Grade 7

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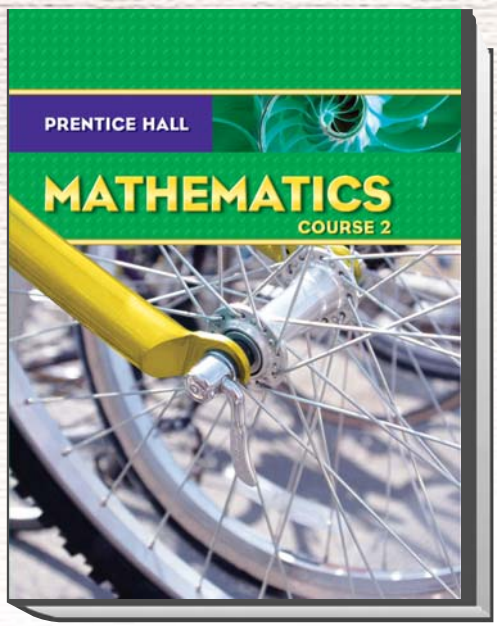

CORRELATED TO

Alaska Standards and Grade Level Expectations
Grade 7

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Alaska Standards and Grade Level Expectations for Math	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
Content Standard A: Mathematical facts, concepts, principles, and theories	
Numeration: Understand and use numeration	
Numeration Performance Standards that apply to grades 7-8:	
M1.3.1 Read, write, model, and order real numbers, explaining scientific notation, exponents, and percents.	
M1.3.2 Model counting in a different base system. M1.3.3 Translate between equivalent representations of the same number. Select a representation that is appropriate for the situation. M1.3.4 Describe and model the relationship of fractions to decimals, percents, ratios, and proportions. M1.3.5 Use, explain, and define the rules of divisibility, prime and composite numbers, multiples, and order of operations. M1.3.6 Use commutative, identity, associative, and distributive properties with variables.	
Understanding Numbers	
The student demonstrates understanding • of rational numbers (fractions, decimals, percents, or integers) by	
[7] N-1 ordering rational numbers (M1.3.1)	**SE / TE:** 31-34, 66C, 87-90, 654
	TE: 2D
[7] N-2 [modeling (place value blocks) or identifying place value positions of whole numbers and decimals L] (M1.3.2)	**SE / TE:** 2, 658-659
[7] N-3 converting between expanded notation (multiples of ten) and standard form for decimal numbers (M1.3.3) • of positive fractions, decimals, or percents by	**SE / TE:** 106-110
[7] N-4 identifying or representing equivalents of numbers (M1.3.4 & M3.3.5)	**SE / TE:** 279-287
Understanding Meaning of Operations	
The student demonstrates conceptual understanding of mathematical operations by	
[7] N-5 using models, explanations, number lines, real-life situations, describing or illustrating the effects of arithmetic operations on rational numbers (fractions, decimals) (M1.2.3)	**SE / TE:** 12-13, 16, 19, 20, 36-40, 43-44, 125-127, 135, 140
	TE: 2C

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Number Theory	
The student demonstrates conceptual understanding of number theory by	
[7] N-6 using commutative, [associative L], inverse, or identity properties with rational numbers (M1.3.6)	**SE/TE:** 9, 15, 181, 186-188, 210-211
[7] N-7 applying rules of divisibility to whole numbers (M1.3.5)	**SE/TE:** 73
[7] N-8 identifying prime and composite numbers (M1.3.5)	**SE/TE:** 75
[7] N-9 [using distributive property with rational numbers L] (M1.3.6)	**SE/TE:** 48-51
Measurement: Select and use systems, units, and tools of measurement	
Measurement Performance Standards that apply to grades 7-8:	
M2.3.1 Estimate and measure various dimensions to a specified degree of accuracy. M2.3.2 Estimate and convert measurements within the same system. M2.3.3 Use a variety of methods and tools to construct and compare plane figures. M2.3.4 Describe and apply the relationships between dimensions of geometric figures to solve problems using indirect measurement; describe and apply the concepts of rate and scale. M2.3.5 Apply information about time zones and elapsed time to solve problems.	
Measurable Attributes	
The student demonstrates understanding of measurable attributes by	
[7] MEA-1 [estimating length to the nearest sixteenth of an inch or millimeter, volume to the nearest cubic centimeter or milliliter or angle to the nearest 30 degrees L] (M2.3.1)	**SE/TE:** 329, 331, 374-375, 423
[7] MEA-2 identifying or using equivalent English (square inches, square feet, square yards) or metric systems (square centimeters, square meters) (M2.3.2)	**SE/TE:** T670
Measurement Techniques	
The student uses measurement techniques by	
[7] MEA-3 applying a given scale factor to find missing dimensions of similar figures (M2.3.4)	**SE/TE:** 252-255
	TE: 226D
[7] MEA-4 measuring various dimensions to one-sixteenth of an inch or millimeter (M2.3.1)	**SE/TE:** 154-157

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[7] MEA-5 accurately measuring a given angles using a protractor to the nearest plus or minus 2 degrees (M2.3.1)	**SE / TE:** 329, 331
[7] MEA-6 solving real-world problems involving elapsed time between world time zones (M2.3.5)	**SE / TE:** Course 1 p: 250
Estimation and Computation: Perform basic arithmetic functions, make reasoned estimates, and select and use appropriate methods or tools	
Estimation and Computation Performance Standards that apply to grades 7-8:	
M3.3.1 Apply, explain, and assess the appropriateness of a variety of estimation strategies including truncating and rounding to compatible numbers. M3.3.2 Apply basic operations efficiently and accurately, using estimation to check the reasonableness of results. M3.3.3 Add and subtract fractions, decimals, and percents. M3.3.4 Multiply and divide rational numbers in various forms including fractions, decimals, and percents. M3.3.5 Convert between equivalent fractions, decimals, percents, and proportions. Convert from exact to decimal representations of irrational numbers. M3.3.6 Solve problems using ratios and proportions.	
Estimation	
The student solves problems (including real-world situations) using estimation by	
[7] E&C-1 identifying or using [a variety of L] strategies, including truncating, rounding, front-end estimation, compatible numbers, to check for reasonableness of solutions (M3.3.1)	**SE / TE:** Sample pages: 28, 14, 21, 24, 26, 29, 46, 127, 287, 131,
[7] E&C 2 [comparing results of different strategies L] (M3.3.1)	**SE / TE:** 28, 55, 76, 78, 143, 202, 246, 332, 390, 437, 505, 534, 600
Computation	
The student accurately solves problems (including real-world situations) involving	
[7] E&C-3 adding or subtracting fractions or mixed numbers with unlike denominators, or decimals to the thousandths place (M3.3.3)	**SE / TE:** 8-12, 118C, 126-133,
	TE: 2C
[7] E&C-4 multiplying or dividing decimals to hundredths, or multiplying or dividing by powers of ten, or multiplying or dividing fractions or mixed numbers (M3.3.4)	**SE / TE:** 13-17, 19-23, 106-110, 118C, 136-145, 661-665
	TE: 2C

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[7] E&C-5 converting between equivalent fractions, terminating decimals, or percents (10% = 1/10 = 0.1) (M3.3.5)	**SE / TE:** 279-287
	TE: 272C
[7] E&C-6 solving proportions using a given scale (M3.3.6)	**SE / TE:** 238-241, 244-248, 251, 252-255, 258-263
	TE: 226C-226D
Functions and Relationships: Represent, analyze, and use patterns, relations, and function	
Functions and Relationships Performance Standards that apply to grades 7-8:	
M4.3.1 Identify numeric and geometric patterns to find the next term and predict the nth term. M4.3.2 Identify and describe how a change in one variable in a function affects the remaining variables (e.g.,, how changing the length affects the area and volume of a rectangular prism). M4.3.3 Use a calculator to find a missing item in arithmetic and a geometric sequence; predict the graph of each function. M4.3.4 Translate among and use tables of ordered pairs, graphs on coordinate planes, and linear equations as tools to represent and analyze patterns. M4.3.5 Find the value of a variable by evaluating formulas and algebraic expressions for given values.	
Describing Patterns and Functions	
The student demonstrates conceptual understanding of functions, patterns, or sequences including those represented in real-world situations by	
[7] F&R-1 describing or extending patterns (linear), up to ten terms, represented in tables, sequences, or in problem situations (M4.3.1)	**SE / TE:** 441-447, 456-459
[7] F&R-2 generalizing relationships (linear) using a table of ordered pairs, a function, or an equation (M4.3.4)	**SE / TE:** 441-447, 451-459
[7] F&R-3 describing in words how a change in one variable in a formula affects the remaining variables (how changing the length affects the area of a quadrilateral) (M4.3.2)	**SE / TE:** 472-475
[7] F&R-4 [using a calculator as a tool when describing, extending, or representing patterns L] (M4.3.3)	**SE / TE:** 460

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Modeling and Solving Equations and Inequalities	
The student demonstrates algebraic thinking by	
[7] F&R-5 evaluating algebraic expressions (M4.3.5)	**SE / TE:** 169-173, 194
	TE: 166C
[7] F&R-6 solving or identifying solutions to one-step linear equations of the form x±a=b or ax=b, where a and b are whole numbers, translating a story problem into an equation of similar form, or translating a story problem into an equation of similar form and solving it (M4.3.5)	**SE / TE:** T55, 174-184, 186-190
	TE: 166C
Geometry: Construct, transform, and analyze geometric figures	
Geometry Performance Standards that apply to grades 7-8:	
M5.3.1 Identify, classify, compare, and sketch regular and irregular polygons. M5.3.2 Model, identify, draw, and describe 3-dimensional figures including tetrahedrons, dodecahedrons, triangular prisms, and rectangular prisms. M5.3.3 Apply the properties of equality and proportionality to solve problems involving congruent or similar shapes. M5.3.4 Estimate and determine volume and surface areas of solid figures using manipulatives and formulas; estimate and find circumferences and areas of circles. M5.3.5 Draw and describe the results of transformations including translations (slides), rotations (turns), reflections (flips), and dilations (shrinking or enlarging). M5.3.6 Use coordinate geometry to represent and interpret relationships defined by equations and formulas including distance and midpoint. M5.3.7 Draw, measure, and construct geometric figures including perpendicular bisectors, polygons with given dimensions and angles, circles with given dimensions, perpendicular and parallel lines.	
Geometric Relationships	
The student demonstrates an understanding of geometric relationships by	
[7] G-1 using the attributes and properties of polygons (diagonals, number of sides and angles) to identify and classify regular or irregular polygons (M5.3.1)	**SE / TE:** 336-344
	TE: 322C-322D,

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[7] G-2 using the attributes and properties of prisms (vertices, length and alignment of edges, shape and number of bases, shape of faces) to identify and describe triangular or rectangular pyramids (M5.3.2)	**SE/TE:** 410-413
	TE: 372D
Transformation of Shapes	
The student demonstrates conceptual understanding of similarity, congruence, symmetry, or transformations of shapes by	
[7] G-3 using a scale factor to solve problems involving similar shapes (e.g., scale drawings, maps) (M5.3.3)	**SE/TE:** 252-256, 258-264
	TE: 226D
[7] G-4 [drawing or describing the results of applying transformations such as translations, rotations, reflections, or dilations to figures L] (M5.3.5)	**SE/TE:** 509-522
	TE: 484D
Perimeter, Area, and Volume	
The student solves problems (including real-world situations) by	
[7] G-5 determining the volume of cubes and rectangular prisms (M5.3.4)	**SE/TE:** 419, 421-426
	TE: 372D
[7] G-6 determining the surface area of rectangular prisms (M5.3.4)	**SE/TE:** 414-418
	TE: 372D
[7] G-7 determining the circumference of a circle (M5.3.4)	**SE/TE:** 394-397
	TE: 372C
Position and Direction	
The student demonstrates understanding of position and direction by	
[7] G-8 graphing or identifying values of variables on a coordinate grid (M5.3.6)	**SE/TE:** 486-489
	TE: 484C

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Construction	
The student demonstrates a conceptual understanding of geometric drawings or constructions by	
[7] G-9 [drawing or measuring polygons with given dimensions and angles or circles with given dimensions L] (M5.3.7)	**SE/TE:** 365, 393
Statistics and Probability: Formulate questions, gather and interpret data, and make predictions	
Statistics and Probability Performance Standards that apply to grades 7-8:	
M6.3.1 Collect, analyze, and display data in a variety of visual displays including frequency distributions, circle graphs, box and whisker plots, stem and leaf plots, histograms, and scatter plots with and without technology. M6.3.2 Interpret and analyze information found in newspapers, magazines, and graphical displays. M6.3.3 Determine and justify a choice of mean, median, or mode as the best representation of data for a practical situation. M6.3.4 Make projections based on available data and evaluate whether or not inferences can be made given the parameters of the data. M6.3.5 Use tree diagrams and sample spaces to make predictions about independent events. M6.3.6 Design and conduct a simulation to study a problem and communicate the results.	
Data Display	
The student demonstrates an ability to classify and organize data by	
[7] S&P-1 [collecting, L] displaying, organizing, or explaining the classification of data in real-world problems (e.g., science or humanities, peers or community), using circle graphs, frequency distributions, stem and leaf, [or scatter plots L] with appropriate scale (M6.3.1)	**SE/TE:** 354-359, 355, 358, 532-536, 544-547, 567-570
Analysis and Central Tendency	
The student demonstrates an ability to analyze data (comparing, explaining, interpreting, evaluating or making predictions; or drawing or justifying conclusions) by	
[7] S&P-2 using information from a variety of displays (e.g., as found in graphical displays in newspapers and magazines) (M6.3.2)	**SE/TE:** 532-564, 566-570
	TE: 530C-530D

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[7] S&P-3 determining range, mean, median, or mode (M6.3.3)	**SE / TE:** 53-58
	TE: 2D
Probability	
The student demonstrates a conceptual understanding of probability and counting techniques by	
[7] S&P-4 determining the [experimental L] and theoretical probability of a simple event (M6.3.5)	**SE / TE:** 580-589
	TE: 578C
[7] S&P-5 using a systematic approach to finding sample spaces or to making predictions about the probability of independent events (M6.3.5)	**SE / TE:** 598-602
[7] S&P-6 [designing and conducting a simulation to study a problem and communicate the results L] (M6.3.6)	**SE / TE:** 587-588
Content Standards B, C, D, and E: Process skills and abilities	
Applying conceptual knowledge and skills designated in all strands of Content Standard A by problem solving, communicating, reasoning, and making connections	
Problem-Solving Performance Standards that apply to grades 7-8:	
M7.3.1 Analyze and summarize a problem using the relationships between the known facts and unknown information. M7.3.2 Select, modify, and apply a variety of problem-solving strategies including graphing, inductive and deductive reasoning, Venn diagrams, and spreadsheets. M7.3.3 Evaluate, interpret, and justify solutions to problems.	
Problem solving: Understand and be able to select and use a variety of problem-solving strategies	
The student demonstrates an ability to problem solve by	
[7] PS-1 selecting, modifying, and applying a variety of problem-solving strategies (e.g., working backwards, drawing a picture, Venn diagrams and verifying the results) (M7.3.2)	**SE / TE:** T22, T46-T55
[7] PS-2 evaluating, interpreting, and justifying solutions to problems (M7.3.3)	**SE / TE:** 8, 9, 14, 15, 52, 127, 130, 131, 137, 142, 178, 233, 280, 285, 299, 302, 329, 384, 423, 446, 462

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Communication: Form and use appropriate methods to define and explain mathematical relationships	
The student communicates his or her mathematical thinking by	
[7] PS-3 representing mathematical problems numerically, graphically, and/or symbolically; or using appropriate vocabulary, symbols, or technology to explain, justify, and defend strategies and solutions (M8.3.1, M8.3.2, & M8.3.3)	**SE / TE:** Sample pages: 9, 14, 127, 149, 194-195, 200-201, 233, 299, 329, 610
Reasoning Performance Standards that apply to grades 7-8:	
M9.3.1 Use informal deductive and inductive reasoning in both concrete and abstract contexts. M9.3.2 State counterexamples to disprove statements. M9.3.3 Justify and defend the validity of mathematical strategies and solutions using examples and counterexamples.	
Reasoning: Use logic and reason to solve mathematical problems	
The student demonstrates an ability to use logic and reason by	
[7] PS-4 using informal deductive and inductive reasoning in concrete contexts or stating counterexamples to disprove statements; or justifying and defending the validity of mathematical strategies and solutions using examples (M9.3.1, M9.3.2, & M9.3.3)	**SE / TE:** Sample pages: 9, 24, 36, 63, 168, 175, 249, 369, 443, 446-447
Connections: Apply mathematical concepts and processes to situations within and outside of school	
The student understands and applies mathematical skills and processes across the content strands by	
[7] PS-5 using real-world contexts such as science, humanities, peers, and community (M10.3.1 & M10.3.2)	**SE / TE:** T20-T21