

Grade Seven

Use proportional

BOA

20-23

Solve routine two-step or three-step

NPO

8

4c) Use proportional reasoning to model and

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	reasoning to solve mixture/concentration problems.		24-27	arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average Solve multi-step arithmetic problems that involve planning or converting units of measure (e.g. feet per second to miles per hour)			solve problems (including rates and scaling).
Grade 7 SPI 0706.1.2	Generalize a variety of patterns to a symbolic rule from tables, graphs, or words.	NCP	20-23	Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor			
Grade 7 SPI 0706.1.3	Recognize whether information given in a table, graph, or formula suggests a directly proportional, linear, inversely proportional, or other nonlinear relationship.	GR	33-36	Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$	ALG	8	2f) Identify or represent functional relationships in meaningful contexts including proportional, linear, and common nonlinear (e.g., compound interest, bacterial growth) in tables, graphs, words, or symbols.
Grade 7 SPI 0706.1.4	Use scales to read maps.	EEL	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)	NPO	8	4c) Use proportions to solve problems (including rates of change).
Grade 7 SPI 0706.2.1	Simplify numerical expressions involving rational numbers.	BOA	16-19	Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems	ALG	8	3c) Perform basic operations, using appropriate tools, on linear algebraic expressions (including grouping and order of multiple operations involving basic operations, exponents, roots, simplifying, and expanding).
Grade 7 SPI 0706.2.2	Compare rational numbers using appropriate inequality symbols.	NCP	20-23	Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes,	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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							3f) Solve application problems involving rational numbers and operations using exact answers or estimates as appropriate.
Grade 7 SPI 0706.2.5	Solve contextual problems that involve operations with integers.	BOA	16-19	Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent	NPO	8	3f) Solve application problems involving rational numbers and operations using exact answers or estimates as appropriate.
Grade 7 SPI 0706.2.6	Express the ratio between two quantities as a percent, and a percent as a ratio or fraction.	BOA EI	20-23 24-27	Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average 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)	NPO	8	4b) Use fractions to represent and express ratios and proportions.
Grade 7 SPI 0706.2.7	Use ratios and proportions to solve problems.	EI	16-19 20-23	Substitute whole numbers for unknown quantities to evaluate expressions Evaluate algebraic expressions by substituting integers for unknown quantities	NPO	8	4c) Use proportions to solve problems (including rates of change).
Grade 7 SPI 0706.3.1	Evaluate algebraic expressions involving rational values for coefficients and/or variables.				ALG	12	3e) Evaluate algebraic expressions, including polynomials and rational expressions.
Grade 7 SPI 0706.3.2	Determine whether a relation (represented in various ways) is a function.				ALG	12	1g) Determine whether a relation, given in verbal, symbolic, tabular, or graphical form, is a function.

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Grade 7 SPI 0706.3.3	Given a table of inputs x and outputs $f(x)$, identify the function rule and continue the pattern.				ALG	8	1a) Recognize, describe, or extend numerical and geometric patterns using tables, graphs, words, or symbols. 1b) Generalize a pattern appearing in a numerical sequence or table or graph using words or symbols.
Grade 7 SPI 0706.3.4	Interpret the slope of a line as a unit rate given the graph of a proportional relationship.	GR	28-32	Exhibit knowledge of slope	ALG	8	1f) Interpret the meaning of slope or intercepts in linear functions.
Grade 7 SPI 0706.3.5	Represent proportional relationships with equations, tables and graphs.	EI	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	2f) Identify or represent functional relationships in meaningful contexts including proportional, linear, and common nonlinear (e.g., compound interest, bacterial growth) in tables, graphs, words, or symbols.
Grade 7 SPI 0706.3.6	Solve linear equations with rational coefficients symbolically or graphically.	EI	20-23 24-27	Solve routine first-degree equations Solve real-world problems using first-degree equations 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	2d) Solve problems involving coordinate pairs on the rectangular coordinate system. 4a) Solve linear equations or inequalities (e.g., $ax + b = c$ or $ax + b = cx + d$ or $ax + b > c$). 3c) Analyze situations or solve problems using linear equations and inequalities with rational coefficients symbolically or graphically (e.g., $ax + b = c$ or $ax + b = cx + d$).
Grade 7 SPI 0706.3.7	Translate between verbal and symbolic representations of real-world phenomena involving	EI	24-27	Solve real-world problems using first-degree equations	ALG	8	2a) Translate between different representations of linear expressions using symbols, graphs, tables, diagrams, or written descriptions.

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	linear equations.	GR	24-27	Match linear graphs with their equations*			4c) Analyze situations or solve problems using linear equations and inequalities with rational coefficients symbolically or graphically (e.g., $ax + b = c$ or $ax + b = cx + d$).
Grade 7 SPI 0706.3.8	Solve contextual problems involving two-step linear equations.	E EI	24-27	Solve real-world problems using first-degree equations 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	4a) Solve linear equations or inequalities (e.g., $ax + b = c$ or $ax + b = cx + d$ or $ax + b > c$). 4c) Analyze situations or solve problems using linear equations and inequalities with rational coefficients symbolically or graphically (e.g., $ax + b = c$ or $ax + b = cx + d$).
Grade 7 SPI 0706.3.9	Solve linear inequalities in one variable with rational coefficients symbolically or graphically.	E EI GR	24-27 28-32 24-27 28-32	Solve first-degree inequalities that do not require reversing the inequality sign Solve linear inequalities that require reversing the inequality sign Identify the graph of a linear inequality on the number line Match number line graphs with solution sets of linear inequalities	ALG	8	a) Solve linear equations or inequalities (e.g., $ax + b = c$ or $ax + b = cx + d$ or $ax + b > c$). c) Analyze situations or solve problems using linear equations and inequalities with rational coefficients symbolically or graphically (e.g., $ax + b = c$ or $ax + b = cx + d$).
Grade 7 SPI 0706.4.1	Solve contextual problems involving similar triangles.	PPF	28-32	Apply properties of 30° - 60° - 90° , 45° - 45° - 90° , similar, and congruent triangles	GEO	8	2 e) Justify relationships of congruence and similarity, and apply these relationships using scaling and proportional reasoning. 2f) For similar figures, identify and use the relationships of conservation of angle and of proportionality of side length and perimeter.
Grade 7 SPI 0706.4.2	Use SSS, SAS, and AA to determine if two triangles are similar.				GEO	8	2e) Justify relationships of congruence and similarity, and apply these relationships using scaling and proportional reasoning.

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Grade 7 SPI 0706.4.3	Apply scale factor to solve problems involving area and volume	MEAS	28-32 33-36	Use relationships involving area, perimeter, and volume of geometric figures to compute another measure Use scale factors to determine the magnitude of a size change	MEAS	12	1c) Estimate, or compare perimeters or areas of two-dimensional geometric figures.
Grade 7 SPI 0706.5.1	Interpret and employ various graphs and charts to represent data.	PSDA	13-15 16-19	Perform a single computation using information from a table or chart Perform computations on data from tables and graphs	DASP	8	1a) Read or interpret data, including interpolating or extrapolating from data. 1b) For a given set of data, complete a graph and then solve a problem using the data in the graph (histograms, line graphs, scatterplots, circle graphs, and bar graphs).
Grade 7 SPI 0706.5.2	Select suitable graph types (such as bar graphs, histograms, line graphs, circle graphs, box-and-whisker plots, and stem-and-leaf plots) and use them to create accurate representations of given data.	PSDA	20-23	Translate from one representation of data to another (e.g., a bar graph to a circle graph)	DASP	8	1a) Read or interpret data, including interpolating or extrapolating from data. 1b) For a given set of data, complete a graph and then solve a problem using the data in the graph (histograms, line graphs, scatterplots, circle graphs, and bar graphs). 1e) Compare and contrast the effectiveness of different representations of the same data.
Grade 7 SPI 0706.5.3	Calculate and interpret the mean, median, upper-quartile, lower-quartile, and interquartile range of a set of data.	PSDA	13-15 16-19 33-36	Calculate the average of a list of positive whole numbers Calculate the average of a list of numbers Distinguish between mean, median, and mode for a list of numbers	DASP	12	2a) Calculate, interpret, or use summary statistics for distributions of data including measures of typical value (mean, median), position (quartiles, percentiles), and spread (range, interquartile range, variance, standard deviation).
Grade 7 SPI 0706.5.4	Use theoretical probability to make predictions				DASP	8	4 d) Use theoretical probability to evaluate or predict experimental outcomes.