



COLORADO
Content Standards Mathematics Grades 9-12
Algebra 1 © 2005

OBJECTIVES	PAGE REFERENCES
STANDARD 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems. In order to meet this standard, a student will	
<ul style="list-style-type: none"> construct and interpret number meanings through real-world experiences* and the use of hands-on materials; 	SE: 6-9, 68-72, 73-78, 103-109 TWE: F 68, 73, 79 ICE 7, 75 OEA 72
<ul style="list-style-type: none"> represent and use numbers in a variety of equivalent forms (<i>for example, fractions, decimals, percents, exponents*, scientific notation*</i>); 	SE: 6-9, 68-72, 103-109, 160-164, 425-430 <i>Prerequisite Skills</i> 802-803, 804-805 <i>Reading Mathematics</i> 165 TWE: ICE 104-106, 161
<ul style="list-style-type: none"> know the structure and properties of the real number system* (<i>for example, primes*, factors, multiples, relationships among sets of numbers</i>); and 	SE: 6-9, 68-72, 103-109, 474-479 TWE: F 474 ICE 69-70, 104, 475-476 SN 70, 477
<ul style="list-style-type: none"> use number sense, including estimation and mental arithmetic, to determine the reasonableness of solutions. 	SE: 121-126, 142-147, 155-159, 533-538, 618-620, 625-630 TWE: ICE 121, 143, 535, 618
GRADES 9-12 As students in grades 9-12 extend their knowledge, what they know and are able to do includes	
<ul style="list-style-type: none"> demonstrating meanings for real numbers, absolute value*, and scientific notation using physical materials and technology in problem-solving situations; 	SE: 68-72, 103-109, 425-430 <i>Algebra Activity</i> 347 TWE: DI 426 OEA 72
<ul style="list-style-type: none"> developing, testing, and explaining conjectures about properties of number systems and sets of numbers; and 	SE: 21-25, 26-31, 32-35, 68-72, 103-109 TWE: F 32 ICE 22, 27-28, 33-34, 104-105
<ul style="list-style-type: none"> using number sense to estimate and justify the reasonableness of solutions to problems involving real numbers. 	SE: 121-126, 142-147, 155-159, 533-538, 618-620, 625-630 TWE: ICE 121, 143, 535, 618
STANDARD 2 Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems. In order to meet this standard, a student will	
<ul style="list-style-type: none"> identify, describe, analyze, extend, and create a wide variety of patterns in numbers, shapes, and data; 	SE: 233-238, 240-245, 567-571 <i>Reading Mathematics</i> 239 <i>Spreadsheet Investigation</i> 232 TWE: F 240, 567 ICE 234-235, 241-242, 568-570

OBJECTIVES	PAGE REFERENCES
<ul style="list-style-type: none"> describe patterns using mathematical language; 	SE: 233-238, 240-245, 567-571 <i>Spreadsheet Investigation</i> 232 TWE: F 240, 567 ICE 234-235, 241-242, 568-570
<ul style="list-style-type: none"> solve problems and model real-world situations using patterns and functions; 	SE: 226-231, 233-238, 240-245, 524-530, 554-560 TWE: F 233, 240, 554 ICE 242
<ul style="list-style-type: none"> compare and contrast different types of functions; and 	SE: 44-48, 218-223, 226-231, 524-530, 533-538, 554-560 <i>Graphing Calculator Investigation</i> 531-532, 545, 553
<ul style="list-style-type: none"> describe the connections among representations of patterns and functions, including words, tables, graphs, and symbols. 	SE: 205-210, 212-217, 218-223, 233-238 <i>Graphing Calculator Investigation</i> 204, 224-225 TWE: ICE 206-207, 214, 219-220, 235
GRADES 9-12	
As students in grades 9-12 extend their knowledge, what they know and are able to do includes	
<ul style="list-style-type: none"> modeling real-world phenomena (<i>for example, distance-versus-time relationships, compound interest, amortization tables, mortality rates</i>) using functions, equations, inequalities, and matrices*; 	SE: 155-159, 339-343, 369-374, 376-381, 715-721 TWE: F 382 ICE 157, 340, 371, 378
<ul style="list-style-type: none"> representing functional relationships using written explanations, tables, equations, and graphs, and describing the connections among these representations; 	SE: 205-210, 212-217, 218-223, 524-530, 554-560 <i>Graphing Calculator Investigation</i> 204 TWE: ICE 206-207, 214, 219-220, 555-556
<ul style="list-style-type: none"> solving problems involving functional relationships using graphing calculators and/or computers as well as appropriate paper-and-pencil techniques; 	SE: 218-223, 264-269, 524-530, 533-538, 554-560 <i>Graphing Calculator Investigation</i> 224-225, 531-532, 553 TWE: ICE 265-266, 525-527
<ul style="list-style-type: none"> analyzing and explaining the behaviors, transformations*, and general properties of types of equations and functions (<i>for example, linear, quadratic*, exponential*</i>); and 	SE: 218-223, 264-269, 524-530, 554-559 <i>Graphing Calculator Investigation</i> 531-532, 545 TWE: ICE 220, 555-557, 562-563, 643
<ul style="list-style-type: none"> interpreting algebraic equations and inequalities geometrically and describing geometric relationships algebraically. 	SE: 128-134, 135-140, 142-148, 292-297, 318-323, 325-331, 332-337, 345-351 TWE: ICE 136-137, 143-144
STANDARD 3:	
Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	
In order to meet this standard, a student will	
<ul style="list-style-type: none"> solve problems by systematically collecting, organizing, describing, and analyzing data using surveys, tables, charts, and graphs; 	SE: 50-55, 88-94, 298-305, 722-728 <i>Spreadsheet Investigation</i> 56 TWE: ICE 52, 89-90, 299-300, 724 OEA 55
<ul style="list-style-type: none"> make valid inferences, decisions, and arguments based on data analysis; and 	SE: 50-55, 88-94, 298-305, 731-736 TWE: ICE 51-52, 90-91, 299-301, 732-733

OBJECTIVES	PAGE REFERENCES
<ul style="list-style-type: none"> use counting techniques, experimental probability, or theoretical probability, as appropriate, to represent and solve problems involving uncertainty. 	SE: 96-101, 754-758, 760-767, 777-780, 782-788 <i>Algebra Activity 102</i> TWE: ICE 97-98, 755-756, 783-784 OEA 758
GRADES 9-12	
As students in grades 9-12 extend their knowledge, what they know and are able to do includes	
<ul style="list-style-type: none"> designing and conducting a statistical experiment to study a problem, and interpreting and communicating the results using the appropriate technology (<i>for example, graphing calculators, computer software</i>); 	SE: <i>Graphing Calculator Investigation 729-730</i> <i>WebQuest 705</i>
<ul style="list-style-type: none"> analyzing statistical claims for erroneous conclusions or distortions; 	SE: 708-713 TWE: ICE 709-710
<ul style="list-style-type: none"> fitting curves to scatter plots, using informal methods or appropriate technology, to determine the strength of the relationship between two data sets and to make predictions; 	SE: 298-305 <i>Graphing Calculator Investigation 306-307, 729-730</i> TWE: ICE 300-301
<ul style="list-style-type: none"> drawing conclusions about distributions of data based on analysis of statistical summaries (<i>for example, the combination of mean and standard deviation, and differences between the mean and median</i>); 	SE: 731-736, 737-742 TWE: ICE 732-733, 738-739
<ul style="list-style-type: none"> using experimental and theoretical probability to represent and solve problems involving uncertainty (<i>for example, the chance of playing professional sports if a student is a successful high school athlete</i>); and 	SE: 782-788 TWE: ICE 783-784
<ul style="list-style-type: none"> solving real-world problems with informal use of combinations and permutations* (<i>for example, determining the number of possible meals at a restaurant featuring a given number of side dishes</i>). 	SE: 760-767, 769-776, 777-780 TWE: ICE 761-763, 770-772 OEA 758
STANDARD 4:	
Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	
In order to meet this standard, a student will	
<ul style="list-style-type: none"> connect various physical objects with their geometric representation; 	See Glencoe's <i>Geometry</i> © 2004. SE: 49 #15-18, 189 #11-14, 212 #29, 251 #16, 271 #9, 304 #41-42, 321 #28, 355 #40-43, 607 #38-39, 665 #32
<ul style="list-style-type: none"> connect mathematical concepts from across the standards with their geometric representations; 	SE: 292-297, 605-610, 611-615, 616-621, 623-630
<ul style="list-style-type: none"> recognize, draw, describe, and analyze geometric shapes in one, two, and three dimensions; 	SE: 292-297, 605-610, 616-621 <i>Prerequisite Skills 810-811, 812, 813-814, 815-816, 817</i> TWE: F 605 ICE 617-618

OBJECTIVES	PAGE REFERENCES
<ul style="list-style-type: none"> make, investigate, and test conjectures about geometric ideas; and 	See Glencoe's <i>Geometry</i> © 2004. SE: 62-66, 94-100, 101-106, 107-114 <i>Geometry Activity</i> 22, 28, 32, 38, 184 <i>Geometry Software Investigation</i> 101
<ul style="list-style-type: none"> solve problems and model real-world situations using geometric concepts. 	SE: 605-610, 616-620, 623-630 TWE: F 605, 616, 623 ICE 606-607, 617-618, 626
GRADES 9-12	
As students in grades 9-12 extend their knowledge, what they know and are able to do includes	
<ul style="list-style-type: none"> finding and analyzing relationships among geometric figures using transformations (<i>for example, reflections, translations, rotations, dilations*</i>) in coordinate systems*; 	SE: 197-203 <i>Graphing Calculator Investigation</i> 545, 556 TWE: DI 199 ICE 198-200
<ul style="list-style-type: none"> deriving and using methods to measure perimeter, area, and volume of regular and irregular geometric figures; 	SE: 412-415, 454-456, 477-478, 590-591, 594-596, 673 <i>Algebra Activity</i> 416 <i>Prerequisite Skills</i> 813-814, 815-816, 817
<ul style="list-style-type: none"> making and testing conjectures about geometric shapes and their properties, incorporating technology where appropriate; and 	See Glencoe's <i>Geometry</i> © 2004. SE: 140, 298, 404 <i>Construction</i> 200, 202, 207 <i>Geometry Activity</i> 184, 365, 524, 672 <i>Geometry Software Investigation</i> 384
<ul style="list-style-type: none"> using trigonometric ratios* in problem-solving situations (<i>for example, finding the height of a building from a given point, if the distance to the building and the angle of elevation are known</i>). 	SE: 623-630 TWE: ICE 624-626
STANDARD 5:	
Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	
In order to meet this standard, a student will	
<ul style="list-style-type: none"> understand and apply the attributes of length, capacity*, weight, mass, time, temperature, perimeter, area, volume, and angle measurement in problem-solving situations; 	SE: 616-620, 623-630 <i>Algebra Activity</i> 416 <i>Prerequisite Skills</i> 813-814, 815-816, 817 TWE: ICE 618, 626
<ul style="list-style-type: none"> make and use direct and indirect measurements to describe and compare real-world phenomena; 	SE: 157-159, 605-610, 611-615, 616-620, 623-630 TWE: ICE 156-157, 606-607, 612, 617-618, 626
<ul style="list-style-type: none"> understand the structure and use of systems of measurement; 	See Glencoe's <i>Geometry</i> © 2004. SE: 13-19, 29-36 <i>Prerequisite Skills</i> 730-731, 732-733
<ul style="list-style-type: none"> describe and use rates of change (<i>for example, temperature as it changes throughout the day, or speed as the rate of change of distance over time</i>) and other derived measures; and 	SE: 155-159, 160-164 TWE: ICE 157
<ul style="list-style-type: none"> select appropriate units, including metric and U.S. customary, and tools (<i>for example, rulers, protractors, compasses, thermometers</i>) to measure to the degree of accuracy required to solve a given problem. 	SE: <i>Algebra Activity</i> 626

OBJECTIVES	PAGE REFERENCES
GRADES 9-12	
As students in grades 9-12 extend their knowledge, what they know and are able to do includes	
<ul style="list-style-type: none"> measuring quantities indirectly using techniques of algebra, geometry, or trigonometry*; 	SE: 616-620, 623-630 TWE: ICE 617-618, 624-626
<ul style="list-style-type: none"> selecting and using appropriate techniques and tools to measure quantities in order to achieve specified degrees of precision, accuracy, and error (or tolerance) of measurements; and 	SE: <i>Algebra Activity</i> 626
<ul style="list-style-type: none"> determining the degree of accuracy of a measurement (<i>for example, by understanding and using significant digits</i>). 	SE: <i>Algebra Activity</i> 626
STANDARD 6:	
Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	
In order to meet this standard, a student will	
<ul style="list-style-type: none"> model, explain, and use the four basic operations - addition, subtraction, multiplication, and division - in problem-solving situations; 	SE: 11-15, 26-31, 73-78, 79-83, 84-87 TWE: F 11, 26 ICE 12, 27, 75
<ul style="list-style-type: none"> develop, use, and analyze algorithms*; and 	SE: 11-15, 73-78, 79-83, 84-87 TWE: ICE 12, 74-75, 80 OEA 15, 78, 83
<ul style="list-style-type: none"> select and apply appropriate computational techniques to solve a variety of problems and determine whether the results are reasonable. 	SE: 135-140, 149-154, 171-177, 332-337, 345-351, 387-392 TWE: ICE 136-137, 172-173, 333-334, 346-348
GRADES 9-12	
As students in grades 9-12 extend their knowledge, what they know and are able to do includes	
<ul style="list-style-type: none"> using ratios, proportions, and percents in problem-solving situations; 	SE: 155-159, 160-164, 616-621, 623-630, 642-647 <i>Getting Started</i> 585 <i>Prerequisite Skills</i> 802-803 TWE: F 155 ICE 156-157, 617-618
<ul style="list-style-type: none"> selecting and using appropriate methods for computing with real numbers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods, and determining whether the results are reasonable; and 	SE: 155-159, 160-164, 171-177, 339-343, 376-381, 546-552, 561-565, 616-620, 623-630, 642-647
<ul style="list-style-type: none"> describing the limitations of estimation, and assessing the amount of error resulting from estimation within acceptable limits. 	See Glencoe's <i>Algebra 2</i> © 2003. SE: 296-299 TWE: ICE 296

Codes Used for TWE Pages

DI	Differentiated Instruction
F	Focus
ICE	In-Class Examples
OEA	Open-Ended Assessment
SN	Study Notebook