Grade 8							
Grade 8 SPI 0806.1.1	**Solve problems involving rate/time/distance (i.e., d = rt)**	**EEI**	24-27	Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)	**ALG**	8	4c) Analyze situations or solve problems using linear equations and inequalities with rational coefficients symbolically or graphically (e.g., $ax + b = c$ or $ax + b = cx + d$). 4e) Use and evaluate common formulas [e.g., relationship between a circle's circumference and diameter (C = pi d), distance and time under constant speed].
Grade 8 SPI 0806.1.2	**Interpret a qualitative graph representing a contextual situation**	**PSDA**	16-19	Read tables and graphs	**DASP**	8	1a) Read or interpret data, including interpolating or extrapolating from data.
Grade 8 SPI 0806.1.3	**Calculates rates involving cost per unit to determine the best buy.**	**BOA**	28-32	Solve word problems containing several rates, proportions, or percentages	**NPO**	8	4a) Use ratios to describe problem situations. 4b) Use fractions to represent and express ratios and proportions
Grade 8 SPI 0806.2.1	**Order and compare rational and irrational numbers and locate on the number line**	**NCP**	20-23 24-27	Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Order fractions	**NPO**	8	1h) Order or compare rational numbers (fractions, decimals, percents, or integers) using various models and representations (e.g., number line).

TN DOE unique identifier	SPI	ACT content area	Range	ACT College Readiness Standard	NAEP content area	Grade	NAEP 2009 Math Content Area Standard
		GR	13-15 16-19	Identify the location of a point with a positive coordinate on the number line Locate points on the number line and in the first quadrant			
Grade 8 SPI 0806.2.2	**Identify numbers and square roots as rational or irrational**	**NCP**	24-27	Work problems involving positive integer exponents Work with squares and roots of numbers Work with cubes and cube roots of numbers	**NPO**	8	2a) Establish or apply benchmarks for rational numbers and common irrational numbers (e.g., π) in contexts.
Grade 8 SPI 0806.2.3	**Use scientific notation to compute products and quotients.**	**NCP**	24-27	Work with scientific notation.	**NPO**	8 12	1f) Express or interpret numbers using scientific notation from real-life contexts. 3b) Perform arithmetic operations with real numbers, including common irrational numbers.
Grade 8 SPI 0806.2.4	**Solve real-world problems requiring scientific notation**	**NCP**	24-27	Work with scientific notation.	**NPO**	8 12	1f) Express or interpret numbers using scientific notation from real-life contexts. 3b) Perform arithmetic operations with real numbers, including common irrational numbers.
Grade 8 SPI 0806.3.1	**Find solutions to systems of two linear equations in two variables.**	**EEI**	28-32	Find solutions to systems of linear equations	**ALG**	12	4d) Solve (symbolically or graphically) a system of equations or inequalities and recognize the relationship between the analytical solution and graphical solution.
Grade 8 SPI 0806.3.2	**Solve the linear equation $f(x) = g(x)$.**	**EEI**	20-23	Solve routine first-degree equations	**ALG**	8	4a) Solve linear equations or inequalities (e.g., $ax + b = c$ or $ax + b = cx + d$ or $ax + b > c$).
Grade 8 SPI 0806.3.3	**Solve and graph linear inequalities in two variables.**	**GR**	28-32	Interpret and use information from graphs in the coordinate plane	**ALG**	12	2a) Create and translate between different representations of algebraic expressions, equations, and inequalities (e.g., linear, quadratic, exponential, or *trigonometric) using symbols, graphs, tables, diagrams, or

TN DOE unique identifier	SPI	ACT content area	Range	ACT College Readiness Standard	NAEP content area	Grade	NAEP 2009 Math Content Area Standard
							written descriptions.
Grade 8 SPI 0806.3.4	**Translate between various representations of a linear function.**	**GR**	24-27 33-36	Match linear graphs with their equations Analyze and draw conclusions based on information from graphs in the coordinate plane	**ALG**	8 12	2a) Translate between different representations of linear expressions using symbols, graphs, tables, diagrams, or written descriptions. 2a) Create and translate between different representations of algebraic expressions, equations, and inequalities (e.g., linear, quadratic, exponential, or *trigonometric) using symbols, graphs, tables, diagrams, or written descriptions.
Grade 8 SPI 0806.3.5	**Determine the slope of a line from an equation, two given points, a table or a graph.**	**GR**	28-32 24-27 33-36	Interpret and use information from graphs in the coordinate plane Determine the slope of a line from points or equations Analyze and draw conclusions based on information from graphs in the coordinate plane	**ALG**	8	2d) Solve problems involving coordinate pairs on the rectangular coordinate system. 4d) Interpret relationships between symbolic linear expressions and graphs of lines by identifying and computing slope and intercepts (e.g., know in $y = ax + b$, that a is the rate of change and b is the vertical intercept of the graph).
Grade 8 SPI 0806.3.6	**Analyze the graph of a linear function to find solutions and intercepts.**	**GR**	33-36	Analyze and draw conclusions based on information from graphs in the coordinate plane Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$	**ALG**	8	1f) Interpret the meaning of slope or intercepts in linear functions. 4d) Interpret relationships between symbolic linear expressions and graphs of lines by identifying and computing slope and intercepts (e.g., know in $y = ax + b$, that a is the rate of change and b is the vertical intercept of the graph).
Grade 8	**Identify, compare and contrast functions as**	**GR**	33-36	Identify characteristics of graphs based on a set of conditions or on a	**ALG**	8	1e) Identify functions as linear or nonlinear or contrast distinguishing properties of functions

TN DOE unique identifier	SPI	ACT content area	Range	ACT College Readiness Standard	NAEP content area	Grade	NAEP 2009 Math Content Area Standard
SPI 0806.3.7	**linear or nonlinear.**			general equation such as $y = ax^2 + c$			from tables, graphs, or equations.
Grade 8 SPI 0806.4.1	**Use the Pythagorean Theorem to solve contextual problems.**	**PPF**	28-32 33-36	Use the Pythagorean theorem Solve problems integrating multiple algebraic and/or geometric concepts	**GEO**	8 12	3d) Use the Pythagorean theorem to solve problems. 3d) Use the Pythagorean theorem to solve problems in two- or three-dimensional situations.
Grade 8 SPI 0806.4.2	**Apply the Pythagorean theorem to find distances between points in the coordinate plane to measure lengths and analyze polygons and polyhedra.**	**PPF** **GR**	28-32 28-32 33-36	Use the Pythagorean theorem Use the distance formula Solve problems integrating multiple algebraic and/or geometric concepts	**GEO**	12	4a) Solve problems involving the coordinate plane such as the distance between two points, the midpoint of a segment, or slopes of perpendicular or parallel lines.
Grade 8 SPI 0806.4.3	**Find measures of the angles formed by parallel lines cut by a transversal.**	**PPF**	16-19 20-23	Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines	**GEO**	12	3g) Analyze properties and relationships of parallel, perpendicular, or intersecting lines, including the angle relationships that arise in these cases.
Grade 8 SPI 0806.4.4	**Convert between and within the U.S. Customary System and the metric system.**	**BOA**	13-15	Perform common conversions (e.g., inches to feet or hours to minutes)	**MEAS**	12	2b) Solve problems involving conversions within or between measurement systems, given the relationship between the units.
Grade 8 SPI 0806.4.5	**Identify the intersection of two or more geometric figures in the plane.**	**PSDA**	20-23 21-27	Determine the probability of a simple event Compute straightforward probabilities for common situations	**GEO**	8	3g) Describe or analyze properties and relationships of parallel or intersecting lines. 4b) Describe the intersection of two or more geometric figures in the plane (e.g., intersection of a circle and a line).
Grade 8 SPI 0806.5.1	**Calculate probabilities of events for simple experiments with equally probable outcomes.**	**PSDA**	20-23	Determine the probability of a simple event. Exhibit knowledge of simple counting techniques.	**DASP**	8	4b) Determine the theoretical probability of simple and compound events in familiar contexts. 4c) Estimate the probability of simple and

TN DOE unique identifier	SPI	ACT content area	Range	ACT College Readiness Standard	NAEP content area	Grade	NAEP 2009 Math Content Area Standard
			28-32	Compute a probability when the event and/or sample space are not given or obvious Apply counting techniques.			compound events through experimentation or simulation. 4d) Use theoretical probability to evaluate or predict experimental outcomes. 4f) Use a sample space to determine the probability of the possible outcomes of an event. g) Represent probability of a given outcome using fractions, decimals, and percents.
Grade 8 SPI 0806.5.2	**Use a variety of methods to compute probabilities for compound events (e.g., multiplication, organized lists, tree diagrams, area models).**	**PSDA**	28-32 33-36	Apply counting techniques. Analyze and draw conclusions based on information from figures, tables, and graphs	**DASP**	12	4e) Determine the number of ways an event can occur using tree diagrams, formulas for combinations and permutations, or other counting techniques
Grade 8 SPI 0806.5.3	**Generalize the relationship between two sets of data using scatterplots and lines of best fit.**	**PSDA**	16-19 28-32	Read tables and graphs Interpret and use information from figures, tables, and graphs	**DASP**	8 12	2e) Visually choose the line that best fits given a scatterplot and informally explain the meaning of the line. Use the line to make predictions. 2e) Approximate a trend line if a linear pattern is apparent in a scatterplot or use a graphing calculator to determine a least-squares regression line, and use the line or equation to make predictions.
Grade 8 SPI 0806.5.4	**Recognize miepresentations of published data in the media.**	**PSDA**	33-36	Analyze and draw conclusions based on information from figures, tables, and graphs	**DASP** **DASP**	8 12	1d) Given a graph or a set of data, determine whether information is represented effectively and appropriately (histograms, line graphs, scatterplots, circle graphs, and bar graphs). 5a) Identify misleading uses of data in real-world settings and critique different ways of presenting and using information.