The University of Chicago School Mathematics Project

Transition Mathematics

Correlated to Michigan Mathematics Grade Level Content Expectations

Grade 7

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NUMBER AND OPERATIONS		
Understand derived quantities		
N.MR.07.02	Solve problems involving derived quantities such as density, velocity, and weighted averages.	SE: 412, 562–563 TE: 562 LM: 9-2A, 9-2B RM: 125
Understand and solve problems involving rates, ratios, and proportions		
N.FL.07.03	Calculate rates of change including speed.	SE: 778–782 TE: 778–782 LM: 12-7A, 12-7B
N.MR.07.04	Convert ratio quantities between different systems of units, such as feet per second to miles per hour.	SE: 22, 494–495 TE: 494–495, 564, 565 LM: 8-2A, 8-2B RM: 108
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: 17, 20, 27, 38, 140–146, 493–499, 545, 562–566, 589–595 TE: 17–18, 140–146, 493–499, 562–566, 589–595 LM: 1-3A, 1-3B, 3-2A, 3-2B, 8-2A, 8-2B, 9-2A, 9-2B, 9-7A, 9-7B RM: 11, 38, 39, 108, 123, 124, 131, 132 AR: 26–33, 105–110, 116–121
Recognize irrational numbers		
N.MR.07.06	Understand the concept of square root and cube root, and estimate using calculators.	SE: 41–43, 180–186 TE: 40–42, 180–186 LM: 1-7A, 1-7B, 3-8A, 3-8B RM: 18, 51 AR: 3–10, 26–33
Compute with rational numbers		
N.FL.07.07	Solve problems involving operations with integers.	SE: 11–16, 260–265, 285–293, 500–506, 554–561, 572–577 TE: 11–16, 260–265, 285–293, 500–506, 554–561, 572–577 LM: 1-2A, 1-2B, 4-9A, 4-9B, 5-2A, 5-2B, 8-3A, 8-3B, 9-1A, 9-1B, 9-4A, 9-4B RM: 10, 69–72, 74–76, 109, 110, 121, 122, 127, 128 AR: 3–10, 43–50, 56–63, 105–110, 116–121

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N.FL.07.08	Add, subtract, multiply, and divide positive and negative rational numbers fluently.	SE: 17–22, 23–28, 29–33, 103–109, 147–152, 161–166, 167–173, 174–179, 278–284, 294–299, 300–305, 430–437, 438–443, 486–492, 513–518, 567–571 TE: 17–22, 23–28, 29–33, 103–109, 147–152, 161–166, 167–173, 174–179, 278–284, 294–299, 300–305, 430–437, 438–443, 486–492, 513–518, 567–571 LM: 1-3A, 1-3B, 1-4A, 1-4B, 1-5A, 1-5B, 2-6A, 2-6B, 3-3A, 3-3B, 3-5A, 3-5B, 3-6A, 3-6B, 3-7A, 3-7B, 5-1A, 5-1B, 5-3A, 5-3B, 5-4A, 5-4B, 7-1A, 7-1B, 7-2A, 7-2B, 8-1A, 8-1B, 8-5A, 8-5B, 9-3A, 9-3B RM: 11, 12, 13, 14, 15, 16, 30, 31, 40, 43–45, 46–48, 49, 50, 73, 77, 78, 79, 99, 100, 101, 107, 113, 114, 125, 126 AR: 3–10, 13–20, 26–33, 56–63, 91–98, 105–110
N.FL.07.09	Estimate results of computations with rational numbers.	SE: 29, 58, 153–160, 166, 187, 596–600 TE: 85, 153–160, 174, 596–600 LM: 3-4A, 3-4B, 9-8A, 9-8B RM: 41, 42, 49, 133, 134 AR: 26–33, 116–121
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: 524–531, 616–622, 647–653 TE: 524–531, 616–622, 647–653 LM: 8-7A, 8-7B, 10-1A, 10-1B, 10-6A, 10-6B RM: 116, 117, 136–138, 147–149 AR: 105–110, 132–139
A.RP.07.02	Represent directly proportional and linear relationships using verbal descriptions, tables, graphs, and formulas, and translate among these representations.	SE: 320–326, 524–531 TE: 320–326, 524–531 LM: 5-7A, 5-7B, 8-7A, 8-7B RM: 82, 116, 117 AR: 56–63, 105–110
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: 333–340, 341–347, 350–352 TE: 333–340, 341–347, 350–352 LM: 6-2A, 6-2B, 6-3A, 6-3B

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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.	SE: 88, 576, 654–658, 710–712 TE: 654–658, 710–712 LM: 10-7A, 10-7B, 11-7A, 11-7B RM: 150, 151, 164 AR: 132–139
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 *Advanced Algebra.* SE: 72 TE: 72
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: 333–340, 341–347 TE: 333–340, 341–347 LM: 6-2A, 6-2B, 6-3A, 6-3B
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 *Advanced Algebra.* SE: 93–96, 150–154 TE: 93–96, 150–154
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 *Advanced Algebra.* SE: 150–154 TE: 150–154
Understand and solve problems about inversely proportional relationships		

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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 *Advanced Algebra.* SE: 79–81 TE: 79–81
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 *Advanced Algebra.* SE: 106–109 TE: 106–109
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: 211–215, 282–283, 431–436, 444–449, 489–491 TE: 84, 211–215, 280, 307, 430–433, 444–449 LM: 4-2A, 4-2B, 5-1A, 5-1B, 7-1A, 7-1B, 7-3A, 7-3B RM: 56, 102 AR: 43–50, 91–98
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.	Wright Group/McGraw-Hill *Algebra* teaches operations with polynomials, which includes expressions of the first degree. SE: 656–659, 664–665, 669–672 TE: 656–659, 664–665, 669–672
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.	SE: 532–537, 623–628 TE: 532–537, 623–628 LM: 8-8A, 8-8B, 10-2A, 10-2B RM: 118, 119, 139, 140 AR: 105–110, 132–139
GEOMETRY		
Draw and construct geometric objects		

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G.SR.07.01	Use a ruler and other tools to draw squares, rectangles, triangles, and parallelograms with specified dimensions.	SE: 451 TE: 451 This skill is also taught in Wright Group/McGraw-Hill *Geometry*. SE: 381–384 TE: 381–384 LM: 7-1A, 7-1B
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: 335–339, 346, 455 TE: 335–339 LM: 5-9A, 5-9B RM: 85 AR: 56–63
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: 601–606 TE: 601–606 LM: 9-9A, 9-9B RM: 135, 136 AR: 116–121
G.TR.07.04	Solve problems about similar figures and scale drawings.	SE: 470–476, 601–606 TE: 470–476, 601–602 LM: 7-7A, 7-7B, 9-9A, 9-9B RM: 106, 135, 136 AR: 91–98, 116–121
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.	This skill is taught in Wright Group/McGraw-Hill *Geometry*. SE: 750–755, 756–763 TE: 750–755, 756–760 LM: 12-6A, 12-6B, 12-7A, 12-7B RM: 223, 224, 225–227 AR: 170–179
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 r2.	SE: 719–724 TE: 719–724 LM: 11-9A, 11-9B RM: 166, 167 AR: 147–154
DATA AND PROBABILITY		

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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: 740–744, 745–751, 763–771, 778–783 TE: 740–744, 745–751, 763–771, 778–783 LM: 12-1A, 12-1B, 12-2A, 12-2B, 12-5A, 12-5B, 12-7A, 12-7B RM: 170, 171, 172, 175–177, 179 AR: 161–168
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.	SE: 57–60, 74, 88, 319, 531, 757 TE: 57–60 LM: 1-10A, 1-10B RM: 21 AR: 3–10
Compute statistics about data sets		
D.AN.07.03	Calculate and interpret relative frequencies and cumulative frequencies for given data sets.	SE: 187–191 TE: 187–191
D.AN.07.04	Find and interpret the median, quartiles, and interquartile range of a given set of data.	SE: 763–771 TE: 763–771 LM: 12-5A, 12-5B RM: 175–177 AR: 161–168

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