



MathScape

Seeing and Thinking Mathematically
Course 2

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STANDARDS	PAGE REFERENCES
<p>Content Standard A: Mathematical facts, concepts, principles, and theories</p> <p>Numeration: Understand and use numeration</p> <p>Measurement: Select and use systems, units, and tools of measurement</p>	
<p>Understanding Numbers</p>	
<p>The student demonstrates understanding</p> <ul style="list-style-type: none"> of rational numbers (fractions, decimals, percents, or integers) by 	
<p>[7] N-1 ordering <u>rational</u> numbers (M1.3.1)</p>	<p>Student Edition: 6-7, 10-11, 16-17, 34, 36, 161, 163, 186-187, 190-191, 213</p> <p>Teacher's Guide: 6A, 7A, 11A, 161A, 163A, 191A</p>
<p>[7] N-2 [modeling (place value blocks) or identifying place value positions of <u>whole numbers and decimals</u> L] (M1.3.2)</p>	<p>Student Edition: 62-63, 84, 108-109, 212-213</p> <p>Teacher's Guide: 63A, 109A, 208A, 212A</p>
<p>[7] N-3 converting between expanded notation (multiples of ten) and standard form for <u>decimal numbers</u> (M1.3.3)</p>	<p>See <i>MathScape: Seeing and Thinking Mathematically Course 3</i> © 2005</p> <p>Student Edition: 300-301, 313</p> <p>Teacher's Guide: 269H, 300A</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> of positive fractions, decimals, or percents by 	
<p>[7] N-4 identifying or <u>representing</u> equivalents of numbers (M1.3.4 & M3.3.5)</p>	<p>Student Edition: 16-17, 18-19, 26-27, 28-29, 42, 43</p> <p>Teacher’s Guide: 24, 26A, 28A</p>
<p>Understanding Meaning of Operations</p>	
<p>The student demonstrates conceptual understanding of mathematical operations by</p>	
<p>[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)</p>	<p>Student Edition: 58-59, 78-79, 83, 91, 97, 98-99, 100-101, 102-103, 126, 127, 156-157, 175, 190-191, 196-197, 215, 217</p> <p>Teacher’s Guide: 94, 95, 98A, 100A, 102A</p>
<p>Number Theory</p>	
<p>The student demonstrates conceptual understanding of number theory by</p>	
<p>[7] N-6 using commutative, [associative L], inverse, or identity properties with <u>rational numbers</u> (M1.3.6)</p>	<p>Student Edition: 100-101, 102-103, 106-107, 127, 128, 188-189, 214, 238-239, 262</p> <p>Teacher’s Guide: 93G, 102A, 103A, 183, 189A</p>
<p>[7] N-7 applying <u>rules of divisibility to whole numbers</u> (M1.3.5)</p>	<p>Student Edition: 116-117, 132</p> <p>Teacher’s Guide: 114-115, 116A</p>
<p>[7] N-8 identifying <u>prime and composite numbers</u> (M1.3.5)</p>	<p>Student Edition: 86, 118-119, 120-121, 122-123, 133, 134, 135</p> <p>Teacher’s Guide: 119A</p>
<p>[7] N-9 [using <u>distributive</u> property with rational numbers L] (M1.3.6)</p>	<p>Student Edition: 188-189, 214</p> <p>Teacher’s Guide: 183, 189A</p>

STANDARDS	PAGE REFERENCES
Measurable Attributes	
The student demonstrates understanding of measurable attributes by	
<p>[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)</p>	<p>Student Edition: 140-141, 168, 274-275, 276-277, 302-303</p> <p>Teacher's Guide: 137G, 271H, 272, 274A</p> <p>Also see <i>volume</i> in <i>MathScape: Seeing and Thinking Mathematically Course 1</i> © 2005</p> <p>Student Edition: 284-287, 294-295, 310, 314</p>
<p>[7] MEA-2 identifying or using equivalent English (square inches, square feet, square yards) or metric systems (square centimeters, square meters) (M2.3.2)</p>	<p>Student Edition: 146-147, 171, 179</p> <p>Teacher's Guide: 137E, 138, 166A</p>
<p>Content Standard A: Mathematical facts, concepts, principles, and theories</p> <p>Measurement: Select and use systems, units, and tools of measurement</p> <p>Estimation and Computation: Perform basic arithmetic functions, make reasoned estimates, and select and use appropriate methods or tools</p> <p>Functions and Relationships: Represent, analyze, and use patterns, relations, and function</p>	
Measurement Techniques	
The student uses measurement techniques by	
<p>[7] MEA-3 applying a given scale factor to find missing dimensions of similar figures (M2.3.4)</p>	<p>Student Edition: 280-281, 305</p> <p>Teacher's Guide: 137G, 138, 281A</p>
<p>[7] MEA-4 measuring various dimensions to one-sixteenth of an inch or millimeter (M2.3.1)</p>	<p>Student Edition: 140-141, 144-145, 146-147, 168, 170, 171</p> <p>Teacher's Guide: 137E, 138</p>
<p>[7] MEA-5 accurately measuring a given angles using a protractor to the nearest plus or minus 2 degrees (M2.3.1)</p>	<p>Student Edition: 274-275, 276-277, 278-279, 302</p> <p>Teacher's Guide: 271G, 272, 274A</p>
<p>[7] MEA-6 solving real-world problems involving elapsed time between <u>world time zones</u> (M2.3.5)</p>	<p>See <i>MathScape: Seeing and Thinking Mathematically Course 3</i> © 2005 for examples that can be used to illustrate this standard.</p> <p>Student Edition: 50-51, 52-53, 74-75, 79, 88</p>

STANDARDS	PAGE REFERENCES
Estimation	
The student solves problems (including real-world situations) using estimation by	
<p>[7] E&C-1 identifying or using [a variety of L] strategies, <u>including truncating, rounding, front-end estimation, compatible numbers</u>, to check for reasonableness of solutions (M3.3.1)</p>	<p>Student Edition: 10-11, 12-13, 26-27, 28-29, 34, 36, 37, 42, 146-147, 154-155, 160-161, 162-163, 171 #13, 177 #11, 298-299, 312</p> <p>Teacher's Guide: 10A, 12A, 25, 27A, 146A, 154A, 161A, 162A, 298A, 299A</p>
<p>[7] E & C 2 [comparing results of different strategies L] (M3.3.1)</p>	<p>Student Edition: 26-27, 146-147, 156-157, 162-163, 166-167</p> <p>Teacher's Guide: 24, 25, 146A, 162A, 163A</p>
Computation	
The student accurately solves problems (including real-world situations) involving	
<p>[7] E&C-3 adding or subtracting <u>fractions or mixed numbers with unlike denominators</u>, or decimals to the <u>thousandths place</u> (M3.3.3)</p>	<p>See <i>MathScape: Seeing and Thinking Mathematically Course 1</i> © 2005</p> <p>Student Edition: 109, 118-121, 123, 125-127, 151-155, 220-221, 254, 260, 275</p>
<p>[7] E & C-4 multiplying or dividing decimals to <u>hundredths</u>, or <u>multiplying or dividing by powers of ten</u>, or multiplying or dividing fractions <u>or mixed numbers</u> (M3.3.4)</p>	<p>Student Edition: 108-109, 294-299, 310-312</p> <p>Also see <i>MathScape: Seeing and Thinking Mathematically Course 1</i> © 2005</p> <p>Student Edition: 70-79, 88-91, 130-141, 156-161</p>
<p>[7] E&C-5 converting between equivalent fractions, terminating decimals, or percents ($10\% = 1/10 = 0.1$) (M3.3.5)</p>	<p>Student Edition: 16-17, 26-27, 28-29, 38, 42-45</p> <p>Teacher's Guide: 14, 15, 24</p>
<p>[7] E&C-6 solving proportions using <u>a given</u> scale (M3.3.6)</p>	<p>Student Edition: 16-17, 18-19, 20-21, 22-23, 28-29, 38-41, 140-141, 142-143, 144-145, 168-170</p> <p>Teacher's Guide: 14, 15, 16A, 20A, 138, 139</p>

STANDARDS	PAGE REFERENCES
Describing Patterns and Functions	
The student demonstrates conceptual understanding of functions, patterns, or sequences including those represented in real-world situations by	
<p>[7] F&R-1 describing or extending patterns (<u>linear</u>), up to ten terms, represented in tables, sequences, or in problem situations (M4.3.1)</p>	<p>Student Edition: 86 #10-#12, 106-107, 112-113, 116-117, 120-121, 127, 128, 132, 134</p> <p>Teacher’s Guide: 104, 107A, 112A, 115</p>
<p>[7] F&R-2 generalizing relationships (linear) using a table of <u>ordered pairs</u>, a <u>function</u>, or an <u>equation</u> (M4.3.4)</p>	<p>Student Edition: 194-195, 196-197, 198-199, 200-201, 206, 216, 217-219</p> <p>Teacher’s Guide: 192, 193</p>
<p>[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)</p>	<p>Student Edition: 146-147, 154-155, 156-157, 160-161, 166-167, 171, 174, 176, 178</p> <p>Teacher’s Guide: 154A, 155A, 160A</p>
<p>[7] F&R-4 [using a calculator as a tool when describing, extending, or representing <u>patterns</u> L] (M4.3.3)</p>	<p>Student Edition: 106-107, 108-109, 112-113, 116-117, 120-121, 154-155, 160-161, 198-199</p> <p>Teacher’s Guide: 181H, 199A</p>
<p>Content Standard A: Mathematical facts, concepts, principles, and theories Functions and Relationships: Represent, analyze, and use patterns, relations, and function Geometry: Construct, transform, and analyze geometric figures</p>	
Modeling and Solving Equations and Inequalities	
The student demonstrates algebraic thinking by	
<p>[7] F&R-5 evaluating algebraic expressions (M4.3.5)</p>	<p>Student Edition: 184-185, 188-189, 212, 214</p> <p>Teacher’s Guide: 184A, 188A</p>
<p>[7] F&R-6 solving or identifying solutions to one-step linear equations of the form $x \pm a = b$ 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)</p>	<p>Student Edition: 196-197, 204-205, 208-209, 217, 221</p> <p>Teacher’s Guide: 197A, 205A, 209A</p>

STANDARDS	PAGE REFERENCES
Geometric Relationships	
The student demonstrates an understanding of geometric relationships by	
<p>[7] G-1 using the attributes and properties of polygons (<u>diagonals</u>, number of sides and angles) to identify and classify regular or irregular polygons (M5.3.1)</p>	<p>Student Edition: 150-151, 172, 276-277, 278-279, 280-281, 284-285, 286-287, 288-289, 290-291, 304-306, 308, 309, 311</p> <p>Teacher’s Guide: 277A, 279A, 281A, 282, 283, 284A, 288A, 291A</p>
<p>[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 <u>pyramids</u> (M5.3.2)</p>	<p>Student Edition: 150-151, 152-153, 172, 173</p> <p>Teacher’s Guide: 150A</p>
Transformation of Shapes	
The student demonstrates conceptual understanding of similarity, congruence, symmetry, or transformations of shapes by	
<p>[7] G-3 using a scale factor to solve problems involving similar shapes (e.g., scale drawings, maps) (M5.3.3)</p>	<p>Student Edition: 280-281, 305</p> <p>Teacher’s Guide: 137G, 138, 281A</p>
<p>[7] G-4 [drawing or describing the results of applying transformations such as translations, rotations, reflections, or <u>dilations</u> to figures L] (M5.3.5)</p>	<p>Student Edition: 280-281, 288-289, 290-291, 305, 308, 309</p> <p>Teacher’s Guide: 283, 289A</p>
Perimeter, Area, and Volume	
The student solves problems (including real-world situations) by	
<p>[7] G-5 determining the volume of cubes and rectangular prisms (M5.3.4)</p>	<p>See <i>MathScope: Seeing and Thinking Mathematically Course 3</i> © 2005</p> <p>Student Edition: 104-105, 126</p> <p>Teacher’s Guide: 93, 102</p>
<p>[7] G-6 determining the surface area of rectangular prisms (M5.3.4)</p>	<p>See <i>MathScope: Seeing and Thinking Mathematically Course 3</i> © 2005</p> <p>Student Edition: 104-105, 126</p> <p>Teacher’s Guide: 102</p>

STANDARDS	PAGE REFERENCES
<p>[7] G-7 determining the circumference of a circle (M5.3.4)</p>	<p>Student Edition: 294-295, 310, 313 #9</p> <p>Teacher’s Guide: 292, 295A</p>
<p>Content Standard A: Mathematical facts, concepts, principles, and theories</p> <p>Geometry: Construct, transform, and analyze geometric figures</p> <p>Statistics and Probability: Formulate questions, gather and interpret data, and make predictions</p> <p>Position and Direction</p> <p>The student demonstrates understanding of position and direction by</p>	
<p>[7] G-8 graphing or identifying values of variables on a coordinate grid (M5.3.6)</p>	<p>Student Edition: 244-245, 246-247, 248-249, 264, 265, 266</p> <p>Teacher’s Guide: 242, 243, 248A</p>
<p>Construction</p> <p>The student demonstrates a conceptual understanding of geometric drawings or constructions by</p>	
<p>[7] G-9 [drawing or measuring <u>polygons</u> with given dimensions and angles <u>or circles with given dimensions</u> L] (M5.3.7)</p>	<p>Student Edition: 140-141, 142-143, 151, 153, 157, 169 #15, 274-275, 276-277, 284-285, 288-289, 294-295, 298-299, 300-301, 309 #11, 310, 312, 313</p> <p>Teacher’s Guide: 137G, 141A, 143A, 151A, 153A, 277A, 288A, 293, 294A</p>
<p>Data Display</p> <p>The student demonstrates an ability to classify and organize data by</p>	
<p>[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, <u>frequency distributions</u>, <u>stem and leaf</u>, [or <u>scatter plots</u> L] with appropriate scale (M6.3.1)</p>	<p>Student Edition: 8-9, 28-29, 32-33, 35, 41, 50-51, 198-199, 200-201, 218, 219, 246-247, 248-249, 265, 266</p> <p>Teacher’s Guide: 3H, 8A, 9A, 24, 25, 28A, 33A, 242, 243, 247A, 248A</p>

STANDARDS	PAGE REFERENCES
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	
<p>[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)</p>	<p>Student Edition: 210-211, 223, 244-245, 246-247, 248-249, 252-253, 256-257, 264, 266, 267, 269</p> <p>Teacher’s Guide: 245A, 247A, 256A</p>
<p>[7] S&P-3 <u>determining</u> range, mean, median, or mode (M6.3.3)</p>	<p>With teacher explanation, the following pages could be used to help fulfill this standard.</p> <p>Student Edition: 74-75, 76-77, 90, 91, 132 #16, 166, 177</p> <p>Teacher’s Guide: 76A</p>
Probability	
The student demonstrates a conceptual understanding of probability and counting techniques by	
<p>[7] S&P-4 determining the [experimental L] and theoretical probability of a simple event (M6.3.5)</p>	<p>Student Edition: 50-51, 52-53, 54-55, 66-67, 68-69, 70-71, 74-75, 80-82, 86-88, 89</p> <p>Teacher’s Guide: 48, 49, 52A, 55A, 56, 57, 64-65</p>
<p>[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)</p>	<p>Student Edition: 66-67, 68-69, 70-71, 86, 87, 88</p> <p>Teacher’s Guide: 64, 65, 69A, 70A</p>
<p>[7] S&P-6 [designing and conducting a simulation to study a problem and communicate the results L] (M6.3.6)</p>	<p>Student Edition: 74-75, 76-77, 78-79, 89-91</p> <p>Teacher’s Guide: 72, 73</p>

STANDARDS	PAGE REFERENCES
<p>Content Standards B, C, D, and E: Process skills and abilities</p>	
<p>Applying conceptual knowledge and skills designated in all strands of Content Standard A by problem solving, communicating, reasoning, and making connections</p>	
<p>Problem solving: Understand and be able to select and use a variety of problem-solving strategies</p>	
<p>The student demonstrates an ability to problem solve by</p>	
<p>[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)</p>	<p>Student Edition: 108-109, 122-123, 198-199, 218, 228-229, 230-231, 244-245, 262, 264, 266, 268, 269, 300-301, 313</p> <p>Teacher’s Guide: 104, 115, 225H, 235, 242, 243, 244A</p>
<p>[7] PS-2 evaluating, interpreting, and justifying solutions to problems (M7.3.3)</p>	<p>Student Edition: 37 #12, 41 #9, 50-51, 60-61, 62-63, 66-67, 80, 85, 86, 135 #11, 228-229, 230-231, 234-235, 236-237, 254-255, 256-257, 258-259, 260, 261, 268-269</p> <p>Teacher’s Guide: 61A, 226-227, 231A</p>
<p>Communication: Form and use appropriate methods to define and explain mathematical relationships</p>	
<p>The student communicates his or her mathematical thinking by</p>	
<p>[7] PS-3 representing <u>mathematical problems numerically, graphically, and/or symbolically</u>; or using appropriate vocabulary, symbols, or technology to explain, <u>justify, and defend strategies</u> and solutions (M8.3.1, M8.3.2, & M8.3.3)</p>	<p>Student Edition: 35 #11, 37 #8, #12, 41 #9, 74-75, 76-77, 79, 80, 82 #9, 89, 91, 108-109, 110-111, 122-123, 135 #11, 198-199, 218 #18, 228-229, 230-231, 236-237, 240-241, 244-245, 254-255, 256-257, 261, 265 #12, 266 #10, 267</p> <p>Teacher’s Guide: 75A, 77A, 79A, 111A, 122A, 199A, 230A, 234, 235, 236A, 240A, 241A, 244A, 250, 251, 254</p>
<p>Reasoning: Use logic and reason to solve mathematical problems</p>	
<p>The student demonstrates an ability to use logic and reason by</p>	
<p>[7] PS-4 using informal deductive and inductive reasoning in concrete contexts or <u>stating counterexamples to disprove statements</u>; or justifying <u>and defending the validity</u> of mathematical strategies <u>and solutions</u> using examples (M9.3.1, M9.3.2, & M9.3.3)</p>	<p>Student Edition: 108-109, 110-111, 122-123, 259 #10, 263 #6, 265 #12, 266 #10, 269 #7, #8, 308 #10</p>

STANDARDS	PAGE REFERENCES
<p>Connections: Apply mathematical concepts and processes to situations within and outside of school</p>	
<p>The student understands and applies mathematical skills and processes across the content strands by</p>	
<p>[7] PS-5 using real-world contexts such as science, humanities, peers, and community (M10.3.1 & M10.3.2)</p>	<p>Student Edition: 36 #13, 37 #12, 40 #16, 131 #26, #27, 169 #17, 171 #13, 212 #20, 217 #16, 263 #1-#5, 266 #10, 269 #7-#8, 300-301, 310 #16, 313</p>