

Macmillan/McGraw-Hill

Math Connects

2009

Course 1, Grade 6

Correlated with

**Alaska
Math Performance Standards
Grade Level Expectations**

Course 1, Grade 6

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| Content Standard A: Mathematical facts, concepts, principles, and theories | |
| Numeration: Understand and use numeration | |
| Measurement: Select and use systems, units, and tools of measurement | |
| Understanding Numbers | |
| The student demonstrates conceptual understanding | |
| <ul style="list-style-type: none"> • of fractions (proper or mixed numbers), decimals, percents (whole number), or integers by | |
| [6] N-1 reading, writing, ordering, or [counting L] (M1.2.1) | pp. 121-126, 130, 138-193, 202-213, 220-231, 238-239, 241-242, 246-309, 364, 365-369, 370, 371, 372, 373, 374, 375, 376-380, 381-386, 401-410, 417, 572-591, 594-597, 620-622 |
| [6] N-2 [identifying place value positions from thousandths to millions L] (M1.2.2) | pp. 23, 77, 137-139, 225-226, 738-739 |
| [6] N-3 converting between whole numbers written in expanded notation and standard form (M1.2.4) | pp. 138a, 139-141, 149, 187, 195, 738-739 |
| <ul style="list-style-type: none"> • of fractions, mixed numbers, or percents by [modeling L], identifying, describing, or illustrating | |
| [6] N-4 equal parts of a whole, a region, or a set (M1.2.4) | pp. 202-203, 204a, 204, 209, 210 |
| [6] N-5 equivalent fractions or mixed numbers (M1.2.4 & M3.2.5) | pp. 202-203, 204-208, 209-212, 221-224, 226-228, 230-231, 239, 247 |
| Understanding Meaning of Operations | |
| The student demonstrates conceptual understanding of mathematical operations by | |
| [6] N-6 [using models, explanations, number lines, or real-life situations L] describing or illustrating the relationships among the four basic operations (M1.2.3) | pp. 37-40, 582-583, 636-638 |
| [6] N-7 [using models, explanations, number lines, or real-life situations L] describing or illustrating the process of adding and subtracting fractions with <u>different</u> denominators (M1.2.5) | pp. 261-262, 263-268, 269, 275, 302, 304 |
| Number Theory | |
| The student demonstrates conceptual understanding of number theory by | |
| [6] N-8 describing or illustrating commutative, [<u>associative</u> , <u>inverse</u> L] or identity properties of addition or multiplication using models or explanations (M1.2.7) | pp. 636-638, 663-664, 748 |
| [6] N-9 identifying or describing factors and multiples common to a pair or set of numbers (e.g., Least Common Multiple, L.C.M., or Greatest Common Factor, G.C.F.) (M1.2.6) | pp. 197-201, 205-206, 217-221, 225-226, 238-239, 240-241, 247, 313-315, 365-366 |

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| [6] N-10 [modeling (base 10 blocks) distributive property L] (M1.3.6) | pp. 630-631, 632-633, 638 |
| Measurable Attributes | |
| The student demonstrates understanding of measurable attributes by | |
| [6] MEA-1 [estimating length to the nearest <u>eighth-inch</u> or <u>millimeter</u> L] (M2.2.1) | pp. 422, 433-436, 444, 465 |
| [6] MEA-2 identifying equivalent measures <u>within systems</u> | pp. 345, 346, 418-421, 423, 424-429, 430-431, 432, 438-441, 444, 445-448, 462, 463, 465 |
| English | |
| <ul style="list-style-type: none"> length (inches, feet, yards, <u>miles</u>) | pp. 345, 418-421, 423, 462, 465 |
| <ul style="list-style-type: none"> weight (ounces, pounds, [<u>tons</u> L]) | pp. 346, 425-429, 444, 462 |
| <ul style="list-style-type: none"> <u>volume</u> (fluid ounces, cups, pints, quarts, <u>gallons</u>) | pp. 424-429, 444, 465 |
| Metric | |
| <ul style="list-style-type: none"> length (millimeters, centimeters, meters, <u>kilometers</u>) | pp. 430-431, 432, 445-448, 463, 465 |
| <ul style="list-style-type: none"> <u>volume</u> (milliliters, liters) (M2.2.2) | pp. 438-441, 445-448, 463, 465 |
| Content Standard A: Mathematical facts, concepts, principles, and theories | |
| Measurement: Select and use systems, units, and tools of measurement | |
| Estimation and Computation: Perform basic arithmetic functions, make reasoned estimates, and select and use appropriate methods or tools | |
| Functions and Relationships: Represent, analyze, and use patterns, relations, and functions | |
| Measurement Techniques | |
| The student uses measurement techniques by | |
| [6] MEA-3 using a scaled ruler to an eighth of an inch or millimeter on a map or drawing (M2.2.1 & M2.2.3) | pp. 249-250, 252, 418-422, 430-434, 449, 462, 465 |
| [6] MEA-4 <u>calculating</u> elapsed time (minutes, hours) (M2.2.5) | pp. 345, 346-347, 450-451, 452-454, 461, 464, 465 |
| [6] MEA-5 solving real-world problems involving elapsed time between U.S. time zones (including Alaska Standard time) (M2.2.5) | Opportunities to address: pp. 450-451 |
| [6] MEA-6 converting and using equivalent measurements within the same system (M2.2.2) | pp. 345, 346, 418-421, 423, 424-429, 430-431, 432, 438-441, 444, 445-448, 462, 463, 465 |
| [6] MEA-7 measuring length to the nearest <u>1/8</u> of an <u>inch</u> or nearest <u>millimeter</u> (M2.2.1) | pp. 170, 181, 345, 418-423, 430-436, 445-448, 461-462, 658 |

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| Estimation | |
| The student determines reasonable answers to real-life situations, paper/pencil computations, or calculator results by | |
| [6] E&C-1 identifying or using [a variety of L] strategies (e.g., truncating, rounding to compatible numbers) to estimate the results of addition, subtraction or multiplication from <u>thousandths to millions</u> or simple division (M3.2.1) | pp. 5, 7, 150-154, 156-157, 158, 163, 169, 170, 173-174, 179, 184, 186, 188, 189, 264, 270-271, 276-279, 283, 287, 298-299, 305 |
| Computation | |
| The student accurately solves problems (including real-world situations) involving | |
| [6] E&C-2 [recalling basic addition, subtraction, multiplication, and division facts efficiently L] (M3.2.2) | pp. 23, 672-673, 736-737, 742-743, 744-745 |
| [6] E&C-3 adding or subtracting whole numbers, fractions with unlike denominators to 12, or decimals to the <u>hundredths place</u> (M3.2.3) | pp. 23, 77, 155-156, 158-159, 186, 188, 247, 256-268, 270-274, 302, 304-305, 417, 571 |
| [6] E&C-4 multiplying whole numbers by two- or <u>three-digit</u> numbers, dividing <u>three-digit</u> numbers by one or <u>two-digit numbers</u> , or <u>multiplying or dividing decimals that represent money by whole numbers</u> , or <u>multiplying or dividing proper fractions</u> (M3.2.4) | pp. 23, 32-36, 77, 137, 162-172, 173-183, 186, 189-190, 278-290, 291-302, 305-306, 417, 571, 632, 634, 664, 744-745 |
| [6] E&C-5 [developing or interpreting scale models (scale factors such as 1 in. = 1 ft.) L] (M3.2.6) | p. 747 |
| Describing Patterns and Functions | |
| The student demonstrates conceptual understanding of functions, patterns, or sequences by | |
| [6] F&R-1 extending patterns (<u>found in the number system, formed by multiples, factors, perfect squares up to 100, powers of ten</u>), up to 10 terms, represented in tables, sequences, or in problem situations (M4.2.1) | pp. 24, 26-27, 55, 313, 322-324, 341-342, 343-349, 355, 358, 400, 431, 501, 539, 589, 662 |
| [6] F&R-2 using rules to express the generalization of a <u>pattern</u> using words, lists, or tables, <u>with or without variables</u> (M4.2.4) | pp. 341-342, 343a, 343-348, 349a, 349-353, 357, 358, 359, 400 |
| [6] F&R-3 identifying or <u>applying multiplication or division</u> patterns to find missing values in a function (M4.2.2) | pp. 26-27, 54-55, 323-327, 328, 341-342, 344-348, 349-353, 400, 539, 589 |

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| [6] F&R-4 using manipulatives, including a calculator, as tools when describing, extending, or representing a number sequence L] (M4.2.1 & M 4.2.3) | pp. 328, 354 |
| Content Standard A: Mathematical facts, concepts, principles, and theories | |
| Functions and Relationships: Represent, analyze, and use patterns, relations, and functions | |
| Geometry: Construct, transform, and analyze geometric figures | |
| Modeling and Solving Equations and Inequalities | |
| The student demonstrates algebraic thinking by | |
| [6] F&R-5 solving for an unknown <u>represented by a letter</u> , (addition, subtraction, multiplication, or division) (e.g., $3 \cdot n = 15$, $n - 5 = 12$) (M4.2.5) | pp. 22, 57-64, 72, 313, 349-355, 358, 469, 481, 487, 494, 512-513, 631, 642-654, 657-660, 663, 665-666 |
| Geometric Relationships | |
| The student demonstrates an understanding of geometric relationships by | |
| [6] G-1 using the attributes and properties (sides and angles) of <u>regular polygons to identify, classify, or compare regular or irregular polygons</u> (M5.2.1) | pp. 28, 43, 45, 46, 57, 61-68, 72, 237, 485-491, 493-499, 503-506, 509, 512, 513, 520-526, 534, 535, 536, 537, 538, 539-544, 561, 563 |
| [6] G-2 identifying, comparing or describing attributes and properties of circles (radius, and diameter) (M5.2.2) | pp. 470, 527-533, 561-562 |
| [6] G-3 using the attributes and properties of prisms (vertices, <u>length and alignment of edges, shape and number of bases, shape of faces</u>) to [model L], identify, compare, or describe <u>triangular</u> or rectangular prisms (M5.2.2) | pp. 548-553, 554, 555-559, 560-561, 564 |
| [6] G-4 identifying a 3-dimensional shape from the 2-dimensional drawing of the shape (M5.2.2) | pp. 548-553, 555-559, 564, 565 |
| Similarity, Congruence, Symmetry, and Transformation of Shapes | |
| The student demonstrates conceptual understanding of similarity, congruence, symmetry, or transformations of shapes by | |
| [6] G-5 identifying, creating, or drawing geometric figures that are congruent, similar, or symmetrical (M5.2.3) | pp. 11, 479, 488, 495, 502-503, 504, 505, 506, 507, 508-509, 514, 605 |
| [6] G-6 [<u>drawing or describing</u> the results of transformations of polygons such as slides, turns, or flips L] (M5.2.5) | pp. 604-609, 610-614, 615-619, 620, 623-624 |

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| Perimeter, Area, Volume, and Surface Area | |
| The student solves problems (including real-world situations) by using perimeter, area, or volume by | |
| [6] G-7 estimating or determining area or perimeter of polygons (parallelograms, trapezoids, triangles) using a key, ruler, or given measures (M5.2.4) | pp. 43, 45, 57, 61-68, 72, 231, 237, 442, 520-527, 534-540, 541, 555-561, 562, 563-564 |
| [6] G-8 [estimating the area and circumference of a circle using a grid or manipulatives and comparing the relationship of the diameter to the circumference (δ) L] (M5.2.4 & M5.3.4) | pp. 527-533, 562, LA15-LA19 |
| [6] G-9 [estimating or determining the volume of a right rectangular prism using manipulatives and formulas (e.g., cereal box, sand box, planter) L] (M5.3.4) | pp. 548-553, 560-561, 564 |
| Content Standard A: Mathematical facts, concepts, principles, and theories | |
| Geometry: Construct, transform, and analyze geometric figures | |
| Statistics and Probability: Formulate questions, gather and interpret data, and make predictions | |
| Position and Direction | |
| The student demonstrates understanding of position and direction by | |
| [6] G-10 graphing a vertical or horizontal line segment (given whole number coordinates for its end points) on a coordinate grid or identifying its length or midpoint (e.g., using a map to trace a route and calculate distance) (M5.2.6 & M5.2.7) | pp. 534, 602, 616 |
| Construction | |
| The student demonstrates a conceptual understanding of geometric drawings or constructions by | |
| [6] G-11 [drawing or measuring quadrilaterals with given dimensions or angles L] (M5.3.7) | pp. 493, 494-499, 506, 507, 513 |
| Data Display | |
| The student demonstrates an ability to classify and organize data by | |
| [6] S&P-1 [designing an investigation and collecting L], organizing, or displaying, using appropriate scale for <u>data displays</u> (tables, bar graphs, <u>line graphs</u> , or <u>circle graphs</u>), data in real-world problems (e.g., social studies, friends, or school), <u>with whole numbers up to 100</u> (M6.2.1 & M6.2.2) | pp. 27, 45, 55, 78-79, 81, 82-91, 92, 103-104, 109-117, 118, 126-127, 128, 130, 140, 144, 147, 153, 154, 158, 159, 183, 207, 223, 252, 259, 273, 317, 318, 332, 337, 338, 347, 348, 365, 368, 370-375, 377, 379, 384, 385, 388, 400, 405, 407, 440, 453, 537, 547, 552, 574, 626, 662 |

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| Analysis and Central Tendency | |
| The student demonstrates an ability to analyze data (comparing, explaining, interpreting, evaluating; or drawing or justifying conclusions) by | |
| [6] S&P-2 using information from a variety of displays (tables, bar graphs, line graphs, <u>circle graphs</u> , or Venn diagrams) (M6.2.2) | pp. 27, 45, 55, 78-79, 81, 82-91, 92, 103-104, 109-117, 118, 126-127, 128, 130, 140, 144, 147, 153, 154, 158, 159, 183, 196, 197, 198, 207, 223, 252, 259, 273, 317, 318, 332, 337, 338, 347, 348, 365, 368, 370-375, 377, 379, 384, 385, 388, 400, 405, 407, 440, 453, 537, 547, 552, 574, 626, 662 |
| [6] S&P-3 using <u>mean</u> , median, mode, or range (M6.2.3) | pp. 102-107, 108-112, 126, 129 |
| Probability | |
| The student demonstrates a conceptual understanding of probability and counting techniques by | |
| [6] S&P-4 [analyzing whether a game is <u>mathematically fair or unfair</u> by explaining the probability of all possible outcomes L] (M6.2.4) | p. 392 |
| [6] S&P-5 solving or identifying solutions to problems involving <u>possible</u> combinations (e.g., if ice cream sundaes come in 3 flavors with 2 possible toppings, how many different sundaes can be made using only one flavor of ice cream with one topping?) (M6.2.5) | pp. 381, 389, 390-391, 392-393, 406 |
| Content Standards B, C, D, and E: Process skills and abilities | |
| Applying conceptual knowledge and skills as designated in all strands of Content Standard A by problem solving, communicating, reasoning, and making connections | |
| 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 | |
| [6] PS-1 selecting, <u>modifying</u> , and applying appropriate problem solving strategies (e.g., graphing, <u>Venn diagrams</u> , tables, lists, <u>working backwards</u> , guess and check, or extend a pattern) and verifying results (M7.3.2) | pp. 27, 30, 35, 39, 44, 51, 54-55, 59, 65, 78-79, 84, 90, 94, 98, 104, 111, 116, 123, 140, 144, 148, 153, 159, 165, 171, 175, 181, 184-185, 200, 207, 211, 214-215, 218, 223, 227, 231, 236, 252, 254-255, 259, 266, 273, 278, 284, 289, 295, 300, 317, 325, 332, 337, 341-342, 346, 352, 368, 373, 379, 384, 391, 396, 399-400, 404, 421, 427, 434, 440, 442-443, 447, 453, 457, 472, 476, 482, 489, 497, 500-501, 505, 524, 531, 537, 542, 546-547, 551, 557, 574, 579, 585, 589, 592-593, 596, 601, 607, 612, 618, 634, 639, 647, 653, 659, 661-662 |
| [6] PS-2 evaluating and interpreting solutions to problems (M7.3.3) | pp. 54-55, 78-79, 184-185, 214-215, 254-255, 341-342, 399-400, 442-443, 500-501, 546-547, 592-593, 661-662 |

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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 | |
| [6] PS-3 representing problems using mathematical language including concrete, pictorial, and/or symbolic representation; or using appropriate vocabulary, symbols, and technology to explain mathematical solutions (M8.2.1, M8.2.2, & M8.2.3) | pp. H.O.T. Problems, Writing in Math: 5, 7, 9, 11, 13, 15, 27, 31, 36, 40, 46, 53, 54, 60, 67, 85, 95, 100, 106, 112, 118, 124, 141, 145, 149, 154, 160, 166, 172, 176, 182, 184, 201, 208, 212, 214, 224, 228, 232, 237, 253, 254, 260, 268, 274, 285, 297, 301, 319, 327, 333, 338, 341, 348, 353, 369, 374, 380, 386, 392, 397, 399, 404, 423, 428, 435, 441, 442, 448, 454, 458, 473, 477, 491, 498, 500, 507, 526, 533, 538, 544, 546, 552, 558, 560, 575, 580, 586, 590, 592, 597, 603, 609, 614, 619, 631, 635, 640, 647, 654, 656, 660, 661; Vocabulary Links: 42, 138, 164, 204, 383, 425, 432, 445, 502, 599; Vocabulary: 22, 28, 32, 37, 42, 49, 57, 63, 76, 81, 92, 96, 102, 108, 121, 136, 138, 142, 150, 194, 197, 204, 209, 216, 220, 225, 233, 246, 256, 263, 276, 293, 312, 314, 322, 329, 343, 362, 365, 370, 381, 387, 389, 394, 416, 418, 424, 432, 437, 450, 455, 468, 470, 479, 486, 494, 502, 508, 518, 522, 528, 534, 548, 554, 555, 570, 599, 604, 610, 615, 628, 632, 636, 644, 651, 657; Writing in Mathematics: 22E, 76E, 136E, 194E, 246E, 312E, 362E, 416E, 468E, 518E, 570E, 628E |
| Reasoning: Use logic and reason to solve mathematical problems | |
| The student demonstrates an ability to use logic and reason by | |
| [6] PS-4 using informal deductive reasoning in concrete contexts; or justifying answers and mathematical strategies using examples (M9.3.1 & M9.3.3) | pp. 24-25, 50, 143, 150, 257, 264, 270, 271, 298, 299, 366, 372, 446, 450, 451, 475, 481, 496, 530, 535, 541, 549 |
| 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 | |
| [6] PS-5 using real-world contexts such as social studies, friends, school and community (M10.2.1, M10.2.2, & M10.3.2) | pp. 26, 33, 38, 50, 58, 64, 93, 109, 115, 122, 147, 157, 170, 199, 206, 217, 230, 234, 251, 258, 265, 294, 299, 324, 345, 350, 351, 366, 378, 383, 390, 402, 419, 433, 439, 446, 451, 452, 487, 495, 503, 523, 536, 541, 550, 556, 573, 584, 588, 606, 617, 638, 646, 652, 658 |