



MathScape

Seeing and Thinking Mathematically
Course 2

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STANDARDS		PAGE REFERENCES
Numbers, Number Sense, and Computation		
Content Standard 1.0: <i>To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will accurately calculate, use estimation techniques, number relationships, operation rules, and algorithms; they will determine the reasonableness of answers and the accuracy of solutions.</i>		
By the end of Grade 7 , students know and are able to do everything required in the previous grades and:		
1.7.1 Read, write, and compute ratios ¹ and proportions ; read, write, add, subtract, multiply, and divide positive and negative numbers.	I/S	Student Edition: 16-17, 18-19, 20-21, 22-23, 38, 39, 40, 41, 96-97, 98-99, 100-101, 102-103, 124, 125, 126, 127 Teacher's Guide: 16A, 17A, 18A, 19A, 20A, 21A, 96A, 100A, 101A, 102A
1.7.2 Apply positive and negative numbers, ratios, and proportions to solve mathematical and practical problems.	E/S	Student Edition: 16-17, 18-19, 20-21, 22-23, 38, 39, 40, 41, 96-97, 98-99, 100-101, 102-103, 124, 125, 126, 127 Teacher's Guide: 16A, 17A, 18A, 19A, 20A, 21A, 96A, 100A, 101A, 102A

STANDARDS		PAGE REFERENCES
1.7.3 Use absolute value and the properties of real numbers including distributive, commutative , and associative to solve problems.	E/S	Student Edition: 96-97, 98-99, 108-109, 188-189, 214, 314 Teacher's Guide: 188A, 188, 189A, 189
1.7.6 Compare and order groups containing a mix of fractions, percents, and decimals (e.g., on a number line).	I/S	See Glencoe's <i>MathScope: Seeing and Thinking Mathematically Course 1</i> © 2005 Student Edition: 112-113, 114-115, 148, 149, 214-215, 216-217, 244-245, 258, 259, 266, 268, 270 Teacher's Guide: 111A, 111, 112A, 113A, 115A, 214A, 214, 216A, 217A
1.7.7 Select and round to the appropriate significant digit; estimate using a variety of methods.	E/S	Student Edition: 146-147, 156-157, 160-161, 162-163, 164-165, 177 Teacher's Guide: 146A, 162A
1.7.9 Translate among fractions, decimals and percents.	E/S	Student Edition: 54-55, 82 Also see Glencoe's <i>MathScope: Seeing and Thinking Mathematically Course 1</i> © 2005 210-211, 212-213, 256, 257 Teacher's Guide: 210A, 210, 211A, 211, 212A, 213A, 214A
Patterns, Functions, and Algebra		
Content Standard 2.0: <i>To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will use various algebraic methods to analyze, illustrate, extend, and create numerous representations (words, numbers, tables, and graphs) of patterns, functions, and algebraic relations as modeled in practical situations.</i>		
2.7.1 Use and create coordinate graphs (i.e., linear, geometric, and exponential) to represent and/or interpret patterns and relationships, with and without calculators.	E/S	Student Edition: 194-195, 196-197, 198-199, 200-201, 204-205, 216, 217, 218, 219, 220 Teacher's Guide: 194A, 196A, 199A, 200A
2.7.2 Identify, model, describe, and evaluate relationships using graphs, with and without technology.	E/S	Student Edition: 194-195, 196-197, 198-199, 200-201, 204-205, 216, 217, 218, 219, 220 Teacher's Guide: 194A, 196A, 199A, 200A

STANDARDS		PAGE REFERENCES
2.7.3 Evaluate formulas and algebraic expressions for given values of a variable (e.g., $A = lw$ given $l = 6$, $w = 2$, then $A = 12$).	I/S	Student Edition: 184-185, 188-189, 206-207, 208-209, 222, 212 Teacher's Guide: 188A, 189A, 206A, 208A
2.7.4 Represent mathematical situations using algebraic language and symbols	I/S	Student Edition: 184-185, 188-189, 190-191, 196-197, 208-209, 210-211, 213, 214, 215, 217, 222, 223 Teacher's Guide: 188A, 189A, 190A, 196A, 208A, 210A
2.7.5 Combine like terms variable expressions (e.g., $2a+3a=5a$).	I/L	Student Edition: 188-189, 208-209, 214, 222 Teacher's Guide: 188A, 208A
2.7.6 Model, identify, and solve linear equations and inequalities using concrete and informal methods; relate this process to the order of operations.	I/S	Student Edition: 184-185, 186-187, 206-207, 208-209, 210-211, 212, 213, 221, 222, 223 Teacher's Guide: 184A, 186A, 206A, 208A
2.7.7 Generate and graph a set of ordered pairs to solve a linear equation	I/S	Student Edition: 194-195, 196-197, 198-199, 200-201, 216, 217, 218, 219 Teacher's Guide: 197A, 198A, 200A
Measurement		
Content Standard 3.0: <i>To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will use appropriate tools and techniques of measurement to determine, estimate, record, and verify direct and indirect measurements.</i>		
3.7.1 Estimate and convert, units of measure for mass , and volume within the same measurement system; compare corresponding units of the two systems.	E/S	See Glencoe's <i>MathScape: Seeing and Thinking Mathematically Course 1</i> © 2005 Student Edition: 284-285, 292-293, 294-295, 306-307, 318 #17
3.7.2 Given a measurement, determine the greatest possible error .	W/L	See Glencoe's <i>MathScape: Seeing and Thinking Mathematically Course 1</i> © 2005 After defining and discussing the terms, <i>scale factor</i> can be used to meet this standard. Student Edition: 280-281, 282-283, 286-287, 290-291, 292-293, 302-303

STANDARDS		PAGE REFERENCES
3.7.3 Estimate, measure to the required degree of accuracy, derive, and apply standard formulas to find the volume and surface area of solid figures (e.g., cylinders , triangular solids).	I/S	Student Edition: 154-155, 175 <i>Also see Glencoe's MathScape: Seeing and Thinking Mathematically Course 3 © 2005</i> Student Edition: 98-101, 104-109, 114-117, 124-128, 131, 133
3.7.5 Write, solve, and apply proportions.	I/S	Student Edition: 20-21, 22-23, 40, 41, 142-143, 169 Teacher's Guide: 20A, 21A, 22A, 23A, 142A
3.7.6 Use elapsed time to solve practical problems (e.g., develop schedules, plan trips).	E/S	Student Edition: 38 #12-#15, 39 #4
Spatial Relationships and Geometry		
Content Standard 4.0: <i>To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will identify, represent, explain, verify, and apply spatial relationships and geometric properties.</i>		
4.7.1 Identify, describe by properties, classify, compare, and draw regular and irregular polygons; find the sum of the interior angles.	E/S	Student Edition: 276-277, 278-279, 284-285, 286-287, 303, 304, 306, 307 Teacher's Guide: 276A, 278A, 284A, 285A, 286A
4.7.2 Use ratio and proportions to create scale drawings.	I/L	Student Edition: 140-141, 142-143, 144-145, 168, 169, 170 Teacher's Guide: 140A, 141A, 142A, 143A
4.7.3 Use coordinate geometry and models to demonstrate geometric transformations including rotate/turn, translate/slide, reflect/flip by finding the ordered pairs that describe the location of the original and the transformed figures.	I/S	Student Edition: 288-289, 308 Teacher's Guide: 288A
4.7.4 Make a model of a three-dimensional figure from a two-dimensional drawing and make a two-dimensional drawing of a three dimensional object.	I/L	Student Edition: 150-151, 152-153, 172, 173 Teacher's Guide: 150A, 151A, 151

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4.7.5 Use coordinate geometry to represent slope, midpoint, and horizontal and vertical distance.	I/S	Student Edition: 196-197, 217 Teacher's Guide: 196A, 197A
4.7.6 Describe the properties of geometric relationships including parallel lines, perpendicular lines, bisectors, triangles, and quadrilaterals (e.g., properties of angles formed by a transversal of parallel lines).	I/S	Student Edition: 276-277, 278-279, 280-281, 284-285, 303, 304, 305, 306 Teacher's Guide: 276A, 279A, 280A, 281A, 284A
4.7.7 Model the Pythagorean Theorem ; solve for the hypotenuse using the theorem.	I/S	Also see Glencoe's <i>MathScape: Seeing and Thinking Mathematically Course 3</i> © 2005 Student Edition: 236-237, 238-239, 260-261
4.7.8 Construct and verify congruent angles, and parallel and perpendicular lines using hand tools.	W/L	Student Edition: 274-275, 280-281, 302, 305 Teacher's Guide: 274A
Data Analysis		
Content Standard 5.0: <i>To solve problems, communicate, reason, and make connections within and beyond the field of mathematics, students will collect, organize, display, interpret, and analyze data to determine statistical relationships and probability projections.</i>		
5.7.1 Organize, display, read, and analyze data, with and without technology, using a variety of displays including frequency distributions and circle graphs.	E/S	Student Edition: 8-9, 28-29, 32-33, 43, 45, 52-53, 74-75, 81, 89, 163, 177, 244-245, 248-249, 264, 266
5.7.4 Select, use, and graph (when possible) measures of variability including range, distribution and possible outliers.	I/S	Student Edition: 8-9, 35, 76-77, 90, 162-163 Teacher's Guide: 163A
5.7.6 Given a set of data, interpolate and extrapolate to make and explain predictions.	E/S	Student Edition: 74-75, 78-79, 89, 91 Teacher's Guide: 74A, 75A, 78A, 79A

STANDARDS		PAGE REFERENCES
Problem Solving		
Process Standard 6.0: <i>Students will develop their ability to solve problems by engaging in developmentally appropriate problem-solving opportunities in which there is a need to use various approaches to investigate and understand mathematical concepts in order to: formulate their own problems; find solutions to problems from everyday situations; develop and apply strategies to solve a wide variety of problems; and integrate mathematical reasoning, communication and connections.</i>		
6.1 Select, modify, develop, and apply strategies to solve a variety of mathematical and practical problems and to investigate and understand mathematical concepts. S 1.2.3; S 1.5.1; S 1.8.1; S 1.8.4; S 1.12.2; S 1.12.4; S 2.12.1; S 3.2.3; S 10.5.2; S 14.8.6; S 19.12.2; S 21.3.1	E/S	Student Edition: 6-7, 10-11, 12-13, 22-23, 32-33, 74-75, 78-79 Teacher's Guide: 7A, 10A, 74A
6.2 Apply previous experience and knowledge to new problem-solving situations.	E/S	Student Edition: 32-33, 45, 50-51, 52-53, 80, 81, 106-107, 210-211, 223 Teacher's Guide: 50A, 52A, 106A, 210A, 211A
6.5 Verify, interpret, and evaluate results with respect to the original problem situation, determining an efficient strategy for the given situation. S 21.5.3; S 21.12.3	E/S	Student Edition: 50-51, 52-53, 54-55, 58-59, 62-63, 66-67, 68-69, 78-79, 80, 81, 82, 83, 85, 86, 87, 91
6.7 Apply multi-step, integrated, mathematical problem-solving strategies, persisting until a solution is found or until it is clear that no solution exists. S 19.12.2	E/S	Student Edition: 116-117, 118-119, 120-121, 132, 133, 134, 204-205, 206-207, 208-209, 220, 221, 222 Teacher's Guide: 116A, 118A, 120A, 204A, 206A, 208A, 209A
6.9 Generalize solutions and strategies from earlier problems to new problem situations.	E/L	Student Edition: 122-123, 125 #15-#19, 127 #16-#17, 128 #30, 130 #18, 131 #26-#27, 135, 164-165, 178 Teacher's Guide: 122A, 164A

STANDARDS		PAGE REFERENCES
6.10 Interpret and solve a variety of mathematical problems by paraphrasing, identifying necessary and extraneous information, selecting and justifying efficient methods and/or strategies, and ensuring the answer is reasonable.	E/S	Student Edition: 6-7, 8-9, 10-11, 12-13, 26-27, 34, 35, 37, 42, 74-75 Teacher's Guide: 6A, 8A, 10A, 11A, 26A, 27A, 74A
6.13 Use technology, including calculators, to solve problems and verify solutions. S 24.5.5; S 24.8.5	E/L	Student Edition: 236-237, 238-239, 240-241, 246-247, 254-255 Teacher's Guide: 236A, 237A, 238A, 240A, 246A
6.14 Use technology, including calculators, to investigate, define, and describe quantitative relationships such as patterns and functions. G 7.12.3; S 1.5.1; S 1.12.2; S 1.12.4; S 14.8.6; S 24.5.5; S 24.8.5	E/L	Student Edition: 236-237, 238-239, 240-241, 246-247, 254-255 Teacher's Guide: 236A, 237A, 238A, 240A, 246A
Mathematical Communication		
Process Standard 7.0: <i>Students will develop their ability to communicate mathematically by solving problems in which there is a need to obtain information from the real world through reading, listening, and observing in order to: translate this information into a mathematical language and symbols; process this information mathematically; and present results in written, oral and visual formats.</i>		
7.1 Discuss and exchange ideas about mathematics as a part of learning. E 10.2.3; E 10.3.3; E 10.5.3; E 10.3.1; E 10.5.1; E 10.12.1; S 23.5.2	E/L	Student Edition: 32-33, 74-75, 78-79, 122-123, 124 #17, 129 #15, 166-167, 179, 210-211 Teacher's Guide: 33A, 74A, 78A, 79A, 122A, 166A, 167A
7.2 Use inquiry techniques (e.g., discussion, questioning, research, data gathering) to solve mathematical problems. E 4.2.3; E 10.2.2; E 10.3.2; E 10.5.2; E 10.8.2; E 11.2.1; E 11.3.1; E 11.5.1; E 11.8.1; E 11.12.1; E 11.2.2; S 1.5.1; S 1.8.1; S 1.8.4; S 1.12.4; S 10.5.2; S 14.8.6; S 21.3.1	E/L	Student Edition: 6-7, 8-9, 12-13, 34, 35, 37, 52-53, 58-59, 66-67, 68-69, 70-71, 74-75, 76-77, 78-79, 81, 83, 86, 87, 88, 89, 90, 91, 210-211, 261 #7

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7.3 Read expository text to learn about mathematics. E 1.8.3; E 1.12.3; E 2.12.3; E 4.8.1; E 4.8.2; E 4.8.3	I/L	Student Edition: 108, 110, 118, 162, 228, 252
7.6 Interpret and solve word problems without the necessity of key words or phrases.	E/S	Student Edition: 108-109, 120-121, 134, 162-163
7.9 Model and explain mathematical relationships using oral, written, graphical, and algebraic methods. E 5.8.1; E 5.8.2; E 6.8.2; E 11.8.5; E 11.12.5; S 1.12.2; S 1.12.4; S 14.8.6; S 20.12.1; S 22.8.2; S 22.12.2	E/S	Student Edition: 122-123, 204-205, 210-211, 220, 223, 230-231, 232-233, 244-245, 246-247, 259, 260, 264, 265 Teacher's Guide: 122A, 204A, 232A, 233A, 244A, 246A
7.10 Evaluate the effectiveness of written and oral presentations of mathematics. S 21.5.3; S 23.5.2	I/L	Student Edition: 166-167, 228-229, 232-233, 258, 260 Teacher's Guide: 166A, 167A, 228A, 232A, 233A
7.11 Make conjectures and present arguments in discussions of mathematical ideas. S 21.5.3; S 23.5.3	E/L	Student Edition: 108-109, 110-111, 112-113, 122-123, 129, 130, 131, 135 Teacher's Guide: 108A, 109A, 110A, 111A, 112A, 113A, 122A
7.13 Explain and evaluate thinking about mathematical ideas and solutions. E 10.8.2; E 10.12.4; S 21.5.3	I/L	Student Edition: 248-249, 252-253, 254-255, 256-257, 267, 268, 269 Teacher's Guide: 248A, 252A, 253A, 254A, 256A
7.15 Use everyday language to explain thinking about strategies and solutions to mathematical problems. S 21.5.3; S 23.5.3	E/L	Student Edition: 66-67, 68-69, 70-71, 78-79, 86, 87, 88, 91 Teacher's Guide: 66A, 67A, 68A, 70A, 78A

STANDARDS		PAGE REFERENCES
7.16 Express mathematical ideas and use them to define, compare, and solve problems orally and in writing.	E/S	Student Edition: 106-107, 108-109, 110-111, 112-113, 122-123, 124 #17, 126 #13, 128 #30, 129 #15, 133 #20 Teacher's Guide: 106A, 107A, 108A, 110A, 112A, 122A
7.17 Use mathematical notation to communicate and explain mathematical situations. S 21.2.1	E/L	Student Edition: 140-141, 146-147, 156-157, 160-161, 164-165, 166-167, 168 #20, 171 #13 Teacher's Guide: 140A, 146A, 147A, 156A, 160A, 164A, 166A
Mathematical Reasoning		
Process Standard 8.0: <i>Students will develop their ability to reason mathematically by solving problems in which there is a need to investigate significant mathematical ideas and construct their own learning in all content areas in order to justify their thinking; reinforce and extend their logical reasoning abilities; reflect on and clarify their own thinking; and ask questions to extend their thinking.</i>		
8.2 Justify answers and the steps taken to solve problems, with and without manipulatives and physical models. S 1.5.1; S 10.5.2; S 20.5.1	E/S	Student Edition: 16-17, 18-19, 38, 39, 50-51, 52-53, 54-55, 58-59, 60-61, 62-63, 66-67, 68-69, 80, 81, 83, 84, 86, 87, 160-161 Teacher's Guide: 50A, 52A, 58A, 62A, 63A, 68A
8.4 Use patterns and relationships to analyze mathematical situations; draw logical conclusions about mathematical problems. Ec 3.8.2; Ec 3.8.3; Ec 9.8.4; Ec 3.12.1; Ec 3.12.2; Ec 3.12.3; Ec 3.12.4; Ec 6.12.6; G 7.12.4; S 17.3.2	E/S	Student Edition: 86 #10-#12, 106-107, 112-113, 120-121, 122-123, 128, 134, 135, 190-191 Teacher's Guide: 112A, 120A, 122A, 190A
8.5 Follow a logical argument and judge its validity. E 4.8.4; E 4.12.4	E/L	Student Edition: 108-109, 110-111, 112-113, 122-123, 129, 130, 131, 135 Teacher's Guide: 108A, 109A, 110A, 111A, 112A, 113A, 122A
8.7 Recognize and apply deductive and inductive reasoning in both concrete and abstract contexts.	E/S	Student Edition: 288-289, 308 #10 Teacher's Guide: 289

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8.8 Ask questions to reflect on, clarify, and extend thinking.	E/L	Student Edition: 6-7, 8-9, 12-13, 34, 35, 37, 52-53, 58-59, 66-67, 68-69, 70-71, 74-75, 76-77, 78-79, 81, 83, 86, 87, 88, 89, 90, 91, 210-211, 261 #7
8.9 Review and refine the assumptions and steps used to derive conclusions in mathematical arguments.	I/L	Student Edition: 108-109, 110-111, 112-113, 122-123, 129, 130, 131, 135 Teacher's Guide: 108A, 109A, 110A, 111A, 112A, 113A, 122A
8.11 Determine relevant, irrelevant, and/or sufficient information to solve mathematical problems.	E/S	Student Edition: 6-7, 8-9, 10-11, 12-13, 30-31, 32-33, 34, 35, 36, 37, 44, 45, 74-75, 76-77 Teacher's Guide: 6A, 8A, 9A, 10A, 30A, 32A, 76A
Mathematical Connections		
Process Standard 9.0: <i>Students will develop the ability to make mathematical connections by solving problems in which there is a need to view mathematics as an integrated whole, identifying relationships between context strands, and integrating mathematics with other disciplines, allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics.</i>		
9.1 Link new concepts to prior knowledge.	E/L	Student Edition: 32-33, 45, 50-51, 52-53, 80, 81, 106-107, 210-211, 223 Teacher's Guide: 50A, 52A, 106A, 210A, 211A
9.2 Use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics.	E/S	Student Edition: 142-143, 144-145, 146-147, 150-151, 156-157, 160-161, 162-163, 164-165, 169, 170, 171, 172, 175, 176, 177, 178 Teacher's Guide: 142A, 143A, 144A, 156A, 162A
9.3 Use models to explain the relationship of concepts to procedures. S 1.5.1; S 1.8.1; S 1.12.2; S 1.8.4; S 1.12.4; S 10.5.2; S 14.8.6; S 20.5.1	E/S	Student Edition: 98-99, 100-101, 116-117, 125, 126, 132, 208-209, 222 Teacher's Guide: 98A, 100A, 116A, 208A

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9.4 Use the connections among mathematical topics to develop multiple approaches to problems. S 20.8.1	I/L	Student Edition: 10-11, 12-13, 16-17, 32-33, 37, 45 Teacher's Guide: 10A, 12A, 32A
9.6 Use and analyze the connections between Mathematics and other disciplines. Ec 2.8.2; Ec 2.12.4; Ec 2.12.8; H 2.8.3; H 2.12.3; S 2.12.1; S 14.12.5	I/L	Student Edition: 140-141, 142-143, 144-145, 146-147, 150-151, 162-163, 164-165, 168, 169, 170, 171, 172, 177, 178 Teacher's Guide: 140A, 142A, 144A, 145A, 150A
9.7 Apply mathematical thinking and modeling to solve problems that arise in other disciplines (e.g., rhythm in music and motion in science). S 1.5.1; S 1.8.1; S 1.12.2; S 1.8.4; S 1.12.4; S 10.5.2; S 14.8.6; S 19.12.2	E/L	Student Edition: 32-33, 38 #16, 39 #1-#2, 45, 127 #16-#17, 128 #30, 198-199, 212 #20, 213 #24
9.8 Identify, explain, and use mathematics in everyday life. Ec 2.3.2; Ec 2.12.12; Ec 5.2.1; Ec 5.3.1; S 24.12.2	I/S	Student Edition: 6-7, 8-9, 10-11, 12-13, 18-19, 20-21, 26-27, 30-31, 32-33, 34, 35, 36, 37, 39, 40, 42, 44, 45, 82 #8, 84, 204-205, 220, 228-229, 230-231, 258, 259