The University of Chicago School Mathematics Project

Pre-Transition Mathematics

Correlated to Michigan Mathematics Grade Level Content Expectations

Grade 7

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Michigan Mathematics Grade Level Content Expectations	Wright Group/McGraw-Hill *Pre-Transition Mathematics* ©2009
NUMBER AND OPERATIONS	
Understand derived quantities	
N.MR.07.02 Solve problems involving derived quantities such as density, velocity, and weighted averages.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 316 TE: 316
Understand and solve problems involving rates, ratios, and proportions	
N.FL.07.03 Calculate rates of change including speed.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 263–267 TE: 263–267 LM: 5-3A, 5-3B RM: 62 AR: 57–64
N.MR.07.04 Convert ratio quantities between different systems of units, such as feet per second to miles per hour.	This skill is taught in Wright Group/McGraw-Hill *Transition Mathematics.* SE: 552–553, 583 TE: 583
N.FL.07.05 Solve 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.	SE: 488–493, 494–497, 498–503, 504 TE: 488–493, 494–497, 498–503, 504 LM: 8-6A, 8-6B, 8-7A, 8-7B RM: 150, 151, 152, 153, 154 AR: 101–108
Recognize irrational numbers	
N.MR.07.06 Understand the concept of square root and cube root, and estimate using calculators.	This skill is taught in Wright Group/McGraw-Hill *Transition Mathematics.* SE: 41–42, 180–186 TE: 41–42, 180–186 LM: 1-7A, 1-7B, 3-8A, 3-8B RM: 51 AR: 2, 3, 6, 27
Compute with rational numbers	
N.FL.07.07 Solve problems involving operations with integers.	SE: 384–388, 417–421, 423–425 TE: 384–388, 417–421, 423–425 LM: 6-10A, 6-10B, 7-4A, 7-4B, 7-5A, 7-5B RM: 121, 122 AR: 71–78, 89–96

SE: Student Edition RM: Resource Master LM: Lesson Master
TE: Teacher's Edition AR: Assessment Resources

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N.FL.07.08	Add, subtract, multiply, and divide positive and negative rational numbers fluently.	SE: 138–142, 144–151, 153–158, 159–163, 184–189, 191–194, 208–213, 214–217, 220–224, 243–247, 249–253, 328–333, 335–339, 341–347, 349–354, 355–359, 372–376, 400–404, 405–410, 411–416, 417–422, 423–426, 427–430, 432–435, 438–441, 442–447, 448–452, 472–476, 477–481 TE: 138–142, 144–151, 153–158, 159–163, 184–189, 191–194, 208–213, 214–217, 220–224, 243–247, 249–253, 328–333, 335–339, 341–347, 349–354, 355–359, 372–376, 400–404, 405–410, 411–416, 417–422, 423–426, 427–430, 432–435, 438–441, 442–447, 448–452, 472–476, 477–481 LM: 3-1A, 3-1B, 3-2A, 3-2B, 3-3A, 3-3B, 3-4A, 3-4B, 3-8A, 3-8B, 3-9A, 3-9B, 4-1A, 4-1B, 4-2A, 4-2B, 4-3A, 4-3B, 4-7A, 4-7B, 6-1A, 6-1B, 6-3A, 6-3B, 6-4A, 6-4B, 6-5A, 6-5B, 6-8A, 6-8B, 7-1A, 7-1B, 7-3A, 7-3B, 7-4A, 7-4B, 7-5A, 7-5B, 7-6A, 7-6B, 7-7A, 7-7B, 7-8A, 7-8B, 7-9A, 7-9B, 7-10A, 7-10B, 8-3A, 8-3B, 8-4A, 8-4B RM: 60, 61, 62, 63, 64, 65, 70, 71, 75, 76, 77, 78, 79, 80, 107, 109, 110, 111, 119, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 136, 137, 138, 139, 145, 146, 147, 148 AR: 24–31, 42–49, 71–78, 89–96
N.FL.07.09	Estimate results of computations with rational numbers.	SE: 478 TE: 478
ALGEBRA		
Understand and apply directly proportional relationships and relate to linear relationships		
A.PA.07.01	Recognize when information given in a table, graph, or formula suggests a directly proportional or linear relationship.	SE: 488–492, 497 TE: 488–492, 497 LM: 8-6A, 8-6B RM: 151 AR: 101–108
A.RP.07.02	Represent directly proportional and linear relationships using verbal descriptions, tables, graphs, and formulas, and translate among these representations.	SE: 483–486, 488–492, 497 TE: 483–486, 488–492, 497 LM: 8-5A, 8-5B, 8-6A, 8-6B RM: 149, 151 AR: 101–108

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A.PA.07.03	Given a directly proportional or other linear situation, graph and interpret the slope and intercept(s) in terms of the original situation; evaluate y = *mx* + *b* for specific x values, e.g., weight vs. volume of water, base cost plus cost per unit.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 348–355 TE: 348–355 LM: 6-3A, 6-3B RM: 84, 85 AR: 70–77
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.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 348–355 TE: 348–355 LM: 6-3A, 6-3B RM: 84, 85 AR: 70–77
A.PA.07.05	Recognize 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.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 348–355 TE: 348–355 LM: 6-3A, 6-3B RM: 84, 85 AR: 70–77
Understand and represent linear functions		
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.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 326–332, 333–340, 341–347, 348–355, 356–360, 361–367 TE: 326–332, 333–340, 341–347, 348–355, 356–360, 361–367 LM: 6-1A, 6-1B, 6-2A, 6-2B, 6-3A, 6-3B, 6-4A, 6-4B, 6-5A, 6-5B, 6-6A, 6-6B RM: 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91 AR: 70–77

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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.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 326–332, 333–340, 341–347, 348–355, 356–360, 361–367 TE: 326–332, 333–340, 341–347, 348–355, 356–360, 361–367 LM: 6-1A, 6-1B, 6-2A, 6-2B, 6-3A, 6-3B, 6-4A, 6-4B, 6-5A, 6-5B, 6-6A, 6-6B RM: 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91 AR: 70–77
A.FO.07.08	Find and interpret the x and/or y intercepts of a linear equation or function. Know that the solution to a linear equation of the form $ax + b = 0$ corresponds to the point at which the graph of $y = ax + b$ crosses the x-axis.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 348–355 TE: 348–355 LM: 6-4A, 6-4B RM: 86, 87, 88 AR: 70–77
Understand and solve problems about inversely proportional relationships		
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.	This skill is taught in Wright Group/McGraw-Hill *Transition Mathematics.* SE: 441 TE: 441
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.	This skill is taught in Wright Group/McGraw-Hill *Transition Mathematics.* SE: 441 TE: 441
Apply basic properties of real numbers in algebraic contexts		
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.	SE: 140–142, 145, 149, 151, 159–163, 344–346, 377–379, 468–471, 484–485 TE: 140–142, 145, 149, 151, 159–163, 344–346, 377–379, 468–471, 484–485 LM: 3-1A, 3-1B, 3-2B, 3-4A, 3-4B, 6-3A, 6-3B RM: 62 AR: 24–31, 71–78

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Combine algebraic expressions and solve equations		
A.FO.07.12	Add, subtract, and multiply simple algebraic expressions of the first degree, e.g., $(92x + 8y) – 5x + y$, or $x(x+2)$ and justify using properties of real numbers.	SE: 372–376 TE: 372–376 LM: 6-8A, 6-8B RM: 119 AR: 71–78
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.	This skill is taught in Wright Group/McGraw-Hill *Algebra.* SE: 140, 141, 144–148, 202–208 TE: 140, 141, 144–148, 202–208 LM: 3-4A, 3-4B, 4-4A, 4-4B RM: 39, 49, 50 AR: 26–33, 44–51
GEOMETRY		
Draw and construct geometric objects		
G.SR.07.01	Use a ruler and other tools to draw squares, rectangles, triangles, and parallelograms with specified dimensions.	SE: 676–681, 682–685, 692–697, 702–703 TE: 676–681, 682–685, 692–697, 702–703 LM: 12-1A, 12-2B, 12-2A, 12-2B, 12-4A, 12-4B RM: 213 AR: 158–163
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.	SE: 574, 632–637, 638–642 TE: 574, 632–637, 638–642 LM: 11-1A, 11-1B, 11-2A, 11-2B RM: 197, 198, 199 AR: 146–151
Understand the concept of similar polygons, and solve related problems		
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.	SE: 498–503, 504, 676–681, 682–685 TE: 498–502, 504, 676–681, 682–685 LM: 8-8A, 8-8B, 12-1A, 12-1B, 12-2A, 12-2B RM: 153, 212, 213 AR: 101–108, 158–163
G.TR.07.04	Solve problems about similar figures and scale drawings.	SE: 498–503, 504 TE: 498–503, 504 LM: 8-8A, 8-8B RM: 153 AR: 101–108

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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.	SE: 677–680, 682–686 TE: 677–680, 682–686 LM: 12-1A, 12-1B, 12-2A, 12-2B RM: 214 AR: 158–163
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.	SE: 522 TE: 522
DATA AND PROBABILITY		
Represent and interpret data		
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.	SE: 116–119, 284–288, 289–293, 295–300 TE: 116–119, 284–288, 289–293, 295–300 LM: 2-9A, 2-9B, 5-3A, 5-3B, 5-4A, 5-4B, 5-5A, 5-5B RM: 55, 99, 101, 102 AR: 11–18, 55–64
D.AN.07.02	Create and interpret scatter plots and find line of best fit; use an estimated line of best fit to answer questions about the data.	This skill is taught in Wright Group/McGraw-Hill *Algebra*. SE: 27–28, 31, 368–372 TE: 27–28, 31, 368–372 LM: 6-7A, 6-7B RM: 92, 93 AR: 70–77
Compute statistics about data sets		
D.AN.07.03	Calculate and interpret relative frequencies and cumulative frequencies for given data sets.	SE: 290–291, 610–614, 623 TE: 290–291, 610–614, 623 LM: 10–5A, 10-5B RM: 193, 194 AR: 133–140
D.AN.07.04	Find and interpret the median, quartiles, and interquartile range of a given set of data.	SE: 273–276, 293 TE: 273–276, 293 LM: 5-1A, 5-1B RM: 95 AR: 55–64

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