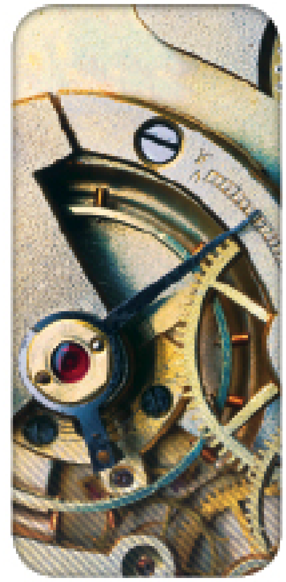
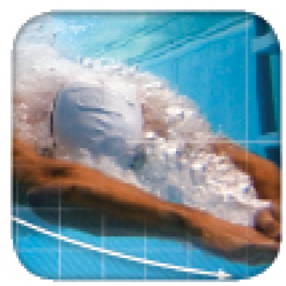
The University of Chicago School Mathematics Project



Transition Mathematics



Correlated to Minnesota Academic Standards for Mathematics

Grade 7

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Minnesota **Academic Standards for Mathematics**	***McGraw-Hill*** ***Transition Mathematics***
ASSESSMENT ANCHOR	
Number & Operations Read, write, represent and compare positive and negative rational numbers, expressed as integers, fractions and decimals.	
7.1.1.1 Know that every rational number can be written as the ratio of two integers or as a terminating or repeating decimal. Recognize that π is not rational, but that it can be approximated by rational numbers such as 22/7 and 3.14.	PE: 17–21, 29–33, 38, 132–139, 154, 158, 160, 161–166, 181–183, 184, 186, 193, 260–265, 284, 346 TE: 17–21, 29–33, 47, 132–139, 155, 158, 161–166, 182, 260–265 RM: 11, 12, 15, 16, 36, 37, 43–45, 69, 70, 71, 72, 105 LM: 1-3A, 1-3B, 1-5A, 1-5B, 3-1A, 3-1B, 3-5A, 3-5B, 4-9A, 4-9B AR: Chapter 1 Test Forms A–D, Chapter 3 Test Forms A–D, Chapter 4 Test Forms A–D
7.1.1.2 Understand that division of two integers will always result in a rational number. Use this information to interpret the decimal result of a division problem when using a calculator.	PE: 554–561, 562–566, 567–571, 572–577 TE: 554–561, 562–566, 567–571, 572–577 RM: 121, 122, 123, 124, 125, 126, 127, 128 LM: 9-1A, 9-1B, 9-2A, 9-2B, 9-3A, 9-3B, 9-4A, 9-4B AR: Chapter 9 Test Forms A–D
7.1.1.3 Locate positive and negative rational numbers on a number line, understand the concept of opposites, and plot pairs of positive and negative rational numbers on a coordinate grid.	PE: 10, 11–16, 22, 33, 38, 50–56, 57–60, 61, 75, 88, 95, 115–119, 132–139, 140, 146, 226, 281, 285–287, 292, 296 TE: 11–16, 50–56, 57–60, 61, 115–119, 132–139, 226 RM: 10, 20, 34, 35, 36, 37, 72 LM: 1-2A, 1-2B, 1-9A, 1-9B, 1-10A, 1-10B, 2-8A, 2-8B, 3-1A, 3-1B, 4-4A, 4-4B, 5-2A, 5-2B, 5-3A, 5-3B AR: Chapter 1 Test Forms A–D, Chapter 2 Test Forms A–D, Chapter 3 Test Forms A–D, Chapter 4 Test Forms A–D

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7.1.1.4 Compare positive and negative rational numbers expressed in various forms using the symbols < , > , = , ≤ , ≥.	PE: 11–16, 22, 27, 38, 49, 110, 113, 115–119, 121, 133, 134, 139, 141–142, 145, 226, 290, 291 TE: 11–16, 115–119, 121, 134, 226, 580 RM: 10, 33, 34, 35, 36, 38 LM: 1-2A, 1-2B, 2-7A, 2-7B, 2-8A, 2-8B, 3-1A, 3-1B, 3-2A, 3-2B, 4-4A, 4-4B AR: Chapter 2 Test Forms A–D, Chapter 3 Test Forms A–D, Chapter 4 Test Forms A–D
7.1.1.5 Recognize and generate equivalent representations of positive and negative rational numbers, including equivalent fractions.	PE: 11, 23–28, 29–33, 45–49, 140–146, 160, 161–166, 167–173 TE: 11, 23–28, 29–33, 140–146, 161–166, 167–173 RM: 11, 12, 13, 14, 16, 43, 44, 45, 46, 47, 48 LM: 1-3A, 1-3B, 1-4A, 1-4B, 1-5A, 1-5B, 1-8A, 1-8B, 3-2A, 3-2B, 3-5A, 3-5B, 3-6A, 3-6B AR: Chapter 1 Test Forms A–D, Chapter 3 Test Forms A–D
Number & Operations Calculate with positive and negative rational numbers, and rational numbers with whole number exponents, to solve real-world and mathematical problems.	
7.1.2.1 Add, subtract, multiply and divide positive and negative rational numbers that are integers, fractions and terminating decimals; use efficient and generalizable procedures, including standard algorithms; raise positive rational numbers to whole-number exponents.	PE: 21, 22, 23–28, 44, 147–152, 174–179, 278–284, 285–293, 294–299, 300–305, 348, 430–437, 438–443, 486–492, 500–506, 513–518, 554–561, 562–566, 572–577 TE: 21, 22, 23–28, 147–152, 174–179, 278–284, 285–293, 298–299, 300–305, 348, 430–437, 438–443, 486–492, 500–506, 513–518, 554–561, 562–566, 572–577 RM: 13, 14, 40, 49, 50, 51, 73, 74–76, 78, 79, 99, 100, 101, 107, 109, 110, 113, 114, 121, 122, 123, 124, 127, 128 LM: 1-3A, 1-3B, 1-4A, 1-4B, 3-3A, 3-3B, 3-7A, 3-7B, 5-1A, 5-1B, 5-2A, 5-2B, 5-3A, 5-3B, 5-4A, 5-4B, 7-1A, 7-1B, 7-2A, 7-2B, 8-1A, 8-1B, 8-3A, 8-3B, 8-5A, 8-5B, 9-1A, 9-1B, 9-2A, 9-2B, 9-4A, 9-4B AR: Chapter 1 Test Forms A–D, Chapter 3 Test Forms A–D, Chapter 5 Test Forms A–D, Chapter 7 Test Forms A–D, Chapter 8 Test Forms A–D, Chapter 9 Test Forms A–D

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7.1.2.2 Use real-world contexts and the inverse relationship between addition and subtraction to explain why the procedures of arithmetic with negative rational numbers make sense.	PE: 11–16, 285–293, 294–299, 347 TE: 11–16, 285–293, 294–299, 347 RM: 10, 24–76, 77 LM: 1-2A, 1-2B, 5-2A, 5-2B, 5-3A, 5-3B AR: Chapter 5 Test Forms A–D
7.1.2.3 Understand that calculators and other computing technologies often truncate or round numbers.	PE: 157, 158, 159 TE: 157, 158 LM: 3-4A, 3-4B
7.1.2.4 Solve problems in various contexts involving calculations with positive and negative rational numbers and positive integer exponents, including computing simple and compound interest.	PE: 20–22, 27, 28, 151, 159, 166, 174–179, 297–299, 348, 504–506, 513–518, 558–561 TE: 21, 27, 28, 151, 159, 174–179, 297–299, 348, 505–506, 513–518, 559 RM: 13, 49, 50, 73, 113, 114 LM: 1-3A, 1-3B, 1-4A, 1-4B, 3-3A, 3-3B, 3-4A, 3-4B, 3-5A, 3-5B, 3-7A, 3-7B, 5-3A, 5-3B, 8-5A, 8-5B, 9-1A, 9-1B AR: Chapter 1 Test Forms A–D, Chapter 3 Test Forms A–D, Chapter 8 Test Forms A–D
7.1.2.5 Use proportional reasoning to solve problems involving ratios in various contexts.	PE: 18, 21, 38, 583–588, 596–600 TE: 18, 583–588, 596–600 RM: 11, 12, 130, 131, 134 LM: 1-3A, 1-3B, 9-6A, 9-6B, 9-8A, 9-8B AR: Chapter 9 Test Forms A–D
7.1.2.6 Demonstrate an understanding of the relationship between the absolute value of a rational number and distance on a number line. Use the symbol for absolute value.	PE: 285–293, 334, 571 TE: 285–293, 773 RM: 74 LM: 5-2A, 5-2B AR: Chapter 5 Test Forms A–D
Algebra Understand the concept of proportionality in real-world and mathematical situations, and distinguish between proportional and other relationships.	
7.2.1.1 Understand that a relationship between two variables, *x* and *y*, is proportional if it can be expressed in the form $\frac{y}{x}=k$ or $y=kx$. Distinguish proportional relationships from other relationships, including inversely proportional relationships ($xy=k$ or $y=\frac{k}{x}$).	PE: 524–525 TE: 524–525

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7.2.1.2 Understand that the graph of a proportional relationship is a line through the origin whose slope is the unit rate (constant of proportionality). Know how to use graphing technology to examine what happens to a line when the unit rate is changed.	PE: 524–531, 599 TE: 524–531, 641 RM: 116, 117 LM: 8-7A, 8-7B AR: Chapter 8 Test Forms A–D
Algebra Recognize proportional relationships in real-world and mathematical situations; represent these and other relationships with tables, verbal descriptions, symbols and graphs; solve problems involving proportional relationships and explain results in the original context.	
7.2.2.1 Represent proportional relationships with tables, verbal descriptions, symbols, equations and graphs; translate from one representation to another. Determine the unit rate (constant of proportionality or slope) given any of these representations.	PE: 72–74, 87, 119, 326, 493–499, 500–506, 524–531, 532–537, 599, 616–622, 641–646, 647–653, 659–665 TE: 72–74, 87, 493–499, 500–506, 524–531, 532–537, 616–622, 641–646, 647–653, 659–665, 778 RM: 23, 26, 108, 109, 110, 116, 117, 118, 119, 136–138, 146, 147–149, 152, 153 LM: 2-1A, 2-1B, 8-2A, 8-2B, 8-3A, 8-3B, 8-7A, 8-7B, 10-1A, 10-1B, 10-5A, 10-5B, 10-6A, 10-6B, 10-8A, 10-8B AR: Chapter 2 Test Forms A–D, Chapter 8 Test Forms A–D, Chapter 10 Test Forms A–D
7.2.2.2 Solve multi-step problems involving proportional relationships in numerous contexts.	PE: 496–499, 504–506, 592–595, 598–600 TE: 496–499, 505–506, 592–595, 599, 600 LM: 8-2A, 8-2B, 9-7A, 9-7B, 9-8A, 9-8B
7.2.2.3 Use knowledge of proportions to assess the reasonableness of solutions.	PE: 29, 596–600 TE: 495, 596–600 RM: 133, 134 LM: 9-8A, 9-8B

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7.2.2.4 Represent real-world or mathematical situations using equations and inequalities involving variables and positive and negative rational numbers.	PE: 34–38, 43, 44, 70–75, 76–82, 103–109, 110–114, 252, 306–312, 313–319, 320–326, 500–506, 519–523, 538–544, 578–582, 629–634, 635–640, 647–653 TE: 34–38, 70–75, 76–82, 103–109, 110–114, 306–312, 313–319, 320–326, 500–506, 519–523, 538–544, 578–582, 629–634, 635–640, 647–653 RM: 18, 22, 23, 24, 25, 30, 31, 32, 33, 80, 82, 109, 110, 115, 120, 129, 141–143, 144, 145, 147–149 LM: 1-6A, 1-6B, 2-1A, 2-1B, 2-2A, 2-2B, 2-6A, 2-6B, 2-7A, 2-7B, 5-5A, 5-5B, 5-6A, 5-6B, 5-7A, 5-7B, 8-3A, 8-3B, 8-6A, 8-6B, 8-9A, 8-9B, 9-5A, 9-5B, 10-3A, 10-3B, 10-4A, 10-4B, 10-6A, 10-6, B AR: Chapter 1 Test Forms A–D, Chapter 2 Test Forms A–D, Chapter 5 Test Forms A–D, Chapter 8 Test Forms A–D, Chapter 9 Test Forms A–D, Chapter 10 Test Forms A–D
Algebra Apply understanding of order of operations and algebraic properties to generate equivalent numerical and algebraic expressions containing positive and negative rational numbers and grouping symbols; evaluate such expressions.	
7.2.3.1 Use properties of algebra to generate equivalent numerical and algebraic expressions containing rational numbers, grouping symbols and whole number exponents. Properties of algebra include associative, commutative and distributive laws.	PE: 43, 282–283, 288, 290, 299, 431–432, 435, 436, 444–449, 469, 489, 513, 589–595, 637 TE: 43, 68, 73, 84, 147, 211, 280, 288–289, 307, 328, 430–431, 444–449, 459, 491, 517, 589–595, 697 RM: 102, 131, 132 LM: 5-1A, 5-1B, 5-2A, 5-2B, 7-1A, 7-1B, 7-3A, 7-3B, 9-7A, 9-7B AR: Chapter 9 Test Forms A–D
7.2.3.2 Evaluate algebraic expressions containing rational numbers and whole number exponents at specified values of their variables.	PE: 32, 34–38, 40, 41, 44, 49, 75, 83–88, 89, 90, 109, 114, 159, 284, 299, 304, 373, 448, 505, 576 TE: 34–38, 40, 46, 83–88, 95, 294, 299, 447, 500–501 RM: 17, 18, 26, 77, 109 LM: 1-6A, 1-6B, 1-7A, 1-7B, 2-3A, 2-3B, 4-2A, 4-2B, 5-3A, 5-3B AR: Chapter 1 Test Forms A–D, Chapter 2 Test Forms A–D

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7.2.3.3 Apply understanding of order of operations and grouping symbols when using calculators and other technologies.	PE: 34–38, 39–44, 48, 62, 83–85, 89, 90 TE: 34–38, 39–44, 48, 62, 83 RM: 17, 18 LM: 1-6A, 1-6B, 1-7A, 1-7B AR: Chapter 1 Test Forms A–D
Algebra Represent real-world and mathematical situations using equations with variables. Solve equations symbolically, using the properties of equality. Also solve equations graphically and numerically. Interpret solutions in the original context.	
7.2.4.1 Represent relationships in various contexts with equations involving variables and positive and negative rational numbers. Use the properties of equality to solve for the value of a variable. Interpret the solution in the original context.	PE: 96–102, 103–109, 310–312, 316–319, 491–492, 521–523, 535–537, 581, 582, 616–622, 623–628, 654–658 TE: 96–102, 103–109, 312, 317–319, 491–492, 522, 536–537, 581, 582, 616–622, 623–628, 654–658 RM: 29, 30, 31, 81, 135, 136–138, 139, 140, 150, 151 LM: 2-5A, 2-5B, 2-6A, 2-6B, 5-3A, 5-3B, 5-6A, 5-6B, 8-6A, 8-6B, 8-8A, 8-8B, 9-5A, 9-5B, 10-1A, 10-1B, 10-2A, 10-2B, 10-7A, 10-7B AR: Chapter 2 Test Forms A–D, Chapter 5 Test Forms A–D, Chapter 8 Test Forms A–D, Chapter 9 Test Forms A–D, Chapter 10 Test Forms A–D
7.2.4.2 Solve equations resulting from proportional relationships in various contexts.	PE: 496–499, 504–506, 592–595, 598–600 TE: 496–499, 505–506, 592–595, 599, 600 LM: 8-2A, 8-2B, 9-7A, 9-7B, 9-8A, 9-8B
Geometry & Measurement Use reasoning with proportions and ratios to determine measurements, justify formulas and solve real-world and mathematical problems involving circles and related geometric figures.	
7.3.1.1 Demonstrate an understanding of the proportional relationship between the diameter and circumference of a circle and that the unit rate (constant of proportionality) is π. Calculate the circumference and area of circles and sectors of circles to solve problems in various contexts.	PE: 463–469, 476, 569 TE: 463–469 RM: 105 LM: 2-4A, 2-4B, 7-6A, 7-6B AR: Chapter 7 Test Forms A–D

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7.3.1.2 Calculate the volume and surface area of cylinders and justify the formulas used.	PE: 696–702, 703–708, 709–713 TE: 696–702, 703–708, 709–713 RM: 161, 162, 163, 164 LM: 11-5A, 11-5B, 11-6A, 11-6B, 11-7A, 11-7B AR: Chapter 11 Test Forms A–D
Geometry & Measurement Analyze the effect of change of scale, translations and reflections on the attributes of two-dimensional figures.	
7.3.2.1 Describe the properties of similarity, compare geometric figures for similarity, and determine scale factors.	PE: 470–476 TE: 470–476 RM: 106 LM: 7-7A, 7-7B AR: Chapter 7 Test Forms A–D
7.3.2.2 Apply scale factors, length ratios and area ratios to determine side lengths and areas of similar geometric figures.	PE: 470–476, 503, 505, 523, 601–606, 608, 719–724 TE: 470–476, 601–606, 608, 719–724 RM: 106, 110, 166, 167 LM: 7-7A, 7-7B, 8-3A, 8-3B, 9-9A, 9-9B, 11-9A, 11-9B AR: Chapter 7 Test Forms A–D, Chapter 9 Test Forms A–D, Chapter 11 Test Forms A–D
7.3.2.3 Use proportions and ratios to solve problems involving scale drawings and conversions of measurement units.	PE: 36–37, 91, 92, 146, 475, 477, 492, 494–495, 497, 503, 576, 594, 600, 601, 606 TE: 91, 105, 477, 494, 564, 601–606 RM: 108, 135, 136 LM: 2-4A, 2-4B, 8-2A, 8-2B, 9-9A, 9-9B AR: Chapter 9 Test Forms A–D
7.3.2.4 Graph and describe translations and reflections of figures on a coordinate grid and determine the coordinates of the vertices of the figure after the transformation.	PE: 358–365, 366–373, 378, 379, 400, 503, 600, 640 TE: 358–365, 366–373, 379 RM: 87, 88, 89, 90, 110, 134 LM: 6-1A, 6-1B AR: Chapter 6 Test Forms A–D
Data Analysis & Probability Use mean, median and range to draw conclusions about data and make predictions.	

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7.4.1.1 Design simple experiments and collect data. Determine mean, median and range for quantitative data and from data represented in a display. Use these quantities to draw conclusions about the data, compare different data sets, and make predictions.	PE: 545, 607, 748, 749, 752–757, 763–771, 784 TE: 58, 545, 607, 752–757, 763–771, 784 RM: 21, 53, 173, 175–177 LM: 12-3A, 12-3B, 12-5A, 12-5B AR: Chapter 12 Test Forms A–D
7.4.1.2 Describe the impact that inserting or deleting a data point has on the mean and the median of a data set. Know how to create data displays using a spreadsheet to examine this impact.	PE: 758–762 TE: 758–762 RM: 174 LM: 12-4A, 12-4B AR: Chapter 12 Test Forms A–D
Data Analysis & Probability Display and interpret data in a variety of ways, including circle graphs and histograms.	
7.4.2.1 Use reasoning with proportions to display and interpret data in circle graphs (pie charts) and histograms. Choose the appropriate data display and know how to create the display using a spreadsheet or other graphing technology	PE: 607, 740–744, 745–751, 784 TE: 607, 740–744, 745–751, 784 RM: 170, 171, 172 LM: 12-1A, 12-1B, 12-2A, 12-2B AR: Chapter 12 Test Forms A–D
Data Analysis & Probability Calculate probabilities and reason about probabilities using proportions to solve real-world and mathematical problems.	
7.4.3.1 Use random numbers generated by a calculator or a spreadsheet or taken from a table to simulate situations involving randomness, make a histogram to display the results, and compare the results to known probabilities.	PE: 190 TE: 190
7.4.3.2 Calculate probability as a fraction of sample space or as a fraction of area. Express probabilities as percents, decimals and fractions.	PE: 187–193, 327–334, 347, 364, 392, 507–512, 582 TE: 187–193, 327–334, 347, 507–512 RM: 52, 54, 83, ,84, 111, 112 LM: 3-9A, 3-9B, 5-8A, 5-8B, 8-4A, 8-4B AR: Chapter 3 Test Forms A–D, Chapter 5 Test Forms A–D, Chapter 8 Test Forms A–D
7.4.3.3 Use proportional reasoning to draw conclusions about and predict relative frequencies of outcomes based on probabilities.	PE: 187–191 TE: 187–191 RM: 53

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