

Publisher:	Glencoe/McGraw-Hill
Program Title:	<i>Pre-Algebra</i> © 2005
Components:	Student Edition (SE) Teacher Wraparound Edition (TWE)
Grade Level(s):	8 through 12
Intended Audience:	Students who are ready to move from basic mathematical concepts to understanding and applying algebra and geometry.

**Standards Map - Basic Comprehensive Program
Grades Eight Through Twelve - Mathematics**

The standards for grades eight through twelve are organized differently from those for kindergarten through grade seven. In this section strands are not used for organizational purposes as they are in the elementary grades because the mathematics studied in grades eight through twelve falls naturally under discipline headings: algebra, geometry, and so forth. Many schools teach this material in traditional courses; others teach it in an integrated fashion. To allow local educational agencies and teachers flexibility in teaching the material, the standards for grades eight through twelve do not mandate that a particular discipline be initiated and completed in a single grade. The core content of these subjects must be covered; students are expected to achieve the standards however these subjects are sequenced.

Grade	Standard #	Text of Standard	PUBLISHER CITATIONS*			Meets Standard		Local Education Agency Evaluator Notes
			Introduced	Practiced	Taught to Mastery	Y	N	
DISCIPLINE		Algebra I Symbolic reasoning and calculations with symbols are central in algebra. Through the study of algebra, a student develops an understanding of the symbolic language of mathematics and the sciences. In addition, algebraic skills and concepts are developed and used in a wide variety of problem-solving situations.						
8-12	1.0	Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable:	SE: 23-27, 440-445	SE: 23-27, 440-445 TWE: ICE 24, 442	SE: 142 #3, 196 #2 TWE: A 27			
8-12	1.1	Students use properties of numbers to demonstrate whether assertions are true or false.	SE: 23-27, 49	SE: 23-27 TWE: ICE 24 DI 26	SE: 52 #5, 142 #3, 196 #2, 488 #1 TWE: A 27			

* For more information, see Notes.
Math 8-12th Grade Standards Map -- Approved by the State Board of Education on February 6, 2002.

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Grade	Standard #	Text of Standard	Introduced	Practiced	Taught to Mastery	Meets Standard		Local Education Agency Evaluator Notes
						Y	N	
8-12	2.0	Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.	SE: 66, 110, 121, 153, 186, 215, 436, 642 TWE: DI 336	SE: 66-68, 110-114, 153-157, 186-190, 215-219, 247, 373 #32, 436-440 TWE: DI 187, 336 ICE 216	SE: 94-95, 142-143, 196-197, 488-489 TWE: DI 438			
8-12	3.0	Students solve equations and inequalities involving absolute values.	SE: 28-29, 58, 66, 340	SE: 28-29, 64-68, 110-114, 115-119, 340-344 TWE: DI 245 SC 29	SE: 95, 142-143 TWE: A 32, 114, 344			
8-12	4.0	Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.	SE: 334	SE: 334-338, 340-342, 355-359, 361, 362 TWE: ICE 335, 336, 341	SE: 364-365 TWE: A 338			
8-12	5.0	Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.	The text covers multistep inequalities as used with equations.	SE: 355-359, 362 TWE: ICE 356	TWE: A 359 DI 356			
8-12	6.0	Students graph a linear equation and compute the x - and y -intercepts (e.g., graph $C262x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $(2x + 6y < 4)$).	SE: 375, 381 TWE: A 379	SE: 375-379, 381-385, 419-422 <i>Graphing Calculator Investigation</i> 423 TWE: ICE 376, 382, 420	TWE: A 385, 422			

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						Y	N	
8-12	7.0	Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations by using the point-slope formula.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	8.0	Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.	SE: 414-418	SE: 414-418 TWE: ICE 415				
8-12	9.0	Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.	SE: 375-379, 414-418, 419-422	SE: 375-379, 414-418, 419-422 <i>Graphing Calculator Investigation</i> 402-403, 423 TWE: PS 429	SE: 430-431 TWE: PS 429			
8-12	10.0	Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.	SE: 674-677, 678-681, 683-686 <i>Algebra Activity</i> 682	SE: 674-677, 678-681, 683-686 <i>Algebra Activity</i> 682 TWE: DI 679 ICE 675, 684	SE: 702-703 TWE: DI 675			
8-12	11.0	Students apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					

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8-12	12.0	Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	13.0	Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	14.0	Students solve a quadratic equation by factoring or completing the square.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	15.0	Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.	SE: 264-268, 273 #39-#40, 300 (e.g. #5)	SE: 264-268, 273 #39-#40, 300 (e.g. #5)				
8-12	16.0	Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.	SE: 369 <i>Study Tip 375</i>	SE: 369-373, 424 <i>Graphing Calculator Investigation 374</i> TWE: DI 371, 373	SE: 430 TWE: A 373			
8-12	17.0	Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.	SE: <i>Graphing Calculator Investigation 374</i>	SE: <i>Graphing Calculator Investigation 374</i> <i>Study Tip 375</i>	TWE: A 374			

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8-12	18.0	Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.	SE: 369	SE: 369-373, 424 <i>Graphing Calculator Investigation</i> 374 TWE: DI 371, 373	SE: 430			
8-12	19.0	Students know the quadratic formula and are familiar with its proof by completing the square.	Quadratic functions are used without quadratic formula. SE: 692-696 <i>Graphing Calculator Investigation</i> 697					
8-12	20.0	Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	21.0	Students graph quadratic functions and know that their roots are the x-intercepts.	SE: 688, 692-696	SE: 688, 692-696 <i>Graphing Calculator Investigation</i> 697	SE: 702-703			
8-12	22.0	Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	23.0	Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.		SE: 693 (e.g. #2)				

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8-12	24.0	Students use and know simple aspects of a logical argument:	SE: 6-10 TWE: TNT 10	SE: 6-10 TWE: DI 13, 25, 134, 150, 335 ICE 24 PS 93	SE: 53 #13			
8-12	24.1	Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.	SE: 7, 25 <i>Study Tip 25</i>	SE: 7, 25, 71, 107				
8-12	24.2	Students identify the hypothesis and conclusion in logical deduction.		SE: 21 #52, 44 #21, 162 #45, 236 #36 <i>Algebra Activity 309</i>				
8-12	24.3	Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.		SE: <i>Algebra Activity 368, 476</i> TWE: DI 25 ICE 24				
8-12	25.0	Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements:	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	25.1	Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	25.2	Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					

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8-12	25.3	Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.		SE: 348 #47				
DISCIPLINE		Geometry The geometry skills and concepts developed in this discipline are useful to all students. Aside from learning these skills and concepts, students will develop their ability to construct formal, logical arguments and proofs in geometric settings and problems.						
8-12	1.0	Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.	SE: 7, 25 <i>Study Tip</i> 25	SE: 7, 25, 71, 107				
8-12	2.0	Students write geometric proofs, including proofs by contradiction.	See Glencoe's <i>Geometry: Concepts and Applications</i> © 2004.					
8-12	3.0	Students construct and judge the validity of a logical argument and give counterexamples to disprove a statement.		SE: 27 #48, 73 #55, 78 #57, 102 #53, 208, 510 #21, 684 #1 <i>Algebra Activity</i> 62-63 TWE: DI 25				
8-12	4.0	Students prove basic theorems involving congruence and similarity.	See Glencoe's <i>Geometry: Concepts and Applications</i> © 2004.					
8-12	5.0	Students prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.	SE: 455, 471-475, 486, 500-504 TWE: DI 501 ICE 501	SE: 455, 471-475, 486, 500-504 TWE: DI 501 ICE 501	SE: 551 TWE: A 504			

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						Y	N	
8-12	6.0	Students know and are able to use the triangle inequality theorem.	See Glencoe's <i>Geometry: Concepts and Applications</i> © 2004.					
8-12	7.0	Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	8.0	Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.	SE: 132, 157	SE: 132-135, 349, 520-525, 563-567, 568-572, 573-577, 578-582 <i>Geometry Activity</i> 562 <i>Spreadsheet Investigation</i> 137 TWE: DI 566, 570, 574 ICE 132, 520, 522, 564, 569	SE: 143 TWE: A 136, 567, 572			
8-12	9.0	Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders.	SE: 157 TWE: TT 569	SE: 563-567, 568-572, 573-577, 578-582 <i>Geometry Activity</i> 562 TWE: DI 574, 579, 580 ICE 564, 565, 569, 570, 574	SE: 601 TWE: A 567, 572, 576, 582			
8-12	10.0	Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.		SE: 132-135, 520-525 <i>Algebra Activity</i> 518-519 TWE: ICE 521, 522	SE: 143			

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8-12	11.0	Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.		SE: 349 #55, 565 #2, 567 #29, 572 #26 <i>Spreadsheet Investigation</i> 137	SE: 601			
8-12	12.0	Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.	SE: 445 #66, 492, 493	SE: 453-457, 477-481, 492-497, 500-504, 513-517, 531 <i>Algebra Activity</i> 476 TWE: DI 449, 496	SE: 551			
8-12	13.0	Students prove relationships between angles in polygons by using properties of complementary, supplementary, vertical, and exterior angles.	SE: 492-497	SE: 492-497, 504 #38 TWE: DI 493				
8-12	14.0	Students prove the Pythagorean theorem.	SE: 460-464	SE: 460-464 <i>Algebra Activity</i> 458-459	SE: 488 TWE: A 464			
8-12	15.0	Students use the Pythagorean theorem to determine distance and find missing lengths of sides of right triangles.	SE: 460-464, 466-469	SE: 460-464, 466-469 <i>Algebra Activity</i> 458-459	SE: 488-489 TWE: A 464			
8-12	16.0	Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.		SE: 492-497 <i>Algebra Activity</i> 498-499	TWE: A 497, 499			
8-12	17.0	Students prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.	SE: 131, 466-470	SE: 466-470 TWE: ICE 467	SE: 487 TWE: A 470			

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						Y	N	
8-12	18.0	Students know the definitions of the basic trigonometric functions defined by the angles of a right triangle. They also know and are able to use elementary relationships between them. For example, $\tan(x) = \sin(x)/\cos(x)$, $(\sin(x))^2 + (\cos(x))^2 = 1$.	SE: 477-481	SE: 477-481 TWE: DI 478, 479, 480 ICE 478				
8-12	19.0	Students use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side.	SE: 477-481	SE: 477-481 <i>Algebra Activity 476</i> TWE: DI 478, 479, 480 ICE 478				
8-12	20.0	Students know and are able to use angle and side relationships in problems with special right triangles, such as 30°, 60°, and 90° triangles and 45°, 45°, and 90° triangles.	SE: <i>Algebra Activity 476 Graphing Calculator Investigation 482</i>	SE: <i>Algebra Activity 476 Graphing Calculator Investigation 482</i>				
8-12	21.0	Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.	SE: 538 #39-#46					
8-12	22.0	Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.	SE: 506-511	SE: 506-511 <i>Algebra Activity 512</i>	SE: 551			

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						Y	N	
DISCIPLINE		Probability and Statistics This discipline is an introduction to the study of probability, interpretation of data, and fundamental statistical problem solving. Mastery of this academic content will provide students with a solid foundation in probability and facility in processing statistical information.						
8-12	1.0	Students know the definition of the notion of <i>independent events</i> and can use the rules for addition, multiplication, and complementation to solve for probabilities of particular events in finite sample spaces.	SE: 650-651 TWE: DI 651, 652 ICE 652	SE: 651 TWE: DI 651, 652 ICE 652				
8-12	2.0	Students know the definition of <i>conditional probability</i> and use it to solve for probabilities in finite sample spaces.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	3.0	Students demonstrate an understanding of the notion of <i>discrete random variables</i> by using them to solve for the probabilities of outcomes, such as the probability of the occurrence of five heads in 14 coin tosses.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					
8-12	4.0	Students are familiar with the standard distributions (normal, binomial, and exponential) and can use them to solve for events in problems in which the distribution belongs to those families.	See Glencoe's <i>Algebra 2</i> © 2005.					
8-12	5.0	Students determine the mean and the standard deviation of a normally distributed random variable.	See Glencoe's <i>Algebra: Concepts and Applications</i> © 2005 California Edition.					

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8-12	6.0	Students know the definitions of the <i>mean</i> , <i>median</i> , and <i>mode</i> of a distribution of data and can compute each in particular situations.	SE: 238-242, 612-616	SE: 238-242, 612-616 <i>Graphing Calculator Investigation</i> 243 TWE: ICE 239, 613				
8-12	7.0	Students compute the variance and the standard deviation of a distribution of data.	SE: 612-616	SE: 612-616 TWE: DI 616				
8-12	8.0	Students organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem-and-leaf displays, scatterplots, and box-and-whisker plots.	SE: 40-44, 606-611, 617-621, 623-628, 722-723 TWE: TT 615	SE: 40-44, 606-611, 617-621, 623-628, 722-723 <i>Algebra Activity</i> 39 <i>Graphing Calculator Investigation</i> 45-46, 622, 629 TWE: DI 619 ICE 41, 618 TNT 620	SE: 53, 665 TWE: A 44			

Codes Used for TWE Pages	
A	Assess
DI	Daily Intervention
ICE	In-Class Example
PS	Portfolio Suggestion
SC	Skills Check
TNT	Tips for New Teachers
TT	Teacher to Teacher

* For more information, see Notes.