

TN DOE unique identifier	SPI	ACT content area	Range	<u>ACT College Readiness Standard</u>	NAEP content area	Grade	<u>NAEP 2009 Math Content Area Standard</u>
Grade 8							
Grade 8 SPI 0806.1.1	Solve problems involving rate/time/distance (i.e., $d = rt$)			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).

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		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

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							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

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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	Use the Pythagorean theorem	GEO	8	3d) Use the Pythagorean theorem to solve problems.
			33-36	Solve problems integrating multiple algebraic and/or geometric concepts		12	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	28-32	Use the Pythagorean theorem	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.
		GR	28-32	Use the distance formula			
			33-36	Solve problems integrating multiple algebraic and/or geometric concepts			
Grade 8 SPI 0806.4.3	Find measures of the angles formed by parallel lines cut by a transversal.	PPF	16-19	Exhibit some knowledge of the angles associated with parallel lines	GEO	12	3g) Analyze properties and relationships of parallel, perpendicular, or intersecting lines, including the angle relationships that arise in these cases.
			20-23	Find the measure of an angle using properties of parallel lines			
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	Determine the probability of a simple event	GEO	8	3g) Describe or analyze properties and relationships of parallel or intersecting lines.
			21-27	Compute straightforward probabilities for common situations			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.	DASP	8	4b) Determine the theoretical probability of simple and compound events in familiar contexts.
				Exhibit knowledge of simple counting techniques.			4c) Estimate the probability of simple and

