



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

STANDARDS	PAGE REFERENCES
EIGHTH GRADE ALGEBRA STANDARDS	
1. apply properties of equalities and inequalities using algebraic techniques.	SE: 50-53, 56 #46-#58, 92-95, 110 #45-#49, 496-499, 500-504 TWE: A 53 DI 51, 500
2. use equalities and inequalities to life-related situations.	SE: 48 #40-#41, 49 #42-#43, 51 ex 3, 53 #40-#44, 57 #29, 93 ex 5, 94 #9-#10, 110 #49, 497 ex 4, 499 #47
3. use properties to justify the steps to expand, combine, or simplify polynomial expressions.	SE: 570-573, 574-577, 578 #10-#17, 580-583, 587 #52-#54, 594 #12-#17 TWE: A 573, 577, 583 B 574
4. analyze products of binomials using area models, e.g., $(x + 3)(x - 2)$.	This objective is covered in Glencoe's <i>Algebra: Concepts and Applications</i> © 2004 on pages 399-404.
5. analyze linear equations to create generalizations.	SE: 517-520, 522-525 <i>Hands-On Lab</i> 521 TWE: A 519 B 517 DI 518
6. solve and graph equations and inequalities.	SE: 50-53, 56 #46-#58, 92-95, 110 #45-#49, 496-499, 500-504 TWE: A 53 DI 51, 500
7. represent solutions to open sentences and inequalities graphically.	SE: 493 ex 7-ex 8, 494 #24-#33, 495 #45, 498 #34-#45, 501 ex 2, 502 ex 4, 503 #12-#29, 506 #27-#28, 507 #14-#19 TWE: A 495
8. describe and represent relations from collected data using tables, graphs, and rules.	SE: 517-520, 522-525 <i>Hands-On Lab</i> 521 TWE: A 519 B 517 DI 518
9. solve multi-step linear equations using strategies involving inverse operations and integers.	SE: 474-477, 478-481, 484-487, 490 #10-#15 <i>Hands-On Lab</i> 482-483 TWE: A 477 B 474, 484 DI 475, 485
10. determine slope from a graph, ordered pairs, or an equation.	SE: 166-169, 173 #47, 174 #9-#11, 182 #23-#25, 199 #13-#15, 201 #7-#8, 526-529, 530 #11-#13 TWE: A 169 B 166

STANDARDS	PAGE REFERENCES
11. identify x and y intercepts from an equation or graph.	SE: 523 ex 2, 525 #27, 530 #14, 532 #7, 533 ex 1-ex 2, 535 #4-#6, 542 #25-#27, 553 #29-#34 TWE: A 525 DI 534
12. generalize the impact of coefficients and constants of linear equations.	SE: 533-536 <i>Graphing Calculator Investigation</i> 532 TWE: A 536
13. identify various phenomena that represents different families of graphs.	SE: 533-536 <i>Graphing Calculator Investigation</i> 532 TWE: A 536
14. solve word problems involving direct and inverse variation.	This objective is covered in Glencoe's <i>Algebra: Concepts and Applications</i> © 2004 on pages 264-275.
EIGHTH GRADE GEOMETRY STANDARDS	
1. use given assumptions to determine properties of figures and relationships between figures.	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
2. use visual perspectives to analyze geometric problems.	SE: 332 ex 3, 333 #11-#12 <i>Hands-On Lab</i> 346 <i>Hands-On Mini Lab</i> 342
3. describe, classify, and construct plane and solid figures, e.g., prisms, pyramids, cylinders, and cones.	SE: 272-275, 282 #27-#29, 284 #1-#2, 307 #19-#20, 308 #8-#10 <i>The Game Zone</i> 285 <i>Key Concept</i> 263 TWE: A 275 B 272 DI 273
4. use the Pythagorean Theorem to solve problems.	SE: 132-136, 137-140, 145 #28-#30, 147 #31-#36, 148 #39-#41, 149 #12-#13, 150 #7 TWE: A 136 B 137 DI 138
5. use various geometric properties, formulas, and relationships to solve problems involving three-dimensional shapes.	SE: 335-339, 340 #9-#10, 342-345, 347-351, 352-355, 365 #24-#26 TWE: A 338, 344, 350 DI 343
6. use given top, side, or bottom views of objects to construct three-dimensional models.	SE: 332 ex 3, 333 #11-#12
7. construct three-dimensional figures from two-dimensional views.	SE: <i>Hands-On Lab</i> 346 <i>Hands-On Mini Lab</i> 342
8. develop two-dimensional representations that demonstrate various perspectives of three-dimensional objects.	SE: 332 ex 3, 333 #11-#12 <i>Hands-On Lab</i> 346 <i>Hands-On Mini Lab</i> 342
9. determine volume and surface area of three-dimensional models.	SE: 335-339, 340 #9-#10, 342-345, 347-351, 352-355, 365 #24-#26 TWE: A 338, 344, 350 DI 343

STANDARDS	PAGE REFERENCES
EIGHTH GRADE MEASUREMENT STANDARDS	
1. apply proportional reasoning to solve measurement problems.	SE: 156-159, 170-173, 174 #12-#14, 182 #22, 184-187, 191 #21-#24, 197 #29 TWE: A 173, 187 DI 185
2. design procedures for measuring various attributes of complex figures.	SE: 326-329, 337 ex 5, 338 #18-#21, 339 #39, 340 #5-#6, 345 #32, 364 #18-#21, 367 #8 TWE: A 329 DI 326
3. develop and use standard formulas for surface area and volume.	SE: 335-339, 340 #9-#10, 342-345, 347-351, 352-355, 365 #24-#26 TWE: A 338, 344, 350 DI 343
4. estimate and determine volume using standard and nonstandard units.	SE: 335-339, 340 #9-#10, 342-345, 351 #35-#36, 355 #28, 362 #46, 365 #24-#29 TWE: A 344 B 335, 342
5. use degrees as a unit of measure for angles and circle problems.	SE: 256-260, 615
6. develop rules to use when converting between different measurement systems.	SE: 604-605, 606-607, 648
7. use the most appropriate tool to measure volume in customary and metric systems.	SE: 358-362, 366 #38-#45 TWE: B 358 DI 359
8. determine precision, accuracy, and measurement errors in a variety of situations.	SE: 358-362, 366 #38-#45, 367 #13-#15, 377 #33-#36, 383 #31 <i>Extra Practice Lesson 7-9 635</i> TWE: B 358 DI 359
9. apply mathematical techniques in situations that defy direct measurement, e.g., measuring the height of a tree, distance to the moon.	SE: 188-191, 197 #28, 200 #28-#29, 201 #16, 203 #15, 209 #52 TWE: A 191 B 188
10. solve problems involving two- and three-dimensional measurement situations in everyday contexts.	SE: 339 #33-#36, 344 #1, 345 #24, 351 #23 <i>Spreadsheet Investigation 356-357</i> TWE: A 338
11. use volume and surface area formulas to solve problems.	SE: 335-339, 340 #9-#10, 342-345, 347-351, 352-355, 365 #24-#26 TWE: A 338, 344, 350 DI 343
EIGHTH GRADE NUMBER SENSE STANDARDS	
1. represent numbers in a variety of equivalent forms, e.g., radicals, absolute value.	SE: 19-21, 62-66, 206-209, 210-215, 219 #42-#46 TWE: A 66, 209 B 62, 210 DI 206, 211

STANDARDS	PAGE REFERENCES
2. describe relationships between the subsets of the real number system.	SE: 125, 126 ex 1-ex 3, 128 #17-#28, 129 #51, 130 #18-#23 TWE: A 129 B 125 DI 126
3. explain the use of irrational numbers, e.g., pi.	SE: 121 #1, 122 #32-#33, 126 ex 4, 127 ex 5-ex 6, 128 #12-#14, 129 #34-#48, 136 #38-#39, 140 #25 TWE: DI 120
4. use concrete representations of real numbers in daily situations.	SE: 23-27, 28-31, 34-38, 42 #35-#38, 55 #25-#34, 125-129 TWE: A 27, 31, 38 DI 29
5. simplify numerical expressions involving exponents.	SE: 11-12, 14 #9, 98-101, 107 #46, 110 #50-#57, 111 #21-#22, 112 #7, 113 #17-#18, 116-119 TWE: A 101
6. use proportions to solve scale-model problems with fractions and decimals.	SE: 156-159, 170-173, 174 #12-#14, 182 #22, 184-187, 191 #21-#24, 197 #29 TWE: A 173, 187 DI 185
7. determine a relative position of a square root on a number line.	SE: 120-124, 129 #54, 130 #12-#17, 136 #42, 147 #16-#24, 149 #6-#8, 150 #5, 151 #11 TWE: A 122 DI 120
8. read, write, and compute within any subset of real numbers.	SE: 23-27, 28-31, 34-38, 42 #35-#38, 55 #25-#34, 125-129 TWE: A 27, 31, 38 DI 29
9. read, write, and explain exponential notation.	SE: 11-12, 14 #9, 98-101, 107 #46, 110 #50-#57, 111 #21-#22, 112 #7, 113 #17-#18, 116-119 TWE: A 101
10. use estimation strategies to predict results and help solve multi-step problems involving real numbers.	SE: 120-122, 130 #12-#17, 136 #42, 147 #16-#24, 228-231, 235 #33, 248 #45-#50, 249 #10-#11, 600-601 <i>Study Tip</i> 321
11. formulate rules to solve practical problems involving real numbers.	SE: 14 #40, 15 #41-#42, 39-42, 51 ex 3, 73 ex 5, 241 ex 1, 242 ex 3, 243 #15-#16, 652 #16 TWE: A 42
12. use properties to justify steps when simplifying expressions.	SE: 469-473, 476 #1, 486 #1 TWE: A 473 DI 470
13. create algorithms to determine solutions for equations and inequalities.	SE: <i>Hands-On Lab</i> 482-483 TWE: A 477 DI 475
14. formulate counter-examples to disclaim given assertions.	SE: 13 ex 5, 15 #51-#54, 21 #59-#61, 27 #45, 31 #46-#47, 38 #62-#64, 57 #1, 128 #1, 182 #18-#19

STANDARDS	PAGE REFERENCES
15. explain the magnitude of radicals, numbers expressed with exponents, and the absolute values of numbers.	SE: 98-101, 104-107, 110 #58-#65, 111 #21-#24 TWE: A 101, 107 B 104 DI 99, 105 TNT 99
16. associate mathematical symbols with word names of real numbers.	This objective is covered in Glencoe's <i>Algebra: Concepts and Applications</i> © 2004 on pages 600-605.
17. explain the effects of operations on the magnitude of real numbers.	SE: 26 #2, 37 #1 <i>Key Concept</i> 23, 24, 28, 34, 35, 36 <i>Teaching Tip</i> 35 TWE: DI 35 NS 37
EIGHTH GRADE PATTERNS, RELATIONS, AND FUNCTIONS STANDARDS	
1. construct problems involving dependent and independent variables.	SE: <i>Study Tip</i> 518
2. represent and interpret quantitative relationships graphically.	SE: 522-525, 529 #32-#35, 530 #8-#10, 537-538, 539-542 <i>Graphing Calculator Investigation</i> 543 <i>Hands-On Lab</i> 521
3. understand the relationship of solutions in one variable, the x-intercept of the related linear equation in two variables, and the related situations from which each arise.	SE: 166-169, 522-525, 529 #27-#29, 533-536, 547 #39-#41 <i>Spreadsheet Investigation</i> 165 TWE: A 536 B 166 DI 167, 523
4. create rules to explain the relationship between numbers when a change in the first variable affects the second variable.	SE: 517-520, 524 #22, 555 #1 TWE: B 517
5. represent situations with patterns and relations to find exact or approximate solutions to 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
6. investigate and describe functional relationships of geometric figures.	SE: <i>Hands-On Lab</i> 278
7. describe and represent relations using tables, graphs, and rules.	SE: 512-515, 520 #29-#31, 525 #32, 530 #4-#6, 537, 552 #9-#13 <i>Hands-On Lab</i> 516, 521 TWE: A 515 B 512
8. create and solve problems using proportions, formulas, and functions.	SE: 156-159, 170-173, 174 #12-#14, 182 #22, 184-187, 191 #21-#24, 197 #29 TWE: A 173, 187 DI 185
9. identify, describe, represent, extend, and create exponential patterns, e.g., the accumulation of a unit of money (penny) over time.	SE: 100 #41, 101 #42, 560-563, 649 #17
10. identify the special characteristics of relationships including maximum and minimum values.	SE: 568 #32-#34

STANDARDS	PAGE REFERENCES
11. differentiate between continuous and discrete functions.	This objective is covered in Glencoe's <i>Advanced Mathematical Concepts: Precalculus with Applications</i> © 2004 on pages 159-168.
12. use exponential growth or decay to explore exponential functions.	SE: 100 #41, 101 #42, 560-563, 649 #17
13. explain the concept of limit using various representations, e.g., $1 + \frac{1}{2} + \frac{1}{4} + \dots$	This objective is covered in Glencoe's <i>Algebra 2</i> © 2003 on page 593.
EIGHTH GRADE STATISTICS & PROBABILITY STANDARDS	
1. explain impact of sampling bias on data and describe procedures for selecting unbiased samples.	SE: 406-409, 412 #46-#49, 413 #2, 414 #7 TWE: A 409 DI 407
2. create and solve problems involving the mean, median, mode and range of a set of data.	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
3. consider effects on reliability of sampling procedures and of missing or incorrect information.	SE: 406-409, 412 #46-#49, 413 #2, 414 #7 TWE: A 409 DI 407
4. use a variety of visual representations to display data to make comparisons, predictions, and inferences.	SE: 424 #3, 428 #3 <i>Spreadsheet Investigation</i> 439 TWE: A 429, 433
5. evaluate the validity of claims based on statistical data.	SE: 406-409, 412 #46-#49, 413 #2, 414 #7 TWE: A 409 DI 407
6. establish appropriate sample spaces to apply principles of probability for simple and compound chance events.	SE: 400-403, 406-409, 412 #42-#45, 413 #17-#19 TWE: A 377, 399, 403 DI 375
7. express theoretical probability of experimental outcomes.	SE: 400-403, 406-409, 412 #42-#45, 413 #17-#19 TWE: A 377, 399, 403 DI 375
8. estimate probability of simple and compound events using a series of trials.	SE: 400-403, 406-409, 412 #42-#45, 413 #17-#19 TWE: A 377, 399, 403 DI 375
9. explain the difference between independent and dependent events and the impact on results in specific probability situations.	SE: 396-397, 398 #1, 413 #1 TWE: B 396 DI 397
10. determine and interpret the probability of a given event occurring from a given sample space.	SE: 400-403, 415 #15 <i>Graphing Calculator Investigation</i> 404-405 TWE: A 403 DI 400

Codes Used for TWE Pages

A	Assess
B	Bellringer
DI	Differentiated Instruction
NS	Number Sense
TNT	Tips for New Teachers