



SOUTH DAKOTA
Mathematics Standards Grade 7
***Mathematics: Applications and Concepts Course 2* © 2004**

STANDARDS	PAGE REFERENCES
SEVENTH GRADE ALGEBRA STANDARDS	
1. evaluate algebraic expressions for given replacement values of variables.	SE: 18-21, 47, 137 #54-#57, 139, 145 #21-#23 <i>The Game Zone 29</i> TWE: ICE 19
2. find and use generalizations about equalities and inequalities.	SE: 156-157, 160, 172-175 <i>Hands-On Lab 154-155, 176</i> TWE: A 159 DI 19
3. use associative, commutative, distributive and identity properties to create equivalent expressions.	SE: 30-33, 48, 50 TWE: A 33 DI 31 ICE 31
4. explore linear equations to identify generalizations.	Graphing solutions of linear equations is found on SE: 178-179.
5. use graphs to solve problems including ordered pairs and inequalities.	SE: 112-115, 172-175 <i>Hands-On Lab 176</i> <i>The Game Zone 117</i> TWE: ICE 113, 173
6. solve one-step linear equations using strategies involving inverse operations and integers.	By using graphing strategy, linear equations are explored on pages SE: 178-179
7. solve inequalities in one variable using strategies involving inverse operations and integers.	By using graphing strategy, inequalities are explored on pages SE: 172-173
8. create algebraic statements representing patterns observed in life-related situations.	SE: 24-27, 148, 150-152, 163 #48-#51, 173 e.g. #7 TWE: DI 25 ICE 151
9. make predictions relating two variables using a rule or a graph.	SE: 60-63 <i>Hands-On Lab 176</i> TWE: A 63 ICE 61
10. use a scatterplot to determine line of best fit.	Scatterplot is defined on page SE: 61
SEVENTH GRADE GEOMETRY STANDARDS	
1. use deductive reasoning and inference to compare and contrast quadrilaterals.	SE: 434-437, 443 #20-#22 TWE: A 437 DI 434, 445 ICE 435
2. identify, describe, and form polygons having up to ten sides.	SE: 428-431, 434-437, 438 #12-#14, 446-450 <i>Hands-On Lab 432-433</i> TWE: DI 434 ICE 435

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3. identify and construct elements of geometric figures, e.g., altitudes, midpoints, bisectors, radii, diameters, and chords.	SE: 275-277, 283 #16 <i>Hands-On Lab</i> 416-417, 426-427 TWE: A 276
4. use geometric properties, formulas, and relationships to solve problems involving regular and irregular shapes.	SE: 163 #44, 200 #44-#47, 202 #12, 261 #37, 307 #17-#21, 440-443, 446-450, 456, 464, 468
5. present logical arguments about the properties of basic geometric figures.	SE: 440-443, 446-450, 456, 464, 468 <i>Problem Solving Strategy</i> 302 TWE: DI 302 TNT 440
6. demonstrate ways that shapes can be combined, subdivided, and changed using transformations, e.g., flips, slides, turns, and enlargements.	SE: 200 #44-#47, 441, 451-454, 456-459, 464, 473 #48-#49 <i>Hands-On Mini Lab</i> 18 <i>Hands-On Lab</i> 460-461 <i>Spreadsheet Investigation</i> 455, 523 TWE: DI 451
7. determine if geometric figures are similar and write proportions to express the relationships between corresponding parts of similar figures.	SE: 440-443 TWE: A 442
8. identify and construct two-dimensional patterns from three-dimensional models.	SE: 514-517, 528 #6, 532 <i>Hands-On Lab</i> 512-513, 530-531 <i>Problem Solving Strategy</i> 518-519 TWE: PS 549
9. use the rectangular coordinate system to analyze connections between stretching, shrinking, and transforming figures.	See <i>Mathematics: Applications and Concepts Course 3</i> © 2004. The following examples can be used to analyze connections between stretching and shrinking figures. SE: 194-195 e.g., #1 & #2
10. explore and predict relationships within patterns, e.g., tessellations.	SE: 446-450 TWE: DI 447
SEVENTH GRADE MEASUREMENT STANDARDS	
1. select, use, and explain methods for comparing measurements, e.g., miles per hour to feet per second.	SE: 13 #61, 292-295 <i>Web Quest</i> 193
2. create scale drawings to represent real-world situations.	SE: 223 #34, 304-308, 331 #18 <i>Spreadsheet Investigation</i> 309 TWE: DI 304 TNT 305
3. develop and use standard formulas for perimeter, area, and circumference.	SE: 16 #41, 163 #44, 238, 261 #37, 270-273, 483-485, 489-492, 493-495 <i>Hands-On Lab</i> 274, 488 TWE: PS 281
4. use proportions to convert between units of measure.	SE: 297-300 <i>Web Quest</i> 193 TWE: PS 329
5. use the most appropriate tool to measure mass, area, and angle in customary and metric systems.	SE: 39, 273 #27 <i>Hands-On Lab</i> 412, 416-417, 426-427
6. analyze a variety of measurement situations to determine the necessary degree of accuracy and precision.	SE: 273 #27, 542-545, 548, 549 #14-#15 TWE: B 542 DI 543 ICE 543

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7. apply mathematical techniques to extend physical senses, e.g., using shadows to determine height of tree.	SE: 441 e.g. #2, 443 #13-#14 TWE: A 443 DI 441 PS 329
8. estimate areas of irregular areas by subdividing them into rectangles and triangles.	SE: 498-500 TWE: DI 499 ICE 499
SEVENTH GRADE NUMBER SENSE STANDARDS	
1. represent numbers in a variety of equivalent forms, e.g., integers, exponents, scientific notation.	SE: 10-13, 43-45, 106-107, 210-213, 312-315, 325, 555-556 <i>Hands-On Lab</i> 196 <i>Web Quest</i> 3, 103, 193 TWE: A 45, 108 B 106, 312 PC 4F PS 235
2. find common multiples and factors, e.g., least common multiple, greatest common factor.	SE: 197-200, 203-206, 216-219, 224-226, 232-233, 554 <i>Hands-On Lab</i> 196 TWE: A 219, 315 DI 228 ICE 225 PC 194F PS 235
3. explain the use of integers using examples from real-life situations.	SE: 106-108, 115 #37-#41, 116 #16, 122 e.g. #8 <i>Web Quest</i> 3, 103 TWE: A 108 ICE 107 WQ 103
4. describe and compare two sets of data using ratios including appropriate notation, e.g., $a:b$, a/b , a to b .	SE: 237 #19, 286, 288-291 <i>Hands-On Lab</i> 296, 301 TWE: BBS 286C DI 289
5. add, subtract, multiply, and divide rational numbers.	SE: 6-9, 50 #1, 118, 120-124, 128-131, 134-137, 209 #34-#37, 244-247, 264-266, 559-560, 562 <i>Hands-On Lab</i> 118, 126 <i>The Game Zone</i> 263 TWE: DI 135 ICE 121, 135 PC 332F TNT 121
6. solve consumer application problems involving discount, markup, commission, profit, and simple compound interest.	SE: 354-357, 358-360, 364, 365 #19 <i>Spreadsheet Investigation</i> 361 TWE: DI 355, 358
7. model multiplication and division with integers.	SE: 134-137, 138-141, 145 #13-#20 <i>Hands-On Lab</i> 118-119, 126-127 TWE: A 137 DI 135 ICE 121, 135 TNT 121

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8. use estimation strategies to make predictions and help solve multi-step problems involving rational numbers.	SE: 240-243, 282 #4, 334-337, 366 #5, #7, 558 <i>Problem Solving Strategy</i> 22, 252-253, 338-339
9. develop and apply properties of proportions to solve problems.	SE: 297-300, 304-308, 441, 443 #13-#14 <i>Hands-On Lab</i> 301 <i>Spreadsheet Investigation</i> 309 TWE: A 300, 443 PS 329
10. formulate rules to solve practical problems involving integers.	Rules of operations are needed to solve the following problems. SE: 140 #33 141 #38
11. analyze and apply properties of operations with rational numbers to simplify expressions.	SE: 14-17, 21 #50-#53, 30-33, 47 #17-#23, 50 #6, 122 e.g. #7, 139 e.g. #4 TWE: A 247 B 14 ICE 31 PS 49
12. understand the magnitude of integers and numbers expressed in scientific notation.	SE: 43-45 #42-#44, 109-111, 116 #16, 140 #7, 295 #27-#28 TWE: B 43 DI 109, 139
13. associate mathematical symbols with word names for irrational numbers.	SE: 213 #44-#45, 275 TWE: DI 275
14. explain the effects of operations on the magnitude of irrational numbers.	Irrational number is defined on page SE: 476 Example 2 shows an effect of operation on an irrational number.
15. compare and order sets of numbers expressed in multiple forms.	Set theory is defined on SE: 107 An application of a set of objects is shown on page SE: 203
SEVENTH GRADE PATTERNS, RELATIONS, AND FUNCTIONS STANDARDS	
1. describe different ways in which variables are used.	SE: 4, 18, 28 #18, 148, 181 #35 TWE: A 273 DI 19 PS 49 TNT 471
2. model and solve multi-step problems involving rate, average speed, distance and time, or direct variation.	SE: 191 #20, 292-295 TWE: DI 293
3. use graphs to distinguish between linear and nonlinear functions.	SE: 178, 181
4. hypothesize relations or functions from patterns.	SE: 177-181 <i>Hands-On Lab</i> 176
5. compute an “output” for a given “input” in a function.	SE: 177-178
6. identify, describe, and generalize patterns involving geometric growth, square roots, cubes, reciprocals, and exponents.	SE: 10-13, 34-36, 43-45, 259, 471-476 <i>Hands-On Lab</i> 37 <i>Spreadsheet Investigation</i> 523 <i>The Game Zone</i> 29

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7. generalize numerical and geometric patterns using algebra and relate the equation, graph, and table of values for the generalization.	SE: 34-36, 51 #17, 182-183, 191 #2, 237 #14 TWE: DI 183
8. use tables and graphs to represent patterns found in real-world events, e.g., temperature trends.	SE: 17 #55, 51 #17, 77 e.g. #3, 109 (WHEN), 169 #40-#41 <i>Problem Solving Strategy</i> 58-59, 132-133
9. connect the concept of maximums and minimums to two- and three-dimensional representations.	TWE: PS 549
10. identify examples of continuous functions.	This objective is covered in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2004 on pages 159-168.
11. identify examples of discrete functions.	This objective is covered in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2004 on pages 159-168.
12. model the concept of limit using various representations, e.g., halving distances on the number line.	SE: 129 e.g. #6, 131 #46-#48 <i>Problem Solving Strategy</i> 302
SEVENTH GRADE STATISTICS & PROBABILITY STANDARDS	
1. explore the concept of sampling bias and describe procedures for selecting unbiased samples.	SE: <i>Hands-On Lab</i> 301, 344
2. solve problems using mean, median, mode and range of a set of data.	SE: 66 #8, 67 #20, 69-72, 79 #26-#27, 94 #9- #11, 95 #19-#20, 97, 100 #6 <i>Hands-On Lab</i> 73 <i>The Game Zone</i> 75 TWE: DS 66 PC 52F
3. display data, using frequency distributions, line plots, stem-and-leaf plots, box-and-whisker plots, and scattergrams.	SE: 54-57, 64-68, 76-79, 80-83, 101 #15 <i>Problem Solving Strategy</i> 58-59 <i>Web Quest</i> 3, 103, 193 TWE: A 68, 79 DI 55 ICE 65
4. make inferences and predictions based on the analysis of student collected data.	SE: 60-63, 345-347 TWE: B 60 PS 99
5. estimate probability of events using a series of trials.	SE: 373 #30 TWE: DI 371
6. represent the results of probability experiments as ratios, decimals, and percents between 0 and 1.	SE: 379 #8, 390 #27-#32, 393 e.g. #1, 398 e.g. #1, 401 TWE: A 383 ICE 394
7. use experimental or real-world data to estimate the probability of future events.	SE: 393-396, 404 <i>Hands-On Lab</i> 397
8. determine and interpret the probability of a given event occurring in a given sample space.	SE: 374-377 TWE: DI 375
9. use sampling techniques to conduct probability experiments.	SE: 407 #16-#17 <i>Hands-On Lab</i> 344

Codes Used for TWE Pages

A	Assess
B	Bellringer
BBS	Bulletin Board Starters
DI	Daily Intervention
DS	Data Sense
ICE	In-Class Examples
PC	Project Criss
PS	Portfolio Suggestion
TNT	Tips for New Teachers
WQ	Web Quest