

Michigan Grade Level Content Expectations: Grade 7
Correlated to *Glencoe Mathematics: Applications and Concepts,*
Course 3: Grade 7

Grade Level Content Expectation		Student Edition Lesson(s)		
		Introduce	Develop/Master	Extend
STRAND N NUMBER AND OPERATIONS				
<i>Understand derived quantities</i>				
N.ME.07.01	Understand derived quantities such as density, velocity, and weighted averages.	2-3, 2-4	2-3, 2-4, 4-1	4-1
N.FL.07.02	Solve problems involving derived quantities.	2-3, 2-4	2-3, 2-4	2-8a
<i>Understand and solve problems involving rates, ratios, and proportions</i>				
N.FL.07.03	Calculate rates of change including speed.	4-1	4-2	4-2b, 4-3
N.MR.07.04	Convert ratio quantities between different systems of units such as feet per second to miles per hour.	4-1	4-1	4-1
N.FL.07.05	Solve simple proportion problems using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation $a/b = c/d$; know how to see patterns about proportional situations in tables.	4-4	4-4, 4-5a, 4-5, 4-5b, 4-6, 4-7	4-8
<i>Recognize irrational numbers</i>				
N.MR.07.06	Understand the concept of square root and cube root, and estimate using calculators.	3-1, 3-2	3-1, 3-2, 3-3, 3-4, 3-5	3-4, 3-5, 3-5b, 3-6
<i>Compute with rational numbers</i>				
N.FL.07.07	Solve problems involving operations with integers.	1-1, 1-2, 1-3, 1-3b	1-4, 1-5, 1-6	1-8a, 1-8, 1-9
N.FL.07.08	Add, subtract, multiply and divide negative rational numbers.	2-3, 2-4, 2-5, 2-6	2-3, 2-4, 2-5, 2-6	2-7, 2-8a
N.FL.07.09	Estimate results of computations with rational numbers.	PS1	2-5	
STRAND A ALGEBRA				
<i>Understand and apply directly proportional relationships and relate to linear relationships</i>				

PS = Prerequisite Skill Lessons (pp. 600-615)

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		Introduce	Develop/Master	Extend
A.PA.07.01	Recognize when information given in a table, graph, or formula suggests a proportional or linear relationship.	4-2b, 4-3, 11-3a	11-3a, 11-3	11-3, 12-1
A.RP.07.02	Represent directly proportional and linear relationships using verbal descriptions, tables, graphs, and formulas, and translate among these representations.	4-2b, 4-3, 4-4, 11-2, 11-3a	11-3, 11-5	11-7
A.PA.07.03	Given a directly proportional or linear situation, graph and interpret the slope and intercept(s) in terms of the original situation; evaluate $y = kx$ for specific x values, given k , e.g., weight vs. volume of water, base cost plus cost per unit.	4-3, 4-4, 11-3a	11-3, 11-5a, 11-5	11-6a
A.PA.07.04	For directly proportional or linear situations, solve applied problems using graphs and equations, e.g., the heights and volume of a container with uniform cross-section, height of water in a tank being filled at a constant rate, degrees Celsius and degrees Fahrenheit, distance and time under constant speed.	4-2b, 4-3, 4-4	11-3a, 11-3, 11-4, 11-5	11-6a, 11-7
A.PA.07.05	Understand and use directly proportional relationships of the form $y = mx$, and distinguish from linear relationships of the form $y = mx + b$, b non-zero; understand that in a directly proportional relationship between two quantities one quantity is a constant multiple of the other quantity.	11-3	11-3, 11-5a, 11-5	11-7
<i>Understand and represent linear functions</i>				

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A.PA.07.06	Calculate the slope from the graph of a linear function as the ratio of “rise/run” for a pair of points on the graph, and express the answer as a fraction and a decimal; understand that linear functions have slope that is a constant rate of change.	4-3, 11-4	4-3, 11-4	11-5a, 11-5
A.PA.07.07	Represent linear functions in the form $y = x + b$, $y = mx$, and $y = mx + b$, and graph, interpreting slope and y-intercept.	11-2	11-3, 11-5a, 11-5	11-6, 11-7
A.FO.07.08	Know that the solution to a linear equation corresponds to the point at which its graph crosses the x-axis.	Beyond the scope of this textbook	Beyond the scope of this textbook	Beyond the scope of this textbook
<i>Understand and solve problems about inversely proportional relationships</i>				
A.PA.07.09	Recognize inversely proportional relationships in contextual situations; know that quantities are inversely proportional if their product is constant, e.g., the length and width of a rectangle with fixed area, and that an inversely proportional relationship is of the form $y = k/x$ where k is some non-zero number.	12-1	<i>Glencoe Algebra 1: 12-1</i>	<i>Glencoe Algebra 1: 12-1</i>
A.RP.07.10	Know that the graph of $y = k/x$ is not a line; know its shape; and know that it crosses neither the x nor the y-axis.	12-1	12-1	<i>Glencoe Algebra 1: 12-1</i>
<i>Apply basic properties of real numbers in algebraic contexts</i>				
A.PA.07.11	Understand and use basic properties of real numbers: additive and multiplicative identities, additive and multiplicative inverses, commutativity, associativity, and the distributive property of multiplication over addition.	1-2, 1-4	1-2, 1-4, 2-4	10-1, 12-3, 12-4, 12-5, 12-6, 12-7

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<i>Combine algebraic expressions and solve equations</i>				
A.FO.07.12	Add, subtract, and multiply simple algebraic expressions of the first degree, e.g., $(92x + 8y) - 5x + y$, or $-2x(5x - 4)$, and justify using properties of real numbers.	10-1, 10-4a, 10-4, 12-3	12-4, 12-5	12-4, 12-5, 12-6
A.FO.07.13	From applied situations, generate and solve linear equations of the form $ax + b = c$ and $ax + b = cx + d$, and interpret solutions.	10-2, 10-3, 10-4	10-2, 10-3, 10-4	10-2, 10-3, 10-4, 10-4b
STRAND G GEOMETRY				
<i>Draw and construct geometric objects</i>				
G.SR.07.02	Use compass and straightedge to perform basic geometric constructions: the perpendicular bisector of a segment, an equilateral triangle, and the bisector of an angle; understand informal justifications.	6-1b	6-2b, 6-3b	6-5b
<i>Understand the concept of similar polygons, and solve related problems</i>				
G.TR.07.03	Understand that in similar polygons, corresponding angles are congruent and the ratios of corresponding sides are equal; understand the concepts of similar figures and scale factor.	4-5, 4-6	4-5, 4-6, 4-7	4-8
G.TR.07.04	Solve problems about similar figures and scale drawings.	4-5, 4-6	4-5, 4-6, 4-7	4-7, 4-8

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G.TR.07.05	Show that two triangles are similar using the criteria: corresponding angles are congruent (AAA similarity); the ratios of two pairs of corresponding sides are equal and the included angles are congruent (SAS similarity); ratios of all pairs of corresponding sides are equal (SSS similarity); use these criteria to solve problems and to justify arguments.	4-5	4-5	4-5
G.TR.07.06	Understand and use the fact that when two triangles are similar with scale factor of r , their areas are related by a factor of r^2 .	4-5	4-5	4-5
STRAND D DATA AND PROBABILITY				
<i>Represent data and interpret</i>				
D.RE.07.01	Represent and interpret data using circle graphs, stem and leaf plots, histograms, and box-and-whisker plots, and select appropriate representation to address specific questions.	PS2, 9-1, 9-1b, 9-2	9-1, 9-1b, 9-2, 9-3, 9-6	9-7
D.AN.07.02	Create and interpret scatter plots and find line of best fit and use an estimated line of best fit to answer questions about the data.	11-6a	11-6, 11-6b	11-6, 11-6b
<i>Compute statistics about data sets</i>				
D.AN.07.03	Calculate and interpret relative frequencies and cumulative frequencies for given data sets.	9-1a	<i>Glencoe Pre-Algebra: 12-4</i>	<i>Glencoe Pre-Algebra: 12-4</i>
D.AN.07.04	Find and interpret the median, quartiles, and interquartile range of a given set of data.	9-4, 9-4b	9-5, 9-6	9-7

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