual understanding of various uses of variables A5. Solve problems involving linear functions. a Identifying functions from information in tables, sets of ordered pairs, equations, graphs, and mappings b Determining the rule that defines a function c Classifying variables in a function as independent or dependent d Classifying relations as linear or nonlinear by examining tables, graphs, or simple equations	8:1-4 13:2	*Moving Straight Ahead* Inv. 1-6 *Thinking With Mathematical Models* Inv. 1-4 *Growing, Growing, Growing* Inv. 1-4 *Frogs, Fleas, and Painted Cubes* Inv. 1-5es	Solve problems using patterns. Identify equations of linear functions given tables of values, points, or graphs. Identify points on a coordinate grid.	III-1 III-2 IV-2 V-1 V-2 V-4

Unit on Geometry – Grade 8

TEAM-Math	Alabama Course of Study	PH	CMP	SAT-10	AHSGE
G1. Develop mathematical arguments about the relationships among types of quadrilaterals and triangles: a Identify angle bisectors, perpendicular bisectors, congruent angles, and congruent figures b Constructing congruent and similar polygons, congruent angles, congruent segments, and parallel and perpendicular lines M3 Investigate the measures of special angle pairs formed by two or more lines cut by a transversal including: a Corresponding b Alternate Interior c Alternate Exterior d Consecutive Interior/Exterior	G8. Compare quadrilaterals, triangles, and solids, using their properties and characteristics. a Developing mathematical arguments about the relationships among types of quadrilaterals and triangles b Identifying angle bisectors, perpendicular bisectors, congruent angles, and congruent figures c Constructing congruent and similar polygons, congruent angles, congruent segments, and parallel and perpendicular lines M9. Determine the measures of special angle pairs, including adjacent, vertical, supplementary, and complementary angles, and angles formed by parallel lines cut by a transversal.	9:1-3,7	*Kaleidoscopes, Hubcaps, and Mirrors* Inv. 1-4	Solve problems using spatial reasoning. Identify geometric transformations. Classify angles.	VII-1 VII-4

Fourth Quarter

Unit on Measurement – Grade 8

TEAM-Math	Alabama Course of Study	PH	CMP	SAT-10	AHSGE
M1. Convert between systems M2. Convert between units of measurement.		3:7 5:5 Extension: pp. 292-293		Convert between units of measurement.	
M4. Find the perimeter and area of regular and irregular plane figures M5 Develop and apply the surface area and volume of prisms, cylinders, pyramids, and cones	10. Find the perimeter and area of regular and irregular plane figures. 11. Determine the surface area and volume of rectangular prisms, cylinders, and pyramids. a Estimating surface area and volume of solid figures b Determining the appropriate units of measure to describe surface area and volume d Developing formulas for determining surface area and volume of rectangular prisms, cylinders, and pyramids	10:1-7, 9		Identify the radius diameter, or chord of a given circle. Solve problems involving perimeter, circumference, area or volume. Solve problems using properties of geometric figures.	IV-1 VII-4

Unit on Data and Probability- Grade 8

TEAM-Math	Alabama Course of Study	PH	CMP	SAT-10	AHSGE
D1. Interpret, represent, and compare data sets: a Box-and-whisker plots b Scatter plot c Circle graph d Determine the measure of center that is most appropriate for a given situation	13. Interpret data from populations, using given and collected data. a Representing the data with the most appropriate graph, including box-and-whisker plot, circle graph, and scatter plot c Comparing data sets involving two populations d Determining the measure of center that is the most appropriate for a given situation	12:1-2 3:3	*Samples and Populations* Inv. 1-4	Determine and use measures of central tendency and dispersion. Analyze data and draw inferences from tables and graphs.	VII-5
D2. Make predictions and estimations for a set of data, including using the line of best fit	11b Making predictions by estimating the line of best fit from a scatter plot	8:5-6	*Clever Counting* Inv. 1-5		
D3 Determine the theoretical probability of events: a Complementary and mutually exclusive events. b Two independent or two dependent events.. D4 Determine the experimental probability of an event through simulation and compare the theoretical probabilities.	14. Determine the theoretical probability of an event. a Calculating the probability of complementary events and mutually exclusive events b Comparing experimental and theoretical probability c Computing the probability of two independent events and two dependent events d Determining the probability of an event through simulation	12:4-9		Determine combinations and permutations. Find the probability of a simple or compound event. Use statistical sampling to make predictions.	VII-6