Correlation of *Moving with Algebra* Grade 8
To Ohio Academic Content Standards

	Part A Student Book Skill Builders (SB)	Part B Student Book Skill Builders (SB)
NUMBER, NUMBER SENSE AND OPERATION STANDARDS		
Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.		
NUMBER AND NUMBER SYSTEMS		
1. Use scientific notation to express large numbers and small numbers between 0 and 1.	22, 23, 25 **SB:** 17, 18	
2. Recognize that natural numbers, whole numbers, integers, rational numbers and irrational numbers are subsets of the real number system.	62, 63, 80 **SB:** 61	
MEANING OF OPERATIONS		
3. Apply order of operations to simplify expressions and perform computations involving integer exponents and radicals.	18, 19 **SB:** 14	290-293 **SB:** 226-228
4. Explain and use the inverse and identity properties and use inverse relationships (addition/subtraction, multiplication/division, squaring/square roots) in problem solving situations.	15, 29, 42, 113-115 **SB:** 12, 23, 24, 35, 36, 97, 98	215-219, 304, 305 **SB:** 184-186, 233
COMPUTATION AND ESTIMATION		
5. Determine when an estimate is sufficient and when an exact answer is needed in problem situations, evaluate estimate in relation to actual answers; e.g., very close, less than, greater than.	30, 31, 41, 52, 53, 103, 104, 117, 158, 172 **SB:** 25, 26, 32, 42, 43, 84-86, 135	217 **SB:** 185

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6.	Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions.	32-34, 54, 55, 58, 59, 105, 106, 116, 118, 119, 144-146, 159, 160, 169-179 SB: 27-29, 44-46, 51-53, 87, 88, 100, 101, 119, 128, 129	
7.	Find the square root of perfect squares, and approximate the square root of non-perfect squares as consecutive integers between which the root lies; e.g. $\sqrt{130}$ is between 11 and 12.	122 SB: 133-138	216, 217, 304, 305 SB: 184, 195, 233
8.	Add, subtract, multiply, divide and compare numbers written in scientific notation.		
	MEASUREMENT STANDARD		
	Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.		
	MEASUREMENT UNITS		
1.	Compare and order the relative size of common U.s. customary units and metric units; e.g., mile and kilometer, gallon and liter, pound and kilogram.		233, 234 SB: 198, 199
2.	Use proportional relationships and formulas to convert units from one measurement system to another; e.g., degrees Fahrenheit to degrees Celsius.		316
	USE MEASUREMENT TECHNIQUES AND TOOLS		
3.	Use appropriate levels of precision when calculating with measurements.		228-230 SB: 193-195
4.	Derive formulas for surface area and volume and justify them using geometric models and common materials. For example, find:		212-214 SB: 180-182
	a. The surface area of a cylinder as a function of its height and radius;		
	b. That the volume of a pyramid (or cone) is one-third of the volume of a prism (or cylinder) with the same base area and height.		

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5. Determine surface area for pyramids by analyzing their parts.		
6. Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.		275-280 **SB:** 222-224, 246
7. Apply proportional reasoning to solve problems involving indirect measurements or rates.		225-227, 275-280 **SB:** 189, 191, 192, 222-224, 246
8. Find the sum of the interior and exterior angles of regular convex polygons with and without measuring the angles with a protractor.		196-199 **SB:** 164-166
9. Demonstrate understanding of the concepts of perimeter, circumference and area by using established formula for triangles, quadrilaterals, and circles to determine the surface area and volume of prisms, pyramids, cylinders, spheres and cones. (Note: Only volume should be calculated for spheres and cones.)		212-214 **SB:** 180, 181
10. Use conventional formulas to find the surface area and volume of prisms, pyramids and cylinders and the volume of spheres and cones to a specified level of precision.		
GEOMETRY AND SPATIAL SENSE STANDARD		
Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.		
CHARACTERISTICS AND PROPERTIES		
1. Make and test conjectures about characteristics and properties (e.g., sides, angles, symmetry) of two-dimensional figures and three-dimensional objects.		188-193 **SB:** 156-162

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2.	Recognize the angles formed and the relationship between the angles when two lines intersect and when parallel lines are cut by a transversal.		194, 195, 200 SB: 163,167
3.	Use proportions in several forms to solve problems involving similar figures (part-to-whole corresponding sides between figures).		225 SB: 189
	SPATIAL RELATIONSHIPS		
4.	Represent and analyze shapes using coordinate geometry; e.g., given three vertices and the type of quadrilateral, find the coordinates of the fourth vertex.		
	TRANSFORMATIONS AND SYMMETRY		
5.	Draw the results of translations, reflections, rotations and dilations of objects in the coordinate plane, and determine properties that remain fixed; e.g., lengths of sides remain the same under translations.		204, 205 SB: 171-173
	VISUALIZATION AND GEOMETRIC MODELS		
6.	Draw nets for a variety of prisms, pyramids, cylinders and cones.		193, 212, 213 SB: 162, 180, 182
	PATTERNS, FUNCTIONS AND ALGEBRA STANDARDS		
	Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.		
	USE PATTERNS, RELATIONS AND FUNCTIONS		
1.	Relate the various representations of a relationship; I.e., relate a table to graph, description and symbolic form.		231-234, 311-317 SB: 196, 197, 236-239, 254
2.	Generalize patterns and sequences by describing how to find the nth tern.	85, 86, 88, 90 SB: 69, 140	199, 307-309 SB: 234, 235

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3.	Identify functions as linear or nonlinear based on information given in a table, graph or equation.		318 SB: 240
	USE ALGEBRAIC REPRESENTATIONS		
4.	Extend the uses of variables to include covariant where y depends on x.		231, 232, 311, 312, 314-317 SB: 196, 197, 236-239, 254
5.	Use physical models to add and subtract monomials and polynomials, and to multiply a polynomial by a monomial.		262-265, 268, 269 SB: 209, 210, 220
6.	Describe the relationship between the graph of a line and its equation, including being able to explain the meaning of slope as a constant rate of change and y-intercept in real-world problems.		318-331 SB: 240-244, 249, 254
7.	Use symbolic algebra (equations and inequalities), graphs and tables to represent situations and solve problems.		231-234, 273-287, 311-317, 332, 333 SB: 196-199, 217, 218, 222-225, 236-239, 254
8.	Write, simplify and evaluate algebraic expressions (including formulas) to generalize situations and solve problems.		249-252, 262-265, 268, 269, 303 SB: 207-210, 220
9.	solve linear equations and inequalities graphically, symbolically and using technology.		255-267, 270-272, 281-287 SB: 212-219, 221, 225, 250, 251
10.	Solve 2 by 2 systems of linear equations graphically and by simple substitution.		
11.	Interpret the meaning of the solution of a 2 by 2 system of equations; I.e., point, line, no solution.		
12.	Solve simple quadratic equations graphically; e.g.; $y - x2 - 16$.		

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13.	Compute and interpret slope, midpoint and distance given a set of ordered pairs.		320-331 **SB:** 241-244, 248, 249
			231-234, 311-317 **SB:** 196-199, 236-239, 254
	ANALYZE CHANGE		
14.	Differentiate and explain types of changes in mathematical relationships, such as linear vs. nonlinear, continuous vs. noncontiguous, direct variation vs. inverse variation.		
15.	Describe and compare how changes in an equation affects the related graphs; e.g., for a linear equation changing the coefficient of x affects the slope and changing the constant affects the intercepts.		
16.	Use graphing calculators or computers to analyze change; e.g., interest compounded over time as a nonlinear growth pattern.		
	DATA ANALYSIS AND PROBABILITY STANDARD		
	Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.		
	DATA COLLECTION		
1.	Use, create and interpret scatter plots and other types of graphs as appropriate.	179 **SB:** 101	
2.	Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose; e.g., line graph for change over time, circle graph for part-to-whole comparison, scatter plot for relationship between two variants.	179	
3.	Differentiate between discrete and continuous data and appropriate ways to represent each.		
	STATISTICAL METHOD		

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4.	Compare two sets of data using measures of center (mean, mode, median) and measures of spread (range, quartiles, interquartile range, percentiles).	56, 57 SB: 47-50	
5.	Explain the mean's sensitivity to extremes and its use in comparison with the median and mode.		
6.	make conjectures about possible relationship in a scatter plot and approximate line of best fit.		
7.	Identify different ways of selecting samples, such as survey response, random sample, representative sample and convenience sample.		
8.	Describe how the relative size of a sample compared to the target population affects the validity of predictions.		
9.	Construct convincing arguments based on analysis of data and interpretation of graphs.		
	PROBABILITY		
10.	Calculate the number of possible outcomes for a situation, recognizing and accounting for when items may occur more than once or when order is important.		
11.	Demonstrate an understanding that the probability of either of two disjoint events occurring can be found by adding the probabilities for each and that the probability of one independent event following another can be found by multiplying the probabilities.		