# IDAHO
# Mathematics Standards Grade 7
## *MathScape: Seeing and Thinking Mathematically*
## *Course 2* © 2005

| STANDARDS | PAGE REFERENCES |
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| **327. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.** | |
| 01. Understand and use numbers. | |
| a. Read, write, order, and compare real numbers (integers, fractions, decimals) and absolute values. | SE: 6-7, 10-11, 16-17, 18-19, 20-21, 28-29, 30-31, 34, 36, 39, 40, 41, 44, 54-55, 60-61, 96-97<br>TG: 4, 30A, 97A |
| b. Expand the use of percents and ratios to solve problems. | SE: 16-17, 18-19, 20-21, 26-27, 28-29, 30-31, 38, 39, 40, 42-44, 162-163, 164-165, 177, 178<br>TG: 14, 15, 24, 25, 26A, 28A |
| c. Show a sense of magnitudes and relative magnitudes of real numbers (integers, fractions, decimals). | SE: 6-7, 8-9, 10-11, 12-13, 18-19, 125 #12, 129 #15, 142, 143, 169<br>TG: 4, 6A, 7A, 11A, 13A |
| d. Develop and apply number theory concepts. | SE: 116-117, 118-119, 120-121, 122-123, 132-135<br>TG: 116A, R16 |
| e. Understand the position of rational numbers on a number line. | SE: 184-185, 186-187, 188-189, 190-191, 196-197, 204-205, 206-207, 208-209, 212-215, 217, 220-222<br>TG: 186A, 187A, 196A, 207A |
| 02. Perform computations accurately. | |
| a. Add, subtract, multiply, and divide fractions and decimals. | SE: 108-109, 129, 146-147, 156-157, 160-161, 164-165, 166-167<br>TG: 146A, 156A |
| b. Evaluate numerical expressions using the order of operations. | SE: 238-239, 262 |
| c. Explore the use of exponents. | SE: 106-107, 108-109, 110-111, 112-113, 128-131<br>TG: 104, 105, 110A, 111A, 112A |
| d. Explore basic operations with integers. | SE: 98-99, 100-101, 102-103, 196-197<br>TG: 93G, 94, 95, 98A, 100A, 102A, 196A |
| e. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three. | SE: 26-27, 42, 96-97, 98-99, 124, 125, 236-237, 238-239, 240-241, 261-263<br>TG: 26A, 27A, 94, 95, 98A |
| f. Use appropriate vocabulary. | TG: 93H, 104, 105, 112A, 114, 115, 119A |
| 03. Estimate and judge reasonableness of results. | |
| a. Use estimation to predict computation results. | SE: 10-11, 26-27, 36, 42, 146-147, 160-161, 162-163, 171, 176, 177<br>TG: 26A, 146A, 161A, 162A |

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| b. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer. | SE: 10-11, 26-27, 36, 42, 146-147, 160-161, 162-163, 171, 176, 177, 228-229, 258<br>TG: 26A, 146A, 161A, 162A |
| c. Determine whether a given estimate is an overestimate or underestimate. | SE: 10-11, 36, 146-147, 160-161, 162-163, 164-165, 176-177, 178<br>TG: 162A |
| d. Use appropriate vocabulary. | SE: 167<br>TG: 26A, 146A, 162A |
| **328. MATHEMATICAL REASONING AND PROBLEM SOLVING** | |
| 01. Understand and use a variety of problem-solving skills. | |
| a. Use a variety of strategies including common mathematical formulas to compute problems drawn from real-world situations. | SE: 50-51, 54-55, 70-71, 80, 82, 88, 278-279, 286-287, 290-291, 294-295, 296-297, 304, 307, 309, 310, 311<br>TG: 71A, 278A, 287A, 294A |
| b. Recognize pertinent information for problem solving. | SE: 52-53, 54-55, 78-79, 81, 82, 91, 278-279, 288-289, 290-291, 300-301, 304, 308, 309, 313<br>TG: 78A, 277A, 282, 283, 288A, 290A, 300A |
| c. Make predictions and decisions based on information. | SE: 52-53, 54-55, 78-79, 81, 82, 91, 244-245, 256-257, 264, 269, 290-291, 300-301, 309, 313<br>TG: 245A, 256A, 290A, 300A |
| 02. Use reasoning skills to recognize problems and express them mathematically. | |
| a. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts. | SE: 52-53, 54-55, 78-79, 81, 82, 91, 232-233, 239, 240-241, 260, 262, 263, 274-275, 276-277, 278-279, 281, 284, 285<br>TG: 272, 273, 278A, 281A, 284A |
| b. Apply solutions and strategies to new problem situations. | SE: 52-53, 54-55, 70-71, 74-75, 78-79, 81, 82, 88, 89, 91, 232-233, 240-241, 260, 263<br>TG: 74A, 75A |
| c. Formulate conjectures and discuss why they must be or seem to be true. | SE: 232-233, 236-237, 240-241, 260-263<br>TG: 233A, 236A |
| 03. Apply appropriate technology and models to find solutions to problems. | |
| a. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems. | SE: 236-237, 238-239, 240-241, 246-247, 252-253, 254-255, 261-263, 265, 267, 268<br>TG: 235, 236A, 237A, 246A, 250, 251, 254A |
| b. Use computer applications to display and manipulate data. | SE: 236-237, 238-239, 240-241, 261, 262, 263<br>TG: 250, 251 |
| c. Select appropriate models to represent mathematical ideas. | SE: 236-237, 238-239, 240-241, 246-247, 254-255, 261-263, 265, 268<br>TG: 239A, 246A, 254A |
| 04. Communicate results using appropriate terminology and methods. | |
| a. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information. | SE: 50-51, 61-67, 74-75, 80, 86, 89, 120-121, 134<br>TG: 50A, 66A, 67A, 74A |
| b. Use appropriate vocabulary to communicate mathematical information. | SE: 50-51, 80, 116-117, 118-119, 132, 133, 284-285, 300-301, 306, 313<br>TG: 284A |

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| c. Use appropriate notation. | SE: 106-107, 110-111, 112-113, 120-121, 128, 130, 131, 134<br>TG: 104, 105, 106A, 112A, 120A |
| **329. CONCEPTS AND PRINCIPLES OF MEASUREMENT.** | |
| 01. Understand and use U.S. customary and metric measurements. | |
| a. Select and use appropriate units and tools to make formal measurements in both systems. | SE: 12-13, 37, 140-141, 142-143, 164-165, 168, 169, 178, 198-199, 218, 272-273, 274-275, 280-281, 304, 305 |
| b. Apply estimation of measurement to real-world and content problems using actual measuring devices. | SE: 146-147, 154-155, 171, 174, 274-275, 298-299, 302, 312<br>TG: 154A, 298A |
| c. Recognize the differences between measures of length, area, and volume (capacity) in both systems. | SE: 140-141, 142-143, 144-145, 146-147, 152-153, 154-155, 156-157, 168-171, 173-175, 296-297, 311<br>TG: 296A |
| d. Solve problems involving length, perimeter, area, volume (capacity), weight, mass, and temperature. | SE: 140-141, 142-143, 144-145, 146-147, 152-153, 154-155, 156-157, 164-165, 168-171, 173-175, 178<br>TG: 137G, 138, 139, 141A, 155A |
| e. Convert unit of measurement within each system. | SE: 140-141, 168, 198-199, 218<br>TG: 199A |
| f. Use appropriate vocabulary. | SE: 168, 170, 171, 274-275, 276-277, 296-297, 302, 303, 311<br>TG: 137G, 271G, 272, 296A |
| 02. Apply concepts of rates and other derived or indirect measurements. | |
| a. Develop the use of rates to make indirect measurements. | Rate is used in percentage of price, ratio, and proportion on the following pages<br>SE: 6-7, 16-17, 18-19, 22-23, 34, 38-39<br>TG: 4 (rate is defined) |
| 03. Apply the concepts of ratios and proportions. | |
| a. Develop the use of proportions, ratios, and scales. | SE: 16-17, 18-19, 20-21, 22-23, 38-41, 140-141, 142-143, 144-145, 168, 169, 170<br>TG: 14-15, 17A, 21A, 138-139 |
| 04. Apply dimensional analysis. | |
| a. Understand units and their relationship to one another and to real-world applications. | SE: 140-141, 142-143, 144-145, 168-170, 172 #8 |
| **330. CONCEPTS AND LANGUAGE OF ALGEBRA.** | |
| 01. Use algebraic symbolism as a tool to represent mathematical relationships. | |
| a. Develop the use of variables in simple expressions and equations. | SE: 184-185, 190-191, 212, 215<br>TG: 182, 183, 184A, 185A |
| b. Translate simple word statements and story problems into algebraic expressions and equations. | SE: 184-185, 188-189, 190-191, 212, 214, 215<br>TG: 188A |
| c. Use symbols (<, >, =, ≤, ≥, ≠) to express relationships. | SE: 177 #12, 186-187, 213<br>TG: 182, 183, 186A, 187A |
| 02. Evaluate algebraic expressions. | |
| a. Develop an understanding of evaluating mathematical and algebraic expressions: commutative, associative, identity, zero, inverse, and substitution. | SE: 188-189, 190-191, 214, 215<br>TG: 183, 202, 203 |

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| b. Understand and use the order of operations in evaluating basic algebraic expressions. | SE: 238-239, 262 |
| 03. Solve algebraic equations and inequalities. | |
| a. Solve one-step equations using inverse operations. | SE: 204-205, 206-207, 208-209, 220, 221, 222<br>TG: 202, 203 |
| b. Explore solutions of simple one-step equations using negative numbers. | SE: 196-197, 217<br>TG: 196A |
| c. Explore graphical representation to show simple linear equations. | SE: 194-195, 196-197, 204-205, 210-211, 216, 217, 220, 223<br>TG: 197A, 202, 203, 210A |
| **331. CONCEPTS AND PRINCIPLES OF GEOMETRY.** | |
| 01. Apply concepts of size, shape, and spatial relationships. | |
| a. Precisely describe, classify, and understand relationships among types of one-, two-, and three-dimensional objects using their defining properties. | SE: 142-143, 146-147, 150-151, 164-165, 169, 171, 172, 178, 274-275, 276-277, 278-279, 280-281, 284-285, 286-287, 288-289, 302-309<br>TG: 138, 139, 164A, 277A, 285A |
| b. Construct and measure various angles and shapes using appropriate tools. | SE: 140-141, 144-145, 152-153, 164-165, 168, 170, 173, 178, 274-275, 276-277, 284-285, 286-287, 302, 303, 306, 307<br>TG: 152A, 271G, 272, 273 |
| c. Apply fundamental concepts, properties, and relationships among points, lines, angles, and shapes. | SE: 140-141, 144-145, 164-165, 168, 170, 178, 274-275, 276-277, 284-285, 286-287, 300-301, 302, 303, 306, 307, 313<br>TG: 137G, 271G |
| d. Recognize and apply congruence, similarities, and symmetry of shapes. | SE: 164-165, 178, 278-279, 280-281, 284-285, 288-289, 290-291, 300-301, 306, 308, 309, 313<br>TG: 271G, 279A, 283, 291A |
| e. Apply formulas for perimeter, circumference, and area to triangles, quadrilaterals, and circles. | SE: 146-147, 154-155, 156-157, 164-165, 171, 174, 175, 178, 294-295, 296-297, 298-299, 310, 311, 312<br>TG: 148, 149, 154A, 292, 293, 295A, 296A, 297A, 298A |
| f. Explore the concept of surface area and volume (capacity). | The following pages can be used when formula is provided first<br>SE: 150-151, 164-165, 172, 178 |
| g. Explore and model the effects of reflections, translations, and rotations on various shapes. | SE: 164-165, 178, 278-279, 280-281, 288-289, 290-291, 300-301, 304, 305, 308, 309, 313<br>TG: 285A, 289A |
| h. Use appropriate vocabulary. | TG: 167, 281A, 282, 283, 284A, 286A, 288A, 289A |
| 02. Apply the geometry of right triangles. | |
| a. Explore right triangle geometry. | SE: 274-275, 276-277, 278-279, 302, 303, 304 |
| 03. Apply graphing in two dimensions. | |
| a. Identify and plot points on a coordinate plane. | SE: 244-245, 246-247, 264, 265, 294-295, 310<br>TG: 245A |

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| **332. DATA ANALYSIS, PROBABILITY AND STATISTICS.** | |
| 01. Understand data analysis. | |
| a. Read and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts). | SE: 8-9, 28-29, 32-33, 35, 43, 45, 76, 78, 90, 91, 120-121, 122-123, 134, 135, 162-163, 177<br>TG: 122A |
| b. Explain and justify conclusions drawn from tables, charts, and graphs. | SE: 8-9, 10-11, 35, 36, 50, 52-53, 74-75, 78-79, 80, 81, 89, 91, 116-117, 122-123, 132, 135, 162-163, 177<br>TG: 5, 8A, 122A |
| c. Understand and use appropriate vocabulary. | SE: 18-20<br>TG: 8A, 9A, 52A, 122A |
| 02. Collect, organize, and display data. | |
| a. Collect, organize, and display data with appropriate notation in tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts). | SE: 8-9, 10-11, 35, 36, 74-75, 76-77, 89, 90, 162-163, 177<br>TG: 8A, 9A |
| 03. Apply simple statistical measurements. | |
| a. Understand and use the measures of central tendency – mean, median, and mode, with simple sets of data. | SE: 74-75, 76-77, 89, 90, 132 #16 |
| b. Explore the significance of range, frequency, and informal distribution. | SE: 52-53, 58-59, 81, 83<br>TG: 49, 52A, 53A, 58A |
| 04. Understand basic concepts of probability. | |
| a. Predict, perform, and record results of simple probability experiments. | SE: 50-51, 52-53, 58-59, 60-61, 62-63, 66-67, 70-71, 80, 81, 83-86, 88 |
| b. Understand and use the language of probability. | SE: 52-53, 62-63, 70-71, 78-79, 81, 85, 88, 91<br>TG: 54A |
| c. Recognize equally likely outcomes. | SE: 50-51, 52-53, 54-55, 66-67, 68-69, 70-71, 80-82, 86-88 |
| 05. Make predictions or decisions based on data. | |
| a. Make predictions based on simple experimental and theoretical probabilities. | SE: 52-53, 54-55, 66-67, 70-71, 82, 86, 88<br>TG: 48-49, 64, 65, 67A |
| b. Understand and use appropriate vocabulary. | TG: 47C, 47D, 49 |
| **333. FUNCTIONS AND MATHEMATICAL MODELS.** | |
| 01. Understand the concept of functions. | |
| a. Extend patterns and identify a rule (function) that generates the pattern using real numbers. | SE: 106-107, 108-109, 112-113, 128-131, 194-195, 198-199, 200-201, 216, 218, 221, 246-247, 254-255, 265, 268 |
| b. Use functional relationships to explain how a change in one quantity results in a change in another. | SE: 194-195, 196-197, 200-201, 204-205, 206-207, 216, 217, 219, 220, 221, 244-245, 246-247, 264, 265 |
| c. Understand and use appropriate vocabulary. | TG: 194A, 198A, 204A, 225C |
| 02. Represent equations, inequalities, and functions in a variety of formats. | |
| a. Represent a simple set of data in a table, as a graph, and as a mathematical relationship. | SE: 184-185, 190-191, 194-195, 198-199, 212, 215, 216, 218, 230-231, 244-245, 246-247, 259, 264, 265 |
| 03. Apply functions to a variety of problems. | |
| a. Use patterns and functions to represent and solve problems. | SE: 120-121, 134, 190-191, 196-197, 206-207, 208-209, 215, 217, 221, 222 |