



IDAHO
Mathematics Standards Grade 8
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STANDARDS	PAGE REFERENCES
337. BASIC ARITHMETIC, ESTIMATION, AND ACCURATE COMPUTATIONS.	
01. Understand and use numbers.	
a. Read, write, order, and compare real numbers (integers, fractions, decimals, percents, ratios) and absolute values.	<i>Looking Behind the Numbers</i> SE: 6-7, 16-17, 32-33, 34 TWE: 70 <i>What Comes Next?</i> SE: 12-13, 19, 30-31 TWE: 28
b. Understand and use real numbers, both rational and irrational.	<i>Roads and Ramps</i> SE: 18-19, 41 TWE: 42 <i>What Comes Next?</i> SE: 6-7, 30-31, 34, 37 TWE: 66
c. Show a sense of magnitudes and relative magnitudes of real numbers (integers, fractions, decimals) using scientific notation and exponential numbers.	<i>What Comes Next?</i> SE: 30-31 TWE: 66 <i>Family Portraits</i> SE: 30-31, 32-33, 34-35, 47 TWE: 68, 76
d. Develop and apply number theory concepts.	This objective is addressed in <i>MathScape Grade 7</i> © 1998 <i>Making Mathematical Arguments</i> SE: 26-27, 28-29, 30-31, 32-33, 44 #14
e. Understand the position of real numbers on a number line.	<i>What Comes Next?</i> TWE: 6, 12
02. Perform computations accurately.	
a. Consistently and accurately add, subtract, multiply, and divide rational numbers.	<i>Exploring the Unknown</i> SE: 16-17, 38 <i>Looking Behind the Numbers</i> SE: 6-7, 34 <i>Mathematics of Motion</i> SE: 6-7, 34 <i>What Comes Next?</i> SE: 8-9, 12-13, 19 TWE: 28, 42

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b. Instantly recall common, equivalent fractions, decimals, and percents.	<i>Family Portraits</i> SE: 32-35, 46, 47 TWE: 76 <i>Roads and Ramps</i> SE: 22-23, 26-27, 31, 44 TWE: 58 <i>What Comes Next?</i> SE: 12-13, 30-31, 44
c. Evaluate numerical expressions using the order of operations.	<i>Exploring the Unknown</i> SE: 20-21, 28-29, 30-31, 43, 44
d. Understand and use exponents.	<i>Family Portraits</i> SE: 32-33, 34-35, 46
e. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.	Note: The method of computation used is a calculator. <i>What Comes Next?</i> SE: 6-7 TWE: 18, 56 <i>Family Portraits</i> SE: 32-33, 34-35, 46, 47
f. Use appropriate vocabulary.	<i>What Comes Next?</i> TWE: 12, 20, 22 <i>Exploring the Unknown</i> TWE: 36, 46
03. Estimate and judge reasonableness of results.	
a. Use estimation to predict computation results.	<i>Looking Behind the Numbers</i> SE: 6-7, 18-19, 32-33, 34, 43 TWE: 14 <i>What Comes Next?</i> SE: 6-7, 12-13, 22-23 TWE: 60
b. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.	<i>Looking Behind the Numbers</i> SE: 6-7 <i>Mathematics of Motion</i> SE: 6-7, 8-9, 35 TWE: 18 <i>What Comes Next?</i> SE: 6-7, 18-19, 34
c. Determine whether a given estimate is an overestimate or underestimate.	<i>What Comes Next?</i> SE: 6-7, 8-9, 12-13, 18-19, 34
d. Use appropriate vocabulary.	<i>Looking Behind the Numbers</i> SE: 14 <i>What Comes Next?</i> SE: 39 #156

STANDARDS	PAGE REFERENCES
338. 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.	<i>Exploring the Unknown</i> SE: 29, 32-33, 43 <i>Family Portraits</i> SE: 26-27 <i>Mathematics of Motion</i> SE: 8-9, 30-31, 32-33 TWE: 3, 20, 34, 66 <i>What Comes Next?</i> SE: 6-7, 16-17, 26-27, 35, 38 TWE: 12, 74
b. Recognize pertinent information for problem solving.	<i>Looking Behind the Numbers</i> SE: 20-21 <i>Mathematics of Motion</i> SE: 26-27, 42 <i>What Comes Next?</i> SE: 28-29, 34 TWE: 64, 74
c. Make predictions and decisions based on information.	<i>Looking Behind the Numbers</i> TWE: 48 <i>Mathematics of Motion</i> SE: 32-33, 45 <i>What Comes Next?</i> SE: 6-7, 22-23, 26-27, 30, 34, 35, 38, 41 TWE: 16, 60, 74
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.	<i>Mathematics of Motion</i> SE: 16-17, 18-19, 22-23, 28-29, 30-31 TWE: 3, 34, 64, 66 <i>What Comes Next?</i> SE: 6-7, 18-19, 38, 42 TWE: 74
b. Apply solutions and strategies to new problem situations.	<i>Mathematics of Motion</i> SE: 26-27, 28-29, 42 TWE: 62 <i>What Comes Next?</i> SE: 16-17, 18-19, 26-27, 28-29 TWE: 74 <i>Roads and Ramps</i> SE: 8-9, 37 TWE: 20
c. Formulate conjectures and justify (short of formal proof) why they must be or seem to be true.	<i>What Comes Next?</i> SE: 16-17, 22-23, 26-27, 30-31, 35 TWE: 74
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.	<i>Looking Behind the Numbers</i> TWE: 35 <i>What Comes Next?</i> SE: 18-19, 36 TWE: 13, 18, 56-57

STANDARDS	PAGE REFERENCES
b. Use computer applications to display and manipulate data.	<i>Mathematics of Motion</i> TWE: 35 <i>Exploring the Unknown</i> TWE: 57 <i>What Comes Next?</i> SE: 26-27 TWE: 13
c. Select appropriate models to represent mathematical ideas.	<i>Exploring the Unknown</i> SE: 16-17, 18-19, 38, 39 TWE: 42 <i>Roads and Ramps</i> SE: 8-9, 10-11, 37 <i>What Comes Next?</i> SE: 12-13, 22-23, 26-27, 28-29 TWE: 12, 26, 40, 57, 58
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.	<i>Mathematics of Motion</i> SE: 12-13, 16-17, 18-19, 22-23, 26-27, 30-31 TWE: 40, 50, 68 <i>What Comes Next?</i> SE: 6-7, 26-27 TWE: 24, 58
b. Use appropriate vocabulary to communicate mathematical information.	<i>Looking Behind the Numbers</i> SE: 12-13 TWE: 6, 26 <i>Mathematics of Motion</i> SE: 12-13, 16-17, 32-33 TWE: 6, 14, 38, 40, 50 <i>What Comes Next?</i> SE: 6-7, 8-9, 20-21, 28-29, 32-33 TWE: 24, 44
c. Use appropriate notation.	<i>Family Portraits</i> SE: 30-31, 32-33, 34-35, 46, 47 TWE: 68, 70, 72, 74, 76
339. 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 using both systems.	<i>Mathematics of Motion</i> SE: 6-7, 8-9 TWE: 18
b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	<i>Mathematics of Motion</i> SE: 6-7, 8-9, 28, 34, 35, 43 <i>Roads and Ramps</i> SE: 6-7, 8-9, 10-11, 36, 37, 38 TWE: 12, 13, 16
c. Recognize the differences and relationships among measures of perimeter, area, and volume (capacity) in both systems.	<i>Family Portraits</i> SE: 26-27 TWE: 58-59 <i>Shapes and Space</i> SE: 10-11, 12-13, 18-19, 30-31, 38, 44 TWE: 22, 66

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d. Solve problems involving length, perimeter, area, volume (capacity), weight, mass, and temperature.	<i>Family Portraits</i> SE: 26-27 TWE: 58-59 <i>Shapes and Space</i> SE: 10-11, 12-13, 18-19, 30-31, 38, 44 TWE: 12
e. Convert unit of measurement within each system.	<i>Mathematics of Motion</i> SE: 6-7, 8-9, 34, 35 <i>Shapes and Space</i> SE: 30-31 TWE: 44
f. Use appropriate vocabulary.	<i>Mathematics of Motion</i> TWE: 6 <i>Shapes and Space</i> SE: 35 TWE: 10, 66
02. Apply concepts of rates and other derived or indirect measurements.	
a. Use rates to make indirect measurements.	<i>Roads and Ramps</i> SE: 24-25, 38
03. Apply the concepts of ratios and proportions.	
a. Understand and use proportions, ratios, and scales.	<i>Roads and Ramps</i> SE: 8-9, 10-11, 22-23, 24-25, 37, 38 TWE: 50
04. Apply dimensional analysis.	
a. Understand units and their relationship to one another and to real-world applications.	<i>Mathematics of Motion</i> SE: 6-7, 8-9, 26-27, 34 #11-#13 TWE: 14 <i>Shapes and Space</i> SE: 20-21, 28-29, 30-31 TWE: 46, 48, 64, 66
340. CONCEPTS AND LANGUAGE OF ALGEBRA.	
01. Use algebraic symbolism as a tool to represent mathematical relationships.	
a. Understand and use variables in expressions, equations, and inequalities.	<i>Exploring the Unknown</i> SE: 6-7, 8-9, 12-13, 22-23, 32-33, 34, 36, 45 TWE: 48, 70
b. Translate simple word statements and story problems into algebraic expressions and equations.	<i>Exploring the Unknown</i> SE: 6-7, 12-13, 18-19, 20-21, 22-23, 32-33, 34, 35 TWE: 40 <i>Family Portraits</i> SE: 6-7, 8-9, 16-17, 18-19 <i>Mathematics of Motion</i> SE: 10-11, 30-31
c. Use symbols (<, >, =, <, >, ≠) to express relationships.	Note: The use of “=” is used consistently in <i>Exploring the Unknown</i> SE: 8-9, 10-11, 28-29, 30-31, 32-33 TWE: 18, 24, 66 to represent equations.

STANDARDS	PAGE REFERENCES
02. Evaluate algebraic expressions.	
a. Understand and use the following properties in evaluating algebraic expressions: commutative, associative, identity, zero, inverse, distributive, and substitution.	<i>Exploring the Unknown</i> SE: 10-11, 20-21, 22-23, 40 TWE: 46 <i>What Comes Next?</i> SE: 12-13 TWE: 28
b. Understand and use the order of operations in evaluating basic algebraic expressions.	<i>Exploring the Unknown</i> SE: 20-21, 30-31 TWE: 46, 74
c. Simplify algebraic expressions.	<i>Exploring the Unknown</i> SE: 6-7, 18-19, 20-21, 22-23, 26-27, 43 TWE: 40, 42
03. Solve algebraic equations and inequalities.	
a. Solve one- and two-step equations and inequalities using inverse operations.	<i>Exploring the Unknown</i> SE: 28-29, 30-31, 44, 45 TWE: 62
b. Explore graphical representation to show simple linear equations.	<i>Family Portraits</i> SE: 6-7, 14-15, 16-17, 18-19, 36, 39, 40 TWE: 16, 30, 40
341. 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.	<i>Family Portraits</i> SE: 24-25 <i>Roads and Ramps</i> SE: 32-33, 34-35 <i>Shapes and Space</i> SE: 6-7, 8-9, 26-27, 28-29, 32-33, 38, 39, 40, 42 TWE: 14, 20, 36, 58, 62, 64
b. Construct and measure various angles and shapes using appropriate tools.	<i>Roads and Ramps</i> SE: 10-11, 38, 41 TWE: 22 <i>Shapes and Space</i> SE: 16-17, 20-21, 26-27, 32-33, 40
c. Understand and apply fundamental concepts, properties, and relationships among points, lines, planes, angles, and shapes.	<i>Family Portraits</i> SE: 24-25 <i>Roads and Ramps</i> SE: 34-35, 36 <i>Shapes and Space</i> SE: 32-33
d. Recognize and apply congruence, similarities, and symmetry of shapes.	<i>Family Portraits</i> SE: 24-25 <i>Roads and Ramps</i> SE: 32-33, 34-35 <i>Shapes and Space</i> SE: 8-9, 20-21, 32-33, 35 TWE: 18, 44
e. Apply formulas for perimeter, circumference, and area to polygons and circles.	<i>Shapes and Space</i> SE: 10-11, 12-13, 16-17, 18-19, 20-21, 26-27, 29, 30-31 TWE: 22, 34, 38, 42, 46

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f. Understand the concept of surface area and volume (capacity).	<i>Shapes and Space</i> SE: 10-11, 12-13, 16-17, 18-19, 20-21, 22-23, 26-27, 28-29, 43-45 TWE: 12-13, 24, 28, 34, 40, 56
g. Explore and model the effects of reflections, translations, and rotations on various shapes.	<i>Family Portraits</i> SE: 24-25 <i>Roads and Ramps</i> SE: 9, 39
h. Use appropriate vocabulary.	<i>Roads and Ramps</i> SE: 39 TWE: 6, 12-13, 14, 24 <i>Shapes and Space</i> TWE: 6, 12, 16, 20, 24, 36, 42
02. Apply the geometry of right triangles.	
a. Investigate right triangle geometry using the Pythagorean Theorem.	<i>Roads and Ramps</i> SE: 14-15, 16-17, 18-19, 26-27, 30-31, 40, 41 TWE: 30, 36
03. Apply graphing in two dimensions.	
a. Use the coordinate plane as it relates to real-world applications.	<i>Family Portraits</i> SE: 26-27, 44 <i>Looking Behind the Numbers</i> SE: 20-21
342. DATA ANALYSIS, PROBABILITY AND STATISTICS.	
01. Understand data analysis.	
a. Analyze and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts).	<i>Family Portraits</i> SE: 8-9, 34-35 <i>Looking Behind the Numbers</i> SE: 6-7, 8-9, 10-11, 12-13, 16-17, 20-21, 34, 35, 37, 38 TWE: 11, 16, 18, 24, 26, 28, 44, 46
b. Explain and justify conclusions drawn from tables, charts, and graphs.	<i>Looking Behind the Numbers</i> SE: 10-11, 16-17, 18-19, 20-21, 22-23, 38, 41 TWE: 40, 44, 50
c. Understand and use appropriate vocabulary.	<i>Exploring the Unknown</i> SE: 6-7, 8-9, 12-13, 16-17, 18-19 TWE: 6, 12, 14, 16, 28, 34, 40
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).	<i>Looking Behind the Numbers</i> SE: 22, 34 TWE: 12 <i>What Comes Next?</i> SE: 37, 42, 44
03. Apply simple statistical measurements.	
a. Choose and calculate the appropriate measure of central tendency – mean, median, and mode.	<i>Looking Behind the Numbers</i> SE: 6-7, 8-9, 10-11, 35, 37, 38, 44 TWE: 11, 18, 24 <i>What Comes Next?</i> SE: 41
b. Explore the significance of range, frequency, and informal distribution.	<i>Looking Behind the Numbers</i> SE: 6-7, 8-9, 10-11, 35, 37, 38, 44

STANDARDS	PAGE REFERENCES
04. Understand basic concepts of probability.	
a. Model situations of probability using simulations.	<i>Looking Behind the Numbers</i> SE: 10-11, 22-23, 26-27, 34 <i>What Comes Next?</i> SE: 10-11, 12-13, 22-23, 26-27
b. Understand and use the language of probability.	<i>Looking Behind the Numbers</i> SE: 26-27, 28-29, 30-31, 32-33, 43-45 TWE: 58, 60, 62, 64, 66
c. Recognize equally likely outcomes.	<i>Looking Behind the Numbers</i> SE: 26-27, 30-31
05. Make predictions or decisions based on data.	
a. Make predictions based on simple experimental and theoretical probabilities.	<i>Looking Behind the Numbers</i> SE: 26-27, 28-29, 30-31, 32-33, 42, 44, 45 <i>What Comes Next?</i> SE: 18-19, 22-23, 26-27, 30-31, 35, 39
b. Understand and use appropriate vocabulary.	<i>Looking Behind the Numbers</i> SE: 26-27, 28-29, 30-31, 32-33 TWE: 56, 57, 60
c. Conduct statistical experiments and interpret results using tables, charts, or graphs.	<i>Looking Behind the Numbers</i> SE: 6-7, 8-9, 10-11, 30-31, 34, 43, 44 TWE: 18, 64, 66 <i>What Comes Next?</i> SE: 12-13, 26-27, 28-29, 30-31, 32-33, 37, 42-45
343. 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.	<i>Exploring the Unknown</i> SE: 22-23 TWE: 48 <i>Family Portraits</i> SE: 6-7, 14-15, 16-17, 18-19, 37-41 TWE: 14, 30-31, 32
b. Use functional relationships to explain how a change in one quantity results in a change in another.	<i>Family Portraits</i> SE: 6-7 TWE: 36
c. Understand and use appropriate vocabulary.	<i>Mathematics of Motion</i> SE: 16-17, 20-21, 26-27, 32-33, 37, 38, 42, 43 <i>Family Portraits</i> TWE: 6, 12-13, 30-31
02. Represent equations, inequalities, and functions in a variety of formats.	
a. Represent a set of data in a table, as a graph, and as a mathematical relationship.	<i>Exploring the Unknown</i> SE: 28-29, 30-31 <i>Family Portraits</i> SE: 6-7, 8-9, 16-17, 18-19 TWE: 36 <i>Mathematics of Motion</i> SE: 22-23, 28-29 TWE: 48, 56, 62

STANDARDS	PAGE REFERENCES
03. Apply functions to a variety of problems.	
a. Use patterns and functions to represent and solve problems.	<i>Family Portraits</i> SE: 6-7, 8-9, 16-17, 18-19 <i>Mathematics of Motion</i> SE: 22-23, 28-29 TWE: 48, 50, 56