



IDAHO
Mathematics Standards Grade 8
***Mathematics: Applications and Concepts Course 3* © 2004**

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.	SE: 67-70, 75 #37-#40, 80 #48, 86 #7-#10, 109 #21-#25, 111 #25 <i>The Game Zone</i> 33 TWE: A 70 B 67 DI 68
b. Understand and use real numbers, both rational and irrational.	SE: 62-66, 67-70, 71-75, 76-80, 82-85 TWE: A 66, 75 B 62, 67 NS 69
c. Show a sense of magnitudes and relative magnitudes of real numbers (integers, fractions, decimals) using scientific notation and exponential numbers.	SE: 98-101, 104-107, 110 #58-#65, 111 #21-#24 TWE: A 101, 107 B 104 DI 99, 105 TNT 99
d. Develop and apply number theory concepts.	SE: 124 #9, 227 #7, 411 #27, 489 #4
e. Understand the position of real numbers on a number line.	SE: 17-19, 20 #5, 23 ex 1, 24 ex 3-ex 4, 31 #49, 68 ex 2, 70 #34, 126 ex 4, 127 ex 5-ex 6, 130 #1
02. Perform computations accurately.	
a. Consistently and accurately add, subtract, multiply, and divide rational numbers.	SE: 71-75, 76-80, 82-85, 88-91, 95 #37-#40 TWE: A 75, 80, 91 DI 77, 83
b. Instantly recall common, equivalent fractions, decimals, and percents.	SE: 62-66, 206-209, 210-215, 219 #42-#46 TWE: A 66, 209 B 62, 210 DI 206, 211
c. Evaluate numerical expressions using the order of operations.	SE: 12 ex 1, 14 #4-#6, 15 #57, 21 #64-#66, 32 #4, 55 #13-#16, 57 #3-#5, 58 #2 <i>Key Concept</i> 11 TWE: DI 12
d. Understand and use exponents.	SE: 98-101, 107 #46, 110 #50-#57, 111 #21-#22, 112 #7, 113 #17, 584-587 TWE: A 101 NS 100 TNT 99
e. Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three.	SE: 80 #41, 220-223 <i>Study Tip</i> 25, 63, 73, 78, 127, 133, 160, 188

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f. Use appropriate vocabulary.	SE: 26 #1, 30 #2, 47 #1, 69 #1, 74 #1, 79 #1, 90 #3, 106 #3, 128 #3, 138 #1
03. Estimate and judge reasonableness of results.	
a. Use estimation to predict computation results.	SE: 8 ex 2, 121 #4, 172 #2, 226-227, 228-231, 488-489, 600-601
b. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.	SE: 90 #3, 120-121, 122, 172 #2, 226-227, 228-229, 230 #3, 321, 488-489, 600-601
c. Determine whether a given estimate is an overestimate or underestimate.	SE: 120-122 TWE: B 120 DI 120
d. Use appropriate vocabulary.	SE: 121 #4, 230 #1, 600-601 TWE: A 122
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.	SE: <i>Problem-Solving Strategy</i> 43, 96, 123, 176, 226, 276, 324, 378, 418, 488
b. Recognize pertinent information for problem solving.	SE: 6-10 <i>Problem-Solving Strategy</i> 378 TWE: DI 7
c. Make predictions and decisions based on information.	SE: 401 ex 5, 406-409, 540 ex 5 <i>Hands-On Lab</i> 22 <i>Problem-Solving Strategy</i> 324, 488
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: 6-10, 26 #1, 30 #2, 47 #1, 69 #1, 74 #1, 79 #1, 90 #3, 106 #3, 128 #3, 138 #1
b. Apply solutions and strategies to new problem situations.	SE: 6-10 <i>Problem-Solving Strategy</i> 324
c. Formulate conjectures and justify (short of formal proof) why they must be or seem to be true.	SE: 7 ex 1, 9 #8-#9, 10 #18, 27 #45, 31 #46-#47, 38 #62-#64, 129 #51, 182 #18-#19, 183 #2, 219 #38
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: <i>Graphing Calculator Investigation</i> 404, 425, 534, 543, 564 <i>Spreadsheet Investigation</i> 165, 245, 256, 439
b. Use computer applications to display and manipulate data.	SE: <i>Graphing Calculator Investigation</i> 425, 543 <i>Spreadsheet Investigation</i> 245, 439
c. Select appropriate models to represent mathematical ideas.	SE: <i>Graphing Calculator Investigation</i> 404, 425, 534, 543, 564 <i>Hands-On Lab</i> 346 <i>Spreadsheet Investigation</i> 165, 245, 256, 439

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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: 6-10, 26 #1, 30 #2, 47 #1, 69 #1, 74 #1, 79 #1, 90 #3, 106 #3, 128 #3, 138 #1
b. Use appropriate vocabulary to communicate mathematical information.	SE: 6-10, 26 #1, 30 #2, 47 #1, 69 #1, 74 #1, 79 #1, 90 #3, 106 #3, 128 #3, 138 #1
c. Use appropriate notation.	TWE: A 21, 53, 80, 101, 145, 235, 329, 457, 473, 487, 495
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.	SE: 358-362, 366 #38-#45 TWE: B 358 DI 359
b. Apply estimation of measurement to real-world and content problems using actual measuring devices.	TWE: A 344 B 335 DI 185, 189, 315, 336, 343, 359
c. Recognize the differences and relationships among measures of perimeter, area, and volume (capacity) in both systems.	SE: 339 #33-#36, 344 #1, 345 #24, 351 #23 <i>Spreadsheet Investigation</i> 356-357 TWE: A 338
d. Solve problems involving length, perimeter, area, volume (capacity), weight, mass, and temperature.	SE: 314-318, 335-339, 342-345, 351 #35-#36, 355 #28, 363 #10-#13, 365 #24-#26 TWE: A 318 B 335 DI 315
e. Convert unit of measurement within each system.	SE: 604-605, 606-607
f. Use appropriate vocabulary.	SE: 328 #2, 333 #1, 334 #20-#22, 337 #3, 354 #1, 367 #1-#2 TWE: A 318, 338, 355
02. Apply concepts of rates and other derived or indirect measurements.	
a. Use rates to make indirect measurements.	SE: 188-191, 197 #28, 200 #28-#29, 201 #16, 203 #15, 209 #52 TWE: A 191 B 188
03. Apply the concepts of ratios and proportions.	
a. Understand and use proportions, ratios, and scales.	SE: 156-159, 170-173, 174 #12-#14, 182 #22, 184-187, 191 #21-#24, 197 #29 TWE: A 173, 187 DI 185
04. Apply dimensional analysis.	
a. Understand units and their relationship to one another and to real-world applications.	SE: 73 ex 5, 75 #28-#29, 78 ex 6, 80 #36-#39, 604-605, 606-607
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.	SE: 11-15, 39-42, 49 #49-#50, 58 #7 TWE: B 39

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b. Translate simple word statements and story problems into algebraic expressions and equations.	SE: 39-42, 49 #49-#50, 56 #42-#45, 58 #7, 471 ex 9, 473 #50-#53 TWE: A 42, 473 B 39 TNT 40
c. Use symbols (<, >, =, <, >, ≠) to express relationships.	SE: 20 #6-#8, 27 #48-#51, 32 #6-#8, 55 #20-#21, 57 #6-#8, 68 ex 2, 69 #12-#23, 70 #37, 75 #37-#40
02. Evaluate algebraic expressions.	
a. Understand and use the following properties in evaluating algebraic expressions: commutative, associative, identity, zero, inverse, distributive, and substitution.	SE: 11-15, 31 #53, 32 #1, 58 #3, 470 ex 3-ex 4, 472 #16-#27, 477 #48-#51, 490 #3-#5, 505 #7-#10 TWE: A 15
b. Understand and use the order of operations in evaluating basic algebraic expressions.	SE: 11-15, 21 #64-#66, 32 #4, 55 #13-#16, 58 #2, 59 #13 TWE: DI 12 TNT 12
c. Simplify algebraic expressions.	SE: 469-473, 477 #48-#51, 490 #3-#9, 505 #7-#12, 507 #3-#4, 509 #12 TWE: B 469 DI 470
03. Solve algebraic equations and inequalities.	
a. Solve one- and two-step equations and inequalities using inverse operations.	SE: 45-49, 50-53, 56 #46-#58, 57 #23-#28, 58 #9, 92-95 TWE: A 49, 53 B 45, 50
b. Explore graphical representation to show simple linear equations.	SE: 522-525, 533-536, 542 #25-#27, 553 #20-#23, 555 #8-#9, 557 #14 TWE: A 525, 536 B 533 DI 523
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.	SE: 272-275, 282 #27-#29, 284 #1-#2, 307 #19-#20, 309 #8-#10 <i>The Game Zone</i> 285 <i>Key Concept</i> 263 TWE: A 275 B 272 DI 273
b. Construct and measure various angles and shapes using appropriate tools.	SE: <i>Hands-On Mini Lab</i> 256
c. Understand and apply fundamental concepts, properties, and relationships among points, lines, planes, angles, and shapes.	SE: 272-275, 331-334 <i>Hands-On Lab</i> 330 TWE: B 331
d. Recognize and apply congruence, similarities, and symmetry of shapes.	SE: 279-282, 286-289, 294 #33-#37, 299 #20, 303 #22-#23, 307 #21-#24, 308 #25-#28 TWE: A 289 DI 280, 287

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e. Apply formulas for perimeter, circumference, and area to polygons and circles.	SE: 314-318, 319-323, 326-329, 339 #39, 340 #3, 363 #10-#13, 364 #14-#17, 367 #3-#6 TWE: A 318, 323
f. Understand the concept of surface area and volume (capacity).	SE: 335-339, 340 #9-#10, 342-345, 347-351, 352-355, 365 #24-#26 TWE: A 338, 344, 350 DI 343
g. Explore and model the effects of reflections, translations, and rotations on various shapes.	SE: 290-294, 296-299, 300-303, 308 #29-#34 TWE: A 294, 299, 303 B 290, 300 DI 300
h. Use appropriate vocabulary.	SE: 260 #39, 269 #1, 273 #1, 284 #2, 292 #2, 333 #1 TWE: A 265, 275, 282, 299
02. Apply the geometry of right triangles.	
a. Investigate right triangle geometry using the Pythagorean Theorem.	SE: 132-136, 137-140, 145 #28-#30, 147 #31-#36, 148 #37-#41, 149 #12-#13, 150 #7 TWE: A 136 B 137 DI 138
03. Apply graphing in two dimensions.	
a. Use the coordinate plane as it relates to real-world applications.	SE: 143 ex 2, 145 #22, 167 #3, 169 #18-#19, 195 ex 3, 197 #21-#23, 203 #16
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).	SE: 420-424, 426-429, 440 #9-#10, 449 #15-#18, 450-453, 461 #3-#5 <i>Hands-On Lab</i> 434 TWE: B 420, 426, 430
b. Explain and justify conclusions drawn from tables, charts, and graphs.	SE: 421 ex 2, 422 #4, 424 #24, 427 ex 2-ex 3, 429 #13, 433 #16, 436 ex 2-ex 3, 438 #20, 447 ex 2, 540 ex 4-ex 5
c. Understand and use appropriate vocabulary.	SE: 420-424, 426-429, 440 #9-#10, 449 #15-#18, 450-453, 461 #3-#5 <i>Hands-On Lab</i> 434 TWE: B 420, 426, 430
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: 424 #23, 425 #3, 428 #3 <i>Spreadsheet Investigation</i> 439 TWE: A 429, 433
03. Apply simple statistical measurements.	
a. Choose and calculate the appropriate measure of central tendency – mean, median, and mode.	SE: 435-438, 442-445, 449 #24, 459 #15-#21, 461 #7-#9, 656 #6-#7 <i>Spreadsheet Investigation</i> 439 TWE: A 437 B 435 DI 436

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b. Explore the significance of range, frequency, and informal distribution.	SE: 418-419, 442-445, 446-449 TWE: B 446 DI 443
04. Understand basic concepts of probability.	
a. Model situations of probability using simulations.	SE: <i>Graphing Calculator Investigation</i> 404-405 TWE: A 377, 399 B 374 DI 375
b. Understand and use the language of probability.	SE: 374-377, 396-399, 410 #9-#15, 412 #35-#45, 413 #2, 415 #14 TWE: A 377
c. Recognize equally likely outcomes.	SE: 374
05. Make predictions or decisions based on data.	
a. Make predictions based on simple experimental and theoretical probabilities.	SE: 400-403, 406-409, 412 #42-#45, 413 #17-#19 TWE: A 377, 399, 403 DI 375
b. Understand and use appropriate vocabulary.	SE: 420-424, 426-429, 440 #9-#10, 449 #15-#18, 450-453, 461 #3-#5 <i>Hands-On Lab</i> 434 TWE: B 420, 426, 430
c. Conduct statistical experiments and interpret results using tables, charts, or graphs.	SE: 424 #23, 425 #3, 428 #3 <i>Spreadsheet Investigation</i> 439 TWE: A 429, 433
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.	SE: 512-515, 517-520, 525 #28, 530 #1 <i>Hands-On Lab</i> 521 TWE: A 519 DI 518
b. Use functional relationships to explain how a change in one quantity results in a change in another.	SE: 517-520, 524 #22, 555 #1 TWE: B 517
c. Understand and use appropriate vocabulary.	SE: 514 #1, 519 #1, 524 #1, 530 #31, 555 #2 TWE: B 517
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.	SE: 517-520, 522-525, 530 #7, 555 #8-#9
03. Apply functions to a variety of problems.	
a. Use patterns and functions to represent and solve problems.	SE: 518 ex 4-ex 5, 520 #23-#24, 525 #23-#24, 530 #7, 534 ex 4-ex 6, 535 #10-#12, 536 #34-#36, 555 #15-#17 TWE: A 519

Codes Used for TWE Pages

A	Assess
B	Bellringer
DI	Daily Intervention
NS	Number Sense
TNT	Tips for New Teachers