



# Math Connects

Concepts, Skills, and Problem Solving

Course 1

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STANDARDS	PAGE REFERENCES
<b>Number and Operations</b>	
<b>1. Understand numbers, ways of representing numbers, relationships among numbers and number systems</b>	
<b>A Read, write and compare numbers</b>	
<p>apply and understand whole numbers to millions, fractions and decimals to the thousandths (including location on the number line) (DOK 1; ST MA 5 1.10)</p>	<p><b>Student Edition:</b> 138 <i>Check Your Understanding 7</i> #1-#3, 143, 222, 573 <i>Example</i> 142, 143, 220, 221, 572 <i>Extra Practice</i> 678, 683, 700 <i>Get Ready for the Lesson</i> 142, 572 <i>Key Concept</i> 220 <i>Practice and Problem Solving</i> 144, 223, 574 <i>Study Guide and Review</i> 187 #11-#21, 241 #37-#43, 621 #11-#15 <i>Test Practice</i> 192 #1, #7, #9</p> <p><b>Teacher Edition:</b> A 575; AE 143, 221, 573; DI 138, 144; TNT 143; VC 138a; VKL 220a</p>

STANDARDS	PAGE REFERENCES
<b>B Represent and use rational numbers</b>	
<p>recognize and generate equivalent forms of fractions, decimals and <u>benchmark</u> percents (DOK 2; ST MA 5 1.10)</p>	<p><b>Student Edition:</b>  143, 204, 225, 229  <i>Check Your Understanding</i> 231, 367, 379  <i>Example</i> 229, 230, 331, 366, 377, 378  <i>Explore</i> 202-203, 364  <i>Get Ready for the Lesson</i> 365  <i>Key Concept</i> 365, 401  <i>Mini Lab</i> 220  <i>Practice and Problem Solving</i> 231, 368, 379  <i>Quick Quiz</i> 247 #6-#14  <i>Real-World Example</i> 206, 366, 378  <i>Study Tip</i> 226</p> <p><b>Teacher Edition:</b>  MC 220a, 365a; UGR 365; UQ 377a; VKL 204a; T 225</p>
<b>C Compose and decompose numbers</b>	
<p>*recognize equivalent representations for the same number and generate them by <u>decomposing and composing</u> numbers (DOK 2; ST MA 5 1.6)</p>	<p><b>Student Edition:</b>  28  <i>Check Your Understanding</i> 30 #5-#8, 34 #3, #4, #7-#9, 140 #7-#11  <i>Example</i> 29, 34, 39  <i>Mini Lab</i> 28, 32  <i>Practice and Problem Solving</i> 30 #22-#33, 35 #10-#15, #26-#33, 140 #24-#31  <i>Quick Quiz</i> 195 #6-#10  <i>Study Guide and Review</i> 69 #10-#16, 187 #11-#13</p> <p><b>Teacher Edition:</b>  AE 29, 34, 139</p>
<b>D. Classify and describe numeric relationships</b>	

STANDARDS	PAGE REFERENCES
<b>2. Understand meanings of operations and how they relate to one another</b>	
<b>A. Represent Operations</b>	
<b>B Describe effects of operations</b>	
<p>describe the effects of multiplication and division on fractions and decimals (DOK 2; ST MA 1 1.10)</p>	<p><b>Student Edition:</b>  <i>Example</i> 163, 173, 174  <i>Explore</i> 162, 167-168, 177-178, 280-281, 291-292  <i>Get Ready for the Lesson</i> 282  <i>H.O.T. Problems</i> 172 #48, #49, 182 #39, #42, 285 #42-#44, #46, 301 #33  <i>Mini Lab</i> 173, 179, 293</p> <p><b>Teacher Edition:</b>  DI 180; E 163a; SQ 179; T 163; UM 282a</p>
<b>C Apply properties of operations</b>	
<p>*apply <u>properties of operations</u> (including order of operations) to positive rational numbers (DOK 2; ST MA 1 1.10)</p>	<p><b>Student Edition:</b>  <i>Check Your Understanding</i> 39, 634, 638  <i>Concepts and Skills Bank</i> 748  <i>Example</i> 37, 38, 632, 633, 637  <i>Key Concept</i> 37, 632, 636  <i>Practice and Problem Solving</i> 39-40, 634, 639</p> <p><b>Teacher Edition:</b>  AE 38, 633, 637</p>
<b>D Apply operations on real and complex numbers</b>	
<p>identify square and cubic numbers and determine whole number roots and cubes (DOK 1; ST MA 5 1.6)</p>	<p><b>Student Edition:</b>  33  <i>Example</i> 33  <i>H.O.T. Problems</i> 36 #43-#46  <i>Practice and Problem Solving</i> 35 #35-#37</p> <p><b>Teacher Edition:</b>  VD 32a</p>
<b>3. Compute fluently and make reasonable estimates</b>	
<b>A. Describe or represent mental strategies</b>	
<b>B. Develop and demonstrate fluency</b>	

STANDARDS	PAGE REFERENCES
<b>C Compute problems</b>	
multiply and divide positive rational numbers (DOK 1; ST MA 1 3.1)	<b>Student Edition:</b> <i>Check Your Understanding</i> 165, 170, 175, 181, 284, 288, 295, 299 <i>Example</i> 163, 164, 169, 173, 174, 179, 180, 282, 283, 287, 288, 294, 298 <i>Key Concept</i> 282, 287, 293 <i>Practice and Problem Solving</i> 165, 171, 175, 181, 284-285, 289, 295, 300 <i>Quick Quiz</i> 23, 77, 137, 417 <i>Study Guide and Review</i> 189, 190 #67-#73, 306 <b>Teacher Edition:</b> AE 164, 1709, 174, 180, 283, 288
<b>D Estimate and justify solutions</b>	
*estimate and justify the results of multiplication and division of positive rational numbers (DOK 3; ST MA 1 3.2)	<b>Student Edition:</b> <i>Check Your Understanding</i> 277 <i>Example</i> 163, 169, 173, 174, 179, 276, 277, 283, 287, 298 <i>Practice and Problem Solving</i> 278 <i>Study Guide and Review</i> 305 #45-#50 <b>Teacher Edition:</b> AE 277; E 163a; T 276
<b>E Use proportional reasoning</b>	
solve problems using ratios and rates (DOK 2; ST MA 1 3.2)	<b>Student Edition:</b> <i>Check Your Understanding</i> 316, 325-326, 331, 336 <i>Example</i> 315, 316, 322, 323, 324, 330, 336 <i>Get Ready for the Lesson</i> 322 <i>Practice and Problem Solving</i> 317-318, 325, 332, 337-338 <i>Real-World Example</i> 324 <i>Study Guide and Review</i> 356-358 <b>Teacher Edition:</b> AE 315, 323; PS 329a

STANDARDS	PAGE REFERENCES
<b>Algebraic Relationships</b>	
<b>1. Understand patterns, relations and functions</b>	
<b>A. Recognize and extend patterns</b>	
<b>B Create and analyze patterns</b>	
<p>represent and describe patterns with tables, graphs, pictures, <u>symbolic rules</u> or words (DOK 2; ST MA 4 1.6)</p>	<p><b>Student Edition:</b>  <i>Check Your Understanding</i> 325  <i>Example</i> 322, 323  <i>Get Ready for the Lesson</i> 24  <i>Mixed Problem Solving</i> 55, 215, 342  <i>Practice and Problem Solving</i> 325-326  <i>Quick Quiz</i> 313 #14-#17  <i>Real-World Example</i> 26, 324</p> <p><b>Teacher Edition:</b>  <b>AE 323</b></p>
<b>C Classify objects and representations</b>	
<p>*compare various forms of <u>representations</u> to identify patterns (DOK 2; ST MA 4 1.6)</p>	<p><b>Student Edition:</b>  49, 343  <i>Check Your Understanding</i> 51, 235 #9, #10, 346  <i>Example</i> 49, 344  <i>Explore</i> 47-48  <i>Practice and Problem Solving</i> 51-52, 236 #29-#33, 346-347  <i>Real-World Example</i> 234, 345  <i>Study Guide and Review</i> 71</p>
<b>D Identify and compare functions</b>	
<p>*identify <u>functions</u> as <u>linear</u> or <u>nonlinear</u> from tables or graphs (DOK 1; ST MA 4 1.6)</p>	<p>The following function page references can be expanded to meet this objective.</p> <p><b>Student Edition:</b>  49-53, 349-353</p>
<b>E. Describe the effect of parameter changes</b>	

STANDARDS	PAGE REFERENCES
<b>2. Represent and analyze mathematical situations and structures using algebraic symbols</b>	
<b>A Represent mathematical situations</b>	
<p>use <u>symbolic algebra</u> to represent unknown quantities in expressions or equations and solve one-step equations (DOK 2; ST MA 4 3.3)</p>	<p><b>Student Edition:</b> 42, 57 <i>Check Your Understanding</i> 9, 351 #4-#6 <i>Example</i> 349 <i>Get Ready for the Lesson</i> 42 <i>Practice and Problem Solving</i> 59 #29-#32, 352 <i>Real-World Example</i> 350, 351</p>
<b>B Describe and use mathematical manipulation</b>	
<p>use the <u>commutative, distributive and associative</u> properties to generate equivalent forms for simple algebraic expressions (DOK 2; ST MA 4 3.2)</p>	<p><b>Student Edition:</b> <i>Check Your Understanding</i> 634, 638 <i>Example</i> 632, 633, 637 <i>Extra Practice</i> 703, 704 <i>Explore</i> 630-631 <i>Key Concept</i> 632, 636 <i>Practice and Problem Solving</i> 634, 639-640 <i>Real-World Example</i> 638 <i>Study Guide and Review</i> 664 <i>Test Practice</i> 668 #4, #6 <b>Teacher Edition:</b> AE 633, 637</p>
<b>C. Utilize equivalent forms</b>	
<b>D. Utilize systems</b>	
<b>3. Use mathematical models to represent and understand quantitative relationships</b>	
<b>A Use mathematical models</b>	
<p><u>model</u> and solve problems, using multiple representations such as tables, expressions and one-step equations (DOK 2; ST MA 4 3.6)</p>	<p><b>Student Edition:</b> 42, 49, 57 <i>Check Your Understanding</i> 44 <i>Example</i> 43, 257, 258, 282, 283, 349 <i>Explore</i> 642-643, 650 <i>Practice and Problem Solving</i> 44-45 <i>Real-World Experience</i> 345, 350, 646, 652, 658 <b>Teacher Edition:</b> AE 43, 257, 283, 345, 350; DI 51; I 58; TNT 283; UM 287a</p>

STANDARDS	PAGE REFERENCES
<b>4. Analyze change in various contexts</b>	
<b>A Analyze change</b>	
<p>*construct and analyze representations to compare situations with constant or varying rates of change (DOK 3; ST MA 4 1.6)</p>	<p><b>Student Edition:</b> 315 <i>Check Your Understanding</i> 316 #5-#7 <i>Example</i> 316, 330, 336 <i>Practice and Problem Solving</i> 317 #18-#23</p> <p><b>Teacher Edition:</b> AE 316, 330, 336</p>
<b>Geometric and Spatial Relationships</b>	
<b>1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</b>	
<b>A Describe and use geometric relationships</b>	
<p>identify similar and congruent shapes (DOK 1; ST MA 5 1.10)</p>	<p><b>Student Edition:</b> 502 <i>Check Your Understanding</i> 11 #2, 505 #1-#3 <i>Example</i> 502 <i>Extra Practice</i> 697 <i>Practice and Problem Solving</i> 505 #9-#14 <i>Study Guide and Review</i> 514 #37</p> <p><b>Teacher Edition:</b> AE 503; KL 502a; MRC 502a</p>
<b>B. Apply geometric relationships</b>	
<b>C. Compose and decompose shapes</b>	
<b>2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems</b>	
<b>A Use coordinate systems</b>	
<p>use <u>coordinate systems</u> to construct geometric shapes (DOK 2; ST MA 2 1.10)</p>	<p><b>Student Edition:</b> 233 <i>Practice and Problem Solving</i> 236 #34</p> <p><b>Teacher Edition:</b> CG 233a</p>

STANDARDS	PAGE REFERENCES
<b>3. Apply transformations and use symmetry to analyze mathematical situations</b>	
<b>A Use transformations on objects</b>	
<p>*describe the transformation from a given pre-image using the terms <u>reflection/flip</u>, <u>rotation/turn</u>, and <u>translation/slide</u> (DOK 3; ST MA 2 3.3)</p>	<p><b>Student Edition:</b>  <i>Check Your Understanding</i> 606, 612, 617  <i>Example</i> 604, 605, 610, 611, 616  <i>Practice and Problem Solving</i> 607-608, 612-613, 618-619  <i>Real-World Example</i> 617  <i>Study Guide and Review</i> 623 #54-#57, 624</p> <p><b>Teacher Edition:</b>            AE 605, 606, 611, 616; UT 615a</p>
<b>Use transformations on functions</b>	
<b>C Use symmetry</b>	
<p>*create polygons and designs with <u>rotational symmetry</u> (DOK 2; ST MA 2 1.6)</p>	<p><b>Student Edition:</b>  <i>Practice and Problem Solving</i> 618 #18</p> <p><b>Teacher Edition:</b>            TNT 618; UT 615a</p>
<b>4. Use visualization, spatial reasoning and geometric modeling to solve problems</b>	
<b>A Recognize and draw three-dimensional representations</b>	
<p>*use spatial visualization to identify <u>isometric representations of mat plans</u> (DOK 2; ST MA 2 3.3)</p>	<p><b>Student Edition:</b>            555  <i>Example</i> 556  <i>Explore</i> 554  <i>Mini Lab</i> 555  <i>Test Practice</i> 559</p> <p><b>Teacher Edition:</b>            FP 555a</p>
<b>B Draw and use visual models</b>	
<p>draw or use <u>visual models</u> to represent and solve problems (DOK 3; ST MA 2 3.3)</p>	<p><b>Student Edition:</b>  <i>Extend</i> 508  <i>Explore</i> 485, 493  <i>Mixed Problem Solving</i> 443, 501, 547</p> <p><b>Teacher Edition:</b>            TNT 546</p>

STANDARDS	PAGE REFERENCES
<b>Measurement</b>	
<b>1. Understand measurable attributes of objects and the units, systems and processes of measurement</b>	
<b>A Determine unit of measurement</b>	
identify and justify the unit of measure for area and volume (customary and metric) (DOK 3; ST MA 2 3.1)	<b>Student Edition:</b> 63, 548 <i>Example</i> 64, 549 <i>Explore</i> 520-521, 539 <i>H.O.T. Problems</i> 552 #33 <i>Real-World Example</i> 64 <b>Teacher Edition:</b> DI 64; FMC 64; TNT 535, 550, 552
<b>B. Identify equivalent measures</b>	
<b>C Tell and use units of time</b>	
*solve problems involving elapsed time (hours and minutes) (DOK 2; ST MA 5 3.1)	<b>Student Edition:</b> <i>Check Your Understanding</i> 452 <i>Example</i> 450 <i>Extra Practice</i> 694 <i>Practice and Problem Solving</i> 453-454 <i>Real-World Example</i> 451, 452 <i>Study Guide and Review</i> 464 #45-#52 <b>Teacher Edition:</b> AE 451; DI 451
<b>D. Count and compute money</b>	
<b>2. Apply appropriate techniques, tools and formulas to determine measurements</b>	
<b>A. Use standard or nonstandard measurement</b>	
<b>B Use angle measurement</b>	
*identify and justify an angle as acute, obtuse, straight, or right	<b>Student Edition:</b> <i>Check Your Understanding</i> 472 <i>Example</i> 471 <i>Extra Practice</i> 695 <i>Key Concept</i> 471 <i>Practice and Problem Solving</i> 472-473 <i>Study Guide and Review</i> 510 #6-#8 <b>Teacher Edition:</b> AE 471; DI 473; RWC 470a

STANDARDS	PAGE REFERENCES
<b>C Apply geometric measurements</b>	
<p>solve problems involving the area or perimeter of polygons (DOK 2; ST MA 2 1.10)</p>	<p><b>Student Edition:</b>  <i>Check Your Understanding</i> 65, 524, 536, 542  <i>Example</i> 63, 523, 535, 540  <i>Extra Practice</i> 674, 698, 699  <i>Key Concept</i> 63  <i>Practice and Problem Solving</i> 65-66, 524-525, 537-538, 542-543  <i>Real-World Example</i> 64, 523, 536, 541  <i>Study Guide and Review</i> 72 #47, #48, 562 #8-#10, 563</p> <p><b>Teacher Edition:</b>            AE 64, 523, 535; DI 536</p>
<b>D. Analyze precision</b>	
<b>E Use relationships within a measurement system</b>	
<p>convert from one unit to another within a system of measurement (mass and weight) (DOK 1; ST MA 2 1.6)</p>	<p><b>Student Edition:</b>            445  <i>Check Your Understanding</i> 421 #5-#8, 426, 447  <i>Example</i> 419, 420, 425, 426, 446  <i>Practice and Problem Solving</i> 421 #20-#29, 427 #11-#26, 447  <i>Real-World Example</i> 446  <i>Study Guide and Review</i> 462 #8-#11, #16-#22, 463 #36-#44  <i>Study Tip</i> 420</p> <p><b>Teacher Edition:</b>            AE 419, 420, 425, 426, 446; VR 418a</p>
<b>Data and Probability</b>	
<b>1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them</b>	
<b>A Formulate questions</b>	
<p>formulate questions, design studies and collect data about a characteristic (DOK 3; ST MA 3 1.2)</p>	<p><b>Student Edition:</b>            Extend 87 #2, 119-120            H.O.T. Problems 84 #11, 91 #20, 95 #17, 99 #19</p> <p><b>Teacher Edition:</b>            GD 78a; PRE 83; US 88a</p>

STANDARDS	PAGE REFERENCES
<b>B. Classify and organize data</b>	
<b>C Represent and interpret data</b>	
<p>interpret circle graphs; create and interpret <u>stem-and-leaf plots</u> (DOK 2; ST MA 3 1.8)</p>	<p><b>Student Edition:</b>  <i>Check Your Understanding</i> 93, 373 #2-#4  <i>Example</i> 92, 372  <i>Extra Practice</i> 676, 690  <i>Practice and Problem Solving</i> 94, 373 #7-#9, 374  <i>Real-World Example</i> 93  <i>Study Guide and Review</i> 128 #17-#19, 407 #15-#17</p> <p><b>Teacher Edition:</b>            AE 93</p>
<b>2. Select and use appropriate statistical methods to analyze data</b>	
<b>A Describe and analyze data</b>	
<p>find the <u>range and measures of center</u>, including <u>median, mode and mean</u> (DOK 2; ST MA 3 1.10)</p>	<p><b>Student Edition:</b>  <i>Check Your Understanding</i> 104, 111  <i>Example</i> 108, 109  <i>Extra Practice</i> 676, 677  <i>Key Concept</i> 102, 108  <i>Mini Lab</i> 102  <i>Practice and Problem Solving</i> 104-105, 111-112  <i>Real-World Example</i> 109  <i>Study Guide and Review</i> 129 #23-#28  <i>Study Tip</i> 109</p> <p><b>Teacher Edition:</b>            AE 103, 109; KL 108a; PS 102a</p>
<b>B. Compare data representations</b>	
<b>C. Represent data algebraically</b>	
<b>3. Develop and evaluate inferences and predictions that are based on data</b>	
<b>A Develop and evaluate inferences</b>	
<p>use observations about differences between 2 samples to make <u>conjectures</u> about the populations from which the samples were taken (DOK 3; ST MA 3 3.5)</p>	<p><b>Student Edition:</b>  <i>Check Your Understanding</i> 89 #2-#4, 396  <i>Example</i> 89  <i>Get Ready for the Lesson</i> 88  <i>Mini Lab</i> 394  <i>Practice and Problem Solving</i> 90 #7, #10-#13, 396</p> <p><b>Teacher Edition:</b>            AIO 381a; RET 394a; TNT 90; US 88a</p>

STANDARDS	PAGE REFERENCES
<b>B. Analyze basic statistical techniques</b>	
<b>4. Understand and apply basic concepts of probability</b>	
<b>A Apply basic concepts of probability</b>	
<p>use a model (diagrams, list, sample space, or area model) to illustrate the possible outcomes of an event (DOK 2; ST MA 3 1.10, 3.2)</p>	<p><b>Student Edition:</b>  381, 382, 389  <i>Check Your Understanding</i> 384, 391  <i>Example</i> 382, 389, 390  <i>Practice and Problem Solving</i> 384-385, 391-392  <i>Real-World Example</i> 390</p> <p><b>Teacher Edition:</b>  T 381</p>
<b>B. use and describe compound events</b>	