



Math Connects

Concepts, Skills, and Problem Solving

Course 2

© 2009

STANDARDS	PAGE REFERENCES
Strand 1: Number Sense and Operations	
1. Number Sense	
<p>1. Apply multiple representations in recognizing and translating between different forms of rational numbers (fractions, decimals, percents, and ratios) in meaningful contexts.</p>	<p>Student Edition: 196-200, 202-205, 206-210 <i>Check Your Understanding</i> 199 #1-#12, 204 #1-#9, 208 #1-#8 <i>Mid-Chapter Quiz</i> 201 #22-#25 <i>Practice Test</i> 225 #6-#18 <i>Real-World Example</i> 198, 203, 207, 208 <i>Study Guide and Review</i> 223 #29-#41, #42-#50, 224 #51-#59 <i>Study Tip</i> 197, 206</p> <p>Teacher Edition: A 200, 205, 210; AE 197, 198, 203, 207, 208; FMC 197, 203, 207; T 206; TNT 197, 209</p>

STANDARDS	PAGE REFERENCES
<p>2. Find or use factors, multiples, or prime factorization within a set of numbers.</p>	<p>Student Edition: 181-184, 186-189, 211-214 <i>Check Your Understanding</i> 183 #1-#10, 188 #1-#8, 213 #1-#7 <i>Math Lab</i> 180 <i>Mid-Chapter Quiz</i> 201 #1-#10 <i>Mini Lab</i> 181, 211 <i>Practice Test</i> 225 #1-#2, #19-#20 <i>Real-World Example</i> 212 <i>Study Guide and Review</i> 222 #8-#19, 224 #60-#66 <i>Study Tip</i> 182, 187</p> <p>Teacher Edition: A 180, 184, 214; AE 181, 182, 186, 187, 212; F 180; FMC 182, 186, 212; T 180, 181, 211; TNT 183, 187, 188, 212</p>
<p>3. Compare and order rational numbers using various models and representations (e.g., number line, coordinate graph).</p>	<p>Student Edition: 215-220 <i>Check Your Understanding</i> 218 #1-#7 <i>Mini Lab</i> 215 <i>Practice Test</i> 225 #22-#24 <i>Real-World Example</i> 216 <i>Study Guide and Review</i> 224 #67-#71</p> <p>Teacher Edition: A 220; AE 216, 217; FMC 216; T 215; TNT 216</p>
<p>4. Find and model absolute value from contextual situations.</p>	<p>Student Edition: 80-83 <i>Check Your Understanding</i> 82 #1-#10 <i>Real-World Example</i> 80 <i>Study Tip</i> 81</p> <p>Teacher Edition: A 83; AE 81; FMC 81; T 80; TNT 82, 83</p>

STANDARDS	PAGE REFERENCES
<p>M08-S1C1-02 Moved to Grade 8</p>	
<p>2. Numerical Operations</p>	
<p>1. Solve contextual problems including word problems with rational numbers and operations using exact answers or estimates as appropriate.</p>	<p>Student Edition: 194 #18-#19, #24-#28, 199 #35-#36, 204 #40</p> <p>Teacher Edition: AE 198 #6, 203 #4</p>
<p>2. Solve problems with integers by selecting and using appropriate operations (+, -, x, ÷).</p>	<p>Student Edition: 95-99, 103-106 <i>Algebra Lab</i> 101-102 <i>Check Your Understanding</i> 98 #1-#9, 105 #1-#12, 109 #1-#13, 116 #1-#9 <i>Mini Lab</i> 103, 107, 114 <i>Practice Test</i> 123 #12-#21 <i>Real-World Example</i> 97, 104, 116 <i>Study Guide and Review</i> 121 #33-#42, 122 #43-#50, #54-#57</p> <p>Teacher Edition: A 99, 106, 111, 118; AE 96, 97, 104, 108, 109, 115, 116; FMC 96, 108, 115; T 95, 103, 107, 114; TNT 97, 104, 107, 110</p>
<p>3. Simplify numerical expressions using the order of operations and appropriate mathematical properties (i.e., commutative, distributive, associative, identity, inverse).</p>	<p>Student Edition: 38-41, 53-56, 96, 98 #23 <i>Check Your Understanding</i> 40 #1-#9, 55 #1-#8 <i>Concept Summary</i> 55 <i>Real-World Example</i> 39, 54 <i>Study Tip</i> 39</p> <p>Teacher Edition: A 41, 56; AE 39, 53, 54; FMC 39, 54, 96; T 38, 53; TNT 40</p>

STANDARDS	PAGE REFERENCES
<p>4. Solve problems involving percentages (including tax, discount, tips, and part/whole relationships) using ratio and proportionality.</p>	<p>Student Edition: 344-348, 350-354, 375-378 <i>Check Your Understanding</i> 346 #1-#7, 353 #1-#7, 377 #1-#5 <i>Math Lab</i> 342-343 <i>Practice Test</i> 389 #1-#4, #19-#21 <i>Real-World Example</i> 345, 352 <i>Study Guide and Review</i> 385 #11-#19, 387 #41-#47 <i>Study Tip</i> 351, 375, 376</p> <p>Teacher Edition: A 348, 354, 375; AE 345, 350, 351, 352, 375, 376; FMC 345, 351, 376; T 344, 350, 375; TNT 345, 351, 376</p>
<p>5. Express or interpret numbers using scientific notation from real-life contexts (positive exponents only).</p>	<p>Student Edition: LA2-LA5 <i>Check Your Understanding</i> LA4 #1-#12 <i>Real-World Example</i> LA3</p> <p>Teacher Edition: A LA5; AE LA3; F LA2; FMC LA3; P LA4; T LA2</p>
<p>3. Estimation</p>	
<p>1. Estimate rational numbers, common irrational numbers, and integers in context by applying benchmarks.</p>	<p>Student Edition: 230-235, 355-360, 637-639 <i>Check Your Understanding</i> 233 #1-#11, 357 #1-#9, 637 #1-#9 <i>Concepts and Skills Bank</i> 735 <i>Mini Lab</i> 636 <i>Real-World Example</i> 232, 355, 356 <i>Study Tip</i> 231, 232, 356</p> <p>Teacher Edition: A 235, 360, 639; AE 231, 232, 355, 356, 357, 637; FMC 231, 356, 637; P 233, 357, 637; T 230, 355, 636; TNT 230, 231, 232, 234, 358</p>

STANDARDS	PAGE REFERENCES
<p>2. Make estimates appropriate to a given situation by:</p> <ul style="list-style-type: none"> identifying when estimation is appropriate, determining the level of accuracy needed, selecting the appropriate method of estimation, analyzing the effect of an estimation method on the accuracy of results, and verifying solutions and determining the reasonableness of results in a variety of situations including but not limited to calculator and computer results. 	<p>Student Edition: 230-235, 355-360, 636-639 <i>Check Your Understanding</i> 233 #1-#11, 357 #1-#9, 637 #1-#9 <i>Mini Lab</i> 636 <i>Real-World Example</i> 232, 356, 357 <i>Study Tip</i> 231, 356</p> <p>Teacher Edition: A 235, 360, 639; AE 231, 232, 356, 357, 637; FMC 231, 356, 637; P 233, 357, 637; T 231, 355, 636; TNT 230, 231, 232, 234, 358</p>
<p>3. Estimate square roots of numbers less than 1,000 between two whole numbers.*</p>	<p>Student Edition: 636-639 <i>Check Your Understanding</i> 637 #1-#9 <i>Mini Lab</i> 636 #1-#5</p> <p>Teacher Edition: A 639; AE 637; FMC 637; P 637; T 636</p>
<p>4. Estimate the measure of an object in one system given the measure of that object in another system and the approximate conversion factor.</p>	<p>Student Edition: <i>Concepts and Skills Bank</i> 747 (introduction of concept)</p>
<p>M07-S4C4-05 Moved to Strand 4 Concept 4</p>	
<p>Strand 2: Data Analysis, Probability, and Discrete Mathematics</p>	
<p>1. Data Analysis (Statistics)</p>	
<p>1. Solve problems by selecting, constructing, interpreting and answering questions based on contextual displays of data including multi-line graphs and scatter plots.</p>	<p>Student Edition: 426-431 <i>Check Your Understanding</i> 428 #1-#3 <i>Mini Lab</i> 426 #1-#4 <i>Spreadsheet Lab</i> 432-433</p> <p>Teacher Edition: A 431, 433; AE 427, 428; F 432; FMC 427; T 426, 432; TNT 428</p>

STANDARDS	PAGE REFERENCES
<p>2. Solve contextual problems by applying the following measures for a data set (extreme values, mean, median, mode, range, and frequency); state how the measures describe the data.</p>	<p>Student Edition: 397, 399 #13, #17, 402-408 <i>Check Your Understanding</i> 398 #3-#4, #7, 405 #1-#5 <i>Graphing Calculator Lab</i> 409 <i>Mini Lab</i> 402 <i>Study Tip</i> 405</p> <p>Teacher Edition: A 408, 409; AE 403, 404, 405; F 409; FMC 397, 403, 404; T 402, 409; TNT 408</p>
<p>3. Interpret trends in data related to the same investigation, estimate values for missing data, and predict values for points beyond the data set.</p>	<p>Student Edition: 434-437, 438-443 <i>Check Your Understanding</i> 435 #1-#4, 440 #1-#3 <i>Real-World Example</i> 434, 440</p> <p>Teacher Edition: A 437, 443; AE 435, 439, 440; FMC 435, 439; P 436, 440; T 434, 438; TNT 438, 440</p>
<p>4. Determine when it is appropriate to use histograms, line graphs, double bar graphs, and stem-and-leaf plots.</p>	<p>Student Edition: 410-414, 415-421, 426-431 <i>Check Your Understanding</i> 412 #1-#5, 418 #1-#4, 428 #1-#3 <i>Mid-Chapter Review</i> 423 #2, #7 <i>Mini Lab</i> 426 <i>Spreadsheet Lab</i> 432-433 <i>Study Tip</i> 416, 417, 427</p> <p>Teacher Edition: A 414, 421, 431, 433; AE 411, 416, 417, 427, 428; F 432; FMC 412, 416, 427; P 412, 418, 429; T 410, 415, 426, 432; TNT 410, 411, 413, 415, 416, 421, 428</p>
<p>5. Distinguish between a random and non-random sample.*</p>	<p>Student Edition: 438-443 <i>Check Your Understanding</i> 440 #1-#3 <i>Real-World Example</i> 440</p> <p>Teacher Edition: A 443; AE 439, 440; FMC 439; P 440; T 438; TNT 438, 440</p>

STANDARDS	PAGE REFERENCES
2. Probability	
1. Determine the theoretical probability that a specific two-stage event will occur in a familiar context and express as a fraction, decimal, and percent.*	Student Edition: 460-464 <i>Check Your Understanding</i> 462 #1-#10 <i>Real-World Example</i> 461 <i>Study Tip</i> 462 Teacher Edition: A 464; AE 461, 462; FMC 461; P 462; T 460; TNT 460, 461
2. Experiment with different events to determine whether the event is dependent or independent.*	Student Edition: 492-497 <i>Check Your Understanding</i> 495 #1-#11 <i>Real-World Example</i> 493 <i>Study Tip</i> 493, 494, 495 Teacher Edition: A 497; AE 492, 493, 494; FMC 493, 494; P 495; T 492; TNT 496
3. Determine and estimate the theoretical probability of simple events through experimentation or simulation.	Student Edition: 486-490 <i>Check Your Understanding</i> 488 #1-#5 <i>Mini Lab</i> 486 <i>Probability Lab</i> 491 <i>Real-World Example</i> 488 Teacher Edition: A 490, 491; AE 487, 488; F 491; FMC 487; P 488; T 486, 491; TNT 486
4. Compare the results of two repetitions of the same probability event.	Student Edition: <i>Probability Lab</i> 491 Teacher Edition: A 491; F 491; T 491
5. Compare probabilities to determine the fairness of a contextual situation.	Teacher Edition: LLR 486b
3. Discrete Mathematics – Systematic Listing and Counting	
1. Solve counting problems using Venn diagrams by representing these principles algebraically.	Student Edition: 186, 186 Example 1, 187 Example 2 <i>Get Ready for the Lesson</i> 186 Teacher Edition: AE 187; FMC 187

STANDARDS	PAGE REFERENCES
2. Analyze relationships among the tree diagrams where items repeat and do not repeat; make numerical connections to the multiplication principle of counting.	Student Edition: 465-470, 471-474 <i>Check Your Understanding</i> 467 #1-#4, 472 #1-#4 <i>Mini Lab</i> 465 <i>Real-World Example</i> 472 <i>Study Tip</i> 472 Teacher Edition: A 470, 474; AE 466, 467, 471, 472; FMC 466; P 467, 472; T 465, 471; TNT 465, 467, 472
4. Discrete Mathematics – Vertex-Edge Graphs	
1. Use vertex-edge graphs to represent and find solutions to practical problems related to Euler/Hamilton paths and circuits.	This standard falls outside the scope of this text and can be met during teacher/class discussion.
2. Devise and describe step-by-step procedures related to working with discrete graphs.*	This standard falls outside the scope of this text and can be met during teacher/class discussion.
Strand 3: Patterns, Algebra, and Functions	
1. Patterns	
1. Recognize, describe, or extend numerical and geometric patterns using words or symbols; make conjectures about these patterns.	Student Edition: 57-61 <i>Algebra Lab</i> 62 <i>Check Your Understanding</i> 59 #1-#5 <i>Mini Lab</i> 57 #1-#4 <i>Problem-Solving Investigation</i> 112-113, 148-149, 530-531 <i>Real-World Example</i> 59 Teacher Edition: A 61, 62, 113, 149, 531; AE 58, 59, 112, 148, 530; F 62, 112, 148, 530; FMC 58; P 59, 113, 149, 531; T 57, 62, 112, 148, 530; TNT 113, 149

STANDARDS	PAGE REFERENCES
2. Functions and Relationships	
1. Define a simple function given a pattern of two variables using appropriate algebraic notation.	<p>Student Edition: 63-67 <i>Check Your Understanding</i> 65 #1-#5 <i>Graphing Calculator Lab</i> 68-69 <i>Real-World Example</i> 64 <i>Study Tip</i> 64</p> <p>Teacher Edition: A 67, 69; AE 63, 64; F 68; FMC 64; P 65; T 63, 68; TNT 66</p>
2. Translate between different representations of linear expressions using graphs and tables.*	<p>Student Edition: 163-167 <i>Check Your Understanding</i> 166 #1-#6 <i>Real-World Example</i> 163, 165 <i>Study Tip</i> 164</p> <p>Teacher Edition: A 167; AE 164, 165; FMC 163, 164; P 166; T 163; TNT 166</p>
3. Use a table of values to graph a linear equation.	<p>Student Edition: 163-167 <i>Check Your Understanding</i> 166 #1-#6 <i>Graphing Calculator Lab</i> 168 <i>Real-World Example</i> 163, 165 <i>Study Tip</i> 164</p> <p>Teacher Edition: A 167, 168; AE 164, 165; F 168; FMC 163, 164; P 166; T 163, 168; TNT 166, 168</p>
3. Algebraic Representations	
1. Write a single variable expression or one-step equation given a contextual situation.	<p>Student Edition: 44-47, 49-52 <i>Check Your Understanding</i> 46 #1-#13, 51 #1-#5 <i>Mini Lab</i> 44 <i>Real-World Example</i> 45, 50 <i>Study Tip</i> 50</p> <p>Teacher Edition: A 47, 52; AE 45, 50; FMC 45, 50; P 46, 51; T 44, 49; TNT 44</p>

STANDARDS	PAGE REFERENCES
2. Evaluate an expression containing two variables by substituting numbers for the variable (including integers, fractions, and decimals).	<p>Student Edition: 98 #33-#36, 104 Example 5, 105 #29-#36, 110 #30-#37, 117 #24-#31, #34-#37 <i>Check Your Understanding</i> 109 #12-#13, 116 #7-#8</p> <p>Teacher Edition: AE 104, 109; TNT 104</p>
3. Solve one-step equations using inverse properties with positive rational numbers.	<p>Student Edition: 258-263 <i>Check Your Understanding</i> 261 #1-#12 <i>Study Tip</i> 259, 260</p> <p>Teacher Edition: A 263; AE 259, 260; FMC 259; P 261; T 258; TNT 262</p>
4. Write and solve one-step inequalities with whole numbers in and out of context.*	<p>Student Edition: <i>Concepts and Skills Bank</i> 740-741 (concept introduced)</p>
5. Solve two-step equations with whole numbers.*	<p>Student Edition: 151-155 <i>Check Your Understanding</i> 153 #1-#7 <i>Mini Lab</i> 151 <i>Real-World Example</i> 153 <i>Study Tip</i> 152</p> <p>Teacher Edition: A 155; AE 152, 153; FMC 152; P 153; T 151; TNT 152, 153</p>
4. Analysis of Change	
1. Use graphs and other representations to model and analyze change.	<p>Student Edition: 314 #37-#40, 347 #46-#49, 358 #38-#40, 359 #41, 373 #28, #31-#33 <i>Math Lab</i> 316 <i>Problem-Solving Investigation</i> 366 <i>Real-World Example</i> 345</p> <p>Teacher Edition: A 316, 367; AE 345, 366; F 316, 366; P 367; T 316, 366</p>

STANDARDS	PAGE REFERENCES
Strand 4: Geometry and Measurement	
1. Geometric Properties	
1. Recognize the relationship between central angles and intercepted arcs; identify arcs and chords of a circle.	This standard can be met during teacher/classroom discussion.
2. Draw and classify 3-dimensional geometric figures with appropriate labels showing specified attributes of parallelism, congruence, perpendicularity, and symmetry.	Student Edition: 603-606 <i>Check Your Understanding</i> 605 #1-#4 <i>Real-World Example</i> 604 <i>Study Tip</i> 604 Teacher Edition: A 606; AE 604; FMC 604; LLR 603b; T 603; TNT 603
3. Model the relationship between the number of sides in regular polygons and the sum of the interior angles.*	Student Edition: 546-551, 547 Example 3 <i>Check Your Understanding</i> 549 #1-#6 <i>Real-World Example</i> 548 Teacher Edition: A 551; AE 547; FMC 547; T 546; TNT 546
4. Identify corresponding parts of congruent figures.	Student Edition: LA14- LA17 (concept introduced) <i>Check Your Understanding</i> LA16 #1-#6 <i>Real-World Example</i> LA15 <i>Study Tip</i> LA15 Teacher Edition: A LA17; AE LA15; T LA14; TNT LA16
5. Analyze and determine properties and relationships of angles created by parallel lines cut by a transversal.	Student Edition: LA10-LA13 (concept introduced) <i>Check Your Understanding</i> LA12 #1-#8 Teacher Edition: A LA13; AE LA11; FMC LA11; T LA10; TNT LA 12
M05-S4C1-02	Moved to Grade 5
M04-S4C1-03	Moved to Grade 4
M05-S4C4-06	Moved to Grade 5
M05-S4C1-02	Moved to Grade 6
MHS-S4C1-07	Moved to High School

STANDARDS	PAGE REFERENCES
2. Transformation of Shapes	
1. Model the result of a double transformation (translations or reflections) of a figure on a coordinate plane using all four quadrants.	<p>Student Edition: 553-557, 558-562 <i>Check Your Understanding</i> 555 #1-#4, 560 #1-#8 <i>Mini Lab</i> 553, 558 <i>Practice Test</i> 567 #15 <i>Real-World Example</i> 558 <i>Study Guide and Review</i> 566 #25-#31 <i>Study Tip</i> 554, 559</p> <p>Teacher Edition: A 557, 562; AE 554, 555, 559; FMC 554; T 553, 558; TNT 554, 561</p>
M08-S4C2-02 Moved to Grade 8	
3. Coordinate Geometry	
No performance objectives at this grade level.	
M06-S4C3-01 Moved to Grade 6	
M06-S4C3-02 Moved to Grade 6	
4. Measurement	
1. Compare estimated to actual lengths based on scale drawings or maps.	<p>Student Edition: 320-326 <i>Check Your Understanding</i> 323 #1-#11 <i>Mini Lab</i> 320 <i>Spreadsheet Lab</i> 327 <i>Study Tip</i> 321, 322</p> <p>Teacher Edition: A 326, 327; AE 321, 322; F 327; FMC 322; T 320, 327; TNT 320, 322</p>

STANDARDS	PAGE REFERENCES
2. Identify the appropriate unit of measure to compute the volume of an object.	<p>Student Edition: 613-618 <i>Check Your Understanding</i> 616 #1-#5, 620 #1-#5 <i>Mini Lab</i> 613, 619 <i>Practice Test</i> 631 #16-#20 <i>Real-World Example</i> 614, 620 <i>Study Tip</i> 615, 620 <i>Study Guide and Review</i> 630 #38-#45</p> <p>Teacher Edition: A 618, 623; AE 614, 615, 620; FMC 614, 620; T 613, 619; TNT 614, 615</p>
3. Measure to the appropriate degree of accuracy.	<p>Student Edition: 586 #6-#11, 587 #22-#24, 591</p> <p>Teacher Edition: AE 590; FMC 590; TNT 587</p>
4. Identify polygons having the same perimeter or area.	<p>Student Edition: 553-557 <i>Check Your Understanding</i> 555 #1-#4 <i>Mini Lab</i> 553 <i>Study Tip</i> 554</p> <p>Teacher Edition: A 557; AE 554, 555; FMC 554; T 553; TNT 554</p>
5. Solve problems involving the circumference and area of a circle by calculating and estimating.	<p>Student Edition: 584-588, 589-593 <i>Check Your Understanding</i> 586 #1-#5, 591 #1-#5 <i>Mini Lab</i> 589 <i>Real-World Example</i> 584, 590 <i>Study Tip</i> 585, 590</p> <p>Teacher Edition: A 588; AE 585, 590; FMC 585, 590; T 584, 589; TNT 587</p>
6. Create a net to calculate the surface area of a given solid.*	<p>Student Edition: <i>Measurement Lab</i> 600-601 <i>Study Tip</i> 601</p> <p>Teacher Edition: A 601; F 600; T 600</p>
	MO7-S1C3-04 Moved to Strand 1 Concept 3
	MO5-S4C4-05 Moved to Grade 5 (parallelograms and triangle); circles are in Grade 7. MO7-S4C4-05

STANDARDS	PAGE REFERENCES
Strand 5: Structure and Logic	
1. Algorithms and Algorithmic Thinking	
1. Create an algorithm to determine the area of a given composite figure.*	Student Edition: 596-599 <i>Check Your Understanding</i> 597 #1-#5 <i>Real-World Example</i> 597 Teacher Edition: A 599; AE 597; FMC 597; T 596; TNT 597
2. Evaluate the quality and accuracy of an answer based on given information and procedures used.*	Student Edition: 598-599 Teacher Edition: AE 597; LLR 596b
M05-S5C1-01 Moved to Grade 5	
M06-S5C1-01 Moved to Grade 6	
2. Logic, Reasoning, Arguments, and Mathematical Proof	
1. Develop the problem-solving strategy of making a simpler problem.*	Student Edition: <i>Problem-Solving Investigation</i> 594-595 Teacher Edition: A 595; F 594; P 595; T 594; TNT 595
2. Solve a non-routine problem by selecting and using a strategy.*	Student Edition: <i>Problem-Solving Investigation</i> 594-595 Teacher Edition: A 595; F 594; P 595; T 594; TNT 595
3. Solve logic problems using multiple variables and multiple conditional statements using words, pictures, and charts.	Student Edition: <i>Problem-Solving Investigation</i> 530-531 Teacher Edition: A 531; AE 530; F 530; P 531; T 530
4. Use manipulatives and other modeling techniques to defend π as a ratio of circumference to diameter.	Student Edition: <i>Measurement Lab</i> 583 Teacher Edition: A 583; F 583; ODI 584a; T 583

STANDARDS	PAGE REFERENCES
<p>5. Explain that the process of solving equations is a deductive proof (i.e., use properties of number systems to justify each step in an equation).*</p>	<p>Student Edition: 151-155, 152 Example #2, #3, #4 <i>Check Your Understanding</i> 153 #1-#7 <i>Real-World Example</i> 153</p> <p>Teacher Edition: A 155; T 151; TNT 151, 153</p>