



Mathematics

Applications and Concepts

Course 2

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STANDARDS	PAGE REFERENCES
GRADE 7	
Number and Operations	
1. Understand numbers, ways of representing numbers, relationships among numbers and number systems	
A. Read, write and compare numbers	
compare and order integers, positive rationals and percents, including finding their approximate location on a number line ST MA 5 3.3 FR IX.b	Student Edition: 106-108, 109-111, 227-231 <i>Study Guide and Review</i> 234 #64-#69 Teacher Wraparound Edition: A 111, 223; DI 228; I-CE 110 Teacher Resources: <i>Study Guide and Intervention</i> 134 <i>Practice: Skills</i> 135 <i>Practice: Word Problems</i> 136 <i>Reading to Learn Mathematics</i> 137
B. Represent and use rational numbers	
use fractions, decimals and percents to solve problems ST MA 1 3.4 FR V.d	Student Edition: 210-213, 216-219, 220-223, 312-315 Teacher Wraparound Edition: A 223, 315; DI 228; I-CE 221 Teacher Resources: <i>Practice: Word Problems</i> 265, 270, 397 <i>Chapter 5 Resource Masters: 267, 272</i>

STANDARDS	PAGE REFERENCES
C. Compose and decompose numbers	
<p>recognize equivalent representations for the same number and generate them by <u>decomposing and composing numbers</u>, including exponential notation</p> <p>ST MA 1 3.6 FR V.b</p>	<p>Student Edition: 10-13, 43-45, 210-213, 216-219, 220-223, 312-315</p> <p>Teacher Wraparound Edition: A 223, 315; DI 228</p> <p>Teacher Resources: <i>Study Guide and Intervention</i> 258, 263 <i>Practice: Skills</i> 259, 264</p>
D. Classify and describe numeric relationships	
<p>use whole number <u>factors</u> and <u>multiples</u> to describe relationships between and among numbers</p> <p>ST MA 5 1.10 FR IX.c</p>	<p>Student Edition: 197-200, 203-206, 224-226 <i>Hands-on Lab</i> 196</p> <p>Teacher Wraparound Edition: A 206; DI 204, 225; TNT 198</p> <p>Teacher Resources: <i>Practice: Word Problems</i> 245 <i>Reading to Learn Mathematics</i> 246, 251, 276</p>
2. Understand meanings of operations and how they relate to one another	
A. Represent operations	
B. Describe effects of operations	
<p>describe the effects of multiplication and division on fractions and addition and subtraction on integers</p> <p>ST MA 1 3.4, 4.1 FR V.a</p>	<p>Student Edition: 120-124, 128-131, 254-257, 264-266 <i>Hands-on Lab</i> 118-119, 126-127 <i>The Game Zone</i> 263</p> <p>Teacher Wraparound Edition: B 264; DI 255</p> <p>Teacher Resources: <i>Study Guide and Intervention</i> 144, 149 <i>Reading to Learn Mathematics</i> 147, 152</p>

STANDARDS	PAGE REFERENCES
C. Apply properties of operations	
apply properties of operations (including order of operations) to positive rational numbers ST MA 5 1.6, 1.10 FR IX.e	Student Edition: 14-17, 30-33 Teacher Wraparound Edition: A 17, 22; B 14; DI 31 Teacher Resources: <i>Study Guide and Intervention 11</i> <i>Practice: Skills 12</i> <i>Practice: Word Problems 13, 28</i>
D. Apply operations on real and complex numbers	
approximate the value of square roots to the nearest whole number ST MA 5 3.3 FR IX.f	Student Edition: 475-477, 482 #26-#29, 485 #28 <i>Mid-Chapter Practice Test 486 #9-#10</i> Teacher Wraparound Edition: A 476; DI 476 Teacher Resources: <i>Study Guide and Intervention 614</i> <i>Practice: Skills 615</i> <i>Practice: Word Problems 616</i> <i>Reading to Learn Mathematics 617</i>
3. Compute fluently and make reasonable estimates	
A. Describe or represent mental strategies	
B. Develop and demonstrate fluency	
C. Compute problems	
multiply and divide positive rational numbers ST MA 1 1.10, 3.3 FR V.a	Student Edition: 10-13, 254-257, 264-266 <i>The Game Zone 263</i> <i>Prerequisite Skills 560-562</i> Teacher Wraparound Edition: A 266; B 264; DI 255 Teacher Resources: <i>Study Guide and Intervention 318, 328</i> <i>Practice: Skills 319, 329</i>

STANDARDS	PAGE REFERENCES
D. Estimate and justify solutions	
estimate and justify the results of multiplication and division of positive rational numbers ST MA 1 3.3, 4.1 FR V.e & h	Student Edition: 415 #30-#33, 517 #30-#33 <i>Getting Started</i> 411 #3-#8 <i>Prerequisite Skills</i> 558
E. Use proportional reasoning	
solve problems involving proportions, such as scaling and finding equivalent ratios ST MA 1 3.3 FR V.c & f	Student Edition: 297-300, 304-308, 323-325 <i>The Game Zone</i> 311 Teacher Wraparound Edition: A 300, 308 Teacher Resources: <i>Practice: Skills</i> 391 <i>Practice: Word Problems</i> 387, 392
Algebraic Relationships	
1. Understand patterns, relations and functions	
A. Recognize and extend patterns	
B. Create and analyze patterns	
analyze patterns represented <u>graphically</u> or <u>numerically</u> using words or <u>symbolic rules</u> , including <u>recursive notation</u> ST MA 4 1.6, 3.6 FR VIII.4.b	Student Edition: 18-21, 34-36, 150-152, 226 #21 <i>Hands-on Lab</i> 37, 176 <i>Problem-Solving Strategy</i> 22-23 #7 Teacher Wraparound Edition: A 36; B 34; DI 35 Teacher Resources: <i>Study Guide and Intervention</i> 31 <i>Practice: Skills</i> 32 <i>Practice: Word Problems</i> 33

STANDARDS	PAGE REFERENCES
C. Classify objects and representations	
<p>compare and contrast various forms of <u>representations</u> of patterns</p> <p>ST MA 4 1.6 FR VIII.3.b</p>	<p>Student Edition: 18-21, 33 #52-#57, 34-36 <i>Hands-on Lab 37</i> <i>Problem-Solving Strategy 132-133</i></p> <p>Teacher Wraparound Edition: A 21, 33; B 34; DI 35</p> <p>Teacher Resources: <i>Study Guide and Intervention 31</i> <i>Practice: Skills 32</i> <i>Practice: Word Problems 33</i></p>
D. Identify and compare functions	
<p>identify <u>functions</u> as <u>linear</u> or <u>nonlinear</u> from tables, graphs or equations</p> <p>ST MA 4 1.6, 3.6 FR VIII.b & c</p>	<p>Student Edition: 177-181</p> <p>Teacher Wraparound Edition: A 181</p> <p>Teacher Resources: <i>Study Guide and Intervention 210</i> <i>Practice: Skills 211</i> <i>Practice: Word Problems 212</i></p>
E. Describe the effects of parameter changes	
2. Represent and analyze mathematical situations and structures using algebraic symbols	
A. Represent mathematical situations	
<p>use variables to represent unknown quantities in equations and inequalities</p> <p>ST MA 4 1.6, 3.1 FR VIII.2.e</p>	<p>Student Edition: 18-21, 150-152 <i>Study Skills 153</i></p> <p>Teacher Wraparound Edition: A 153; B 18, 22; DI 19; I-CE 151</p> <p>Teacher Resources: <i>Practice: Skills 186</i> <i>Practice: Word Problems 187</i></p>

STANDARDS	PAGE REFERENCES
B. Describe and use mathematical manipulation	
generate equivalent forms for simple algebraic expressions ST MA 4 3.6 FR VIII.a	Student Edition: 18-21, 150-152 Teacher Resources: <i>Study Guide and Intervention</i> 185 <i>Practice: Skills</i> 186 <i>Practice: Word Problems</i> 187
C. Utilize equivalent forms	
D. Utilize systems	
3. Use mathematical models to represent and understand quantitative relationships	
A. Use mathematical models	
model and solve problems, using multiple representations such as graphs, tables, expressions, equations or inequalities ST MA 4 1.6, 3.6 FR VIII.b	Student Edition: 18-21, 24-27, 172-175 <i>Problem-Solving Strategy</i> 58-59 <i>Hands-on Lab</i> 154-155 Teacher Wraparound Edition: A 21, 33; DI 25; I-CE 173 Teacher Resources: <i>Practice: Word Problems</i> 18, 23, 207
4. Analyze change in various contexts	
A. Analyze change	
compare situations with constant or varying rates of change ST MA 2, 4 1.6, 4.1 FR VI.I, VIII.c	Student Edition: 159 #37-#39, 163 #38-#41, 358-360 Teacher Resources: <i>Practice Test</i> 189 #16-#19 <i>Hands-on Lab</i> 296 <i>Spreadsheet Investigation</i> 361

STANDARDS	PAGE REFERENCES
Geometric and Spatial Relationships	
1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
A. Describe and use geometric relationships	
classify 2- and 3-dimensional shapes based on their <u>properties</u> ST MA 2 3.6 FR VI.2.a	Student Edition: 434-437, 446-450, 514-517 <i>Hands-on Lab</i> 512-513 Teacher Wraparound Edition: A 513, 517; DI 515; I-CE 515; TT 514 Teacher Resources: <i>Study Guide and Intervention</i> 669
B. Apply geometric relationships	
describe relationships between <u>corresponding sides</u> , <u>corresponding angles</u> and corresponding perimeters of <u>similar polygons</u> ST MA 2 1.6 FR VI.c	Student Edition: 440-443 Teacher Wraparound Edition: A 443; B 440; DI 441; TNT 440 Teacher Resources: <i>Study Guide and Intervention</i> 568 <i>Practice: Skills</i> 569
C. Compose and decompose shapes	
2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
A. Use coordinate systems	
given ordered pairs, identify geometric shapes in the <u>coordinate plane</u> using their properties ST MA 2 1.6, 1.8 FR VI.c	Student Edition: 112-115, 450 #42-#45, 451-454 <i>The Game Zone</i> 117 Teacher Wraparound Edition: DI 113; I-CE 113 Teacher Resources: <i>Study Guide and Intervention</i> 573 <i>Practice: Skills</i> 574

STANDARDS	PAGE REFERENCES
3. Apply transformations and use symmetry to analyze mathematical situations	
A. Use transformations on objects	
reposition shapes under <u>informal</u> transformations, such as reflection (flip), rotation (turn) and translation (slide) ST MA 2 3.6 FR VI.b	Student Edition: 446-450, 451-454, 456-459 <i>Spreadsheet Investigation</i> 455 <i>Hands-on Lab</i> 460-461 Teacher Wraparound Edition: A 454, 461; DI 451, 456 Teacher Resources: <i>Practice: Word Problems</i> 585
B. Use transformations on functions	
describe the relationship between the scale factor and the perimeter of the image using a <u>dilation (contractions-magnifications)</u> (stretching/shrinking) ST MA 2 3.6 FR VI.b & g	Student Edition: 304-308 <i>Spreadsheet Investigation</i> 309, 455 Teacher Wraparound Edition: DI 304; TNT 305 Teacher Resources: <i>Study Guide and Intervention</i> 390 <i>Practice: Skills</i> 391 <i>Practice: Word Problems</i> 392
C. Use symmetry	
determine all lines of symmetry of polygons ST MA 2 1.6 FR VI.b	Student Edition: 456-459 Teacher Wraparound Edition: A 459; B 456; I-CE 457 Teacher Resources: <i>Study Guide and Intervention</i> 583 <i>Practice: Skills</i> 584 <i>Practice: Word Problems</i> 585

STANDARDS	PAGE REFERENCES
<p>4. Use visualization, spatial reasoning and geometric modeling to solve problems</p>	
<p>A. Recognize and draw three-dimensional representations</p>	
<p>use spatial visualizations to identify various 2-dimensional views of <u>isometric drawings</u> ST MA 2 3.3 FR VI.a</p>	<p>Student Edition: 514-517 <i>Mid-Chapter Practice Test 528 #3-#6</i> Teacher Wraparound Edition: A 517; B 514; DI 515; I-CE 515 Teacher Resources: <i>Study Guide and Intervention 669</i> <i>Practice: Skills 670</i> <i>Practice: Word Problems 671</i></p>
<p>B. Draw and use visual models</p>	
<p>draw or use <u>visual models</u> to represent and solve problems ST MA 2 3.1 FR VI.d</p>	<p>Student Edition: 413-415, 434-437, 446-450 <i>Hands-on Lab 416-417, 426-427, 432-433</i> <i>Problem-Solving Strategy 518-519</i> Teacher Wraparound Edition: A 415; B 434; DI 447</p>
<p>Measurement</p>	
<p>1. Understand measurable attributes of objects and the units, systems and processes of measurement</p>	
<p>A. Determine unit of measurement</p>	
<p>identify and justify the unit of measure for volume (customary and metric) ST MA 2 3.1, 4.1 FR VI.f & g</p>	<p>Student Edition: 520-522, 524-527 <i>Spreadsheet Investigation 523</i> Teacher Wraparound Edition: A 522; B 520; TNT 521 Teacher Resources: <i>Study Guide and Intervention 674</i></p>
<p>B. Identify equivalent measures</p>	
<p>identify the equivalent area measures within a system of measurement (e.g., sq ft. to sq in.) ST MA 2 1.6 FR VI.i</p>	<p>The concept of equivalent measures is found: Student Edition: 38-41, 267-269 Teacher Wraparound Edition: B 267 Teacher Resources: <i>Practice: Word Problems 38, 335</i></p>

STANDARDS	PAGE REFERENCES
C. Tell and use units of time	
solve problems involving addition and subtraction of time (hours, minutes and seconds) ST MA 5 3.1 FR IX.d	See Glencoe's <i>Mathematics: Applications and Concepts Course 1</i> © 2006 pages 494-497.
D. Count and compute money	
2. Apply appropriate techniques, tools and formulas to determine measurements	
A. Use standard or non-standard measurement	
B. Use angle measurement	
use tools to measure angles to the nearest degree ST MA 2 1.4, 3.2 FR VI.f	Student Edition: 413-415 <i>Hands-on Lab</i> 412 Teacher Wraparound Edition: B 422; DI 413, 423; TNT 419 Teacher Resources: <i>Practice: Skills 544</i>
C. Apply geometric measurements	
describe how to solve problems involving circumference and/or area of a circle ST MA 2 3.4, 4.1 FR VI.i & g	Student Edition: 275-277, 493-495 <i>Hands-on Lab</i> 274 Teacher Wraparound Edition: A 276, 495; B 493; I-CE 494 Teacher Resources: <i>Study Guide and Intervention</i> 343 <i>Practice: Skills 344</i> <i>Practice: Word Problems</i> 345
D. Analyze precision	
analyze <u>precision</u> and accuracy in measurement situations ST MA 2 1.7, 3.8 FR VI.f	Student Edition: 542-545 Teacher Wraparound Edition: A 545; B 542; DI 543; I-CE 543 Teacher Resources: <i>Study Guide and Intervention</i> 694 <i>Practice: Skills 695</i> <i>Practice: Word Problems</i> 696

STANDARDS	PAGE REFERENCES
E. Use relationships within a measurement system	
convert from one unit to another within a system of measurement (capacity) ST MA 2 1.6, 1.10 FR VI.e & f	Student Edition: 38-41, 267-269 Teacher Wraparound Edition: A 269; DI 39 Teacher Resources: <i>Study Guide and Intervention</i> 36, 333 <i>Practice: Skills</i> 37, 334 <i>Practice: Word Problems</i> 38, 335
Data and Probability	
1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them	
A. Formulate questions	
formulate questions, design studies and collect data about a characteristic ST MA 3 1.2 FR VII.a	Student Edition: 54-57, 64-68 <i>Hands-on Lab</i> 73 <i>Spreadsheet Investigation</i> 90-91 Teacher Wraparound Edition: A 57, 79; B 54, 64; DI 55, 394
B. Classify and organize data	
C. Represent and interpret data	
select, create and use appropriate graphical representation of data, including circle graphs, <u>histograms and box plots (box and whiskers)</u> ST MA 3 1.8, 3.6 FR VII.b	Student Edition: 64-68, 76-79, 80-83, 85-89, 92-95 <i>Hands-on Lab</i> 73 <i>Graphing Calculator Investigation</i> 84 <i>Spreadsheet Investigation</i> 90-91 Teacher Wraparound Edition: A 79, 82 Teacher Resources: <i>Study Guide and Intervention</i> 92 <i>Practice: Skills</i> 93 <i>Practice: Word Problems</i> 94

STANDARDS	PAGE REFERENCES
2. Select and use appropriate statistical methods to analyze data	
A. Describe and analyze data	
<p>find, use and interpret <u>measures of center</u> and spread, including ranges and <u>interquartile range</u></p> <p>ST MA 3 3.4</p>	<p>Student Edition: 69-72, 80-83 <i>Hands-on Lab 73</i> <i>The Game Zone 75</i></p> <p>Teacher Wraparound Edition: A 72; DI 69; I-CE 70</p> <p>Teacher Resources: <i>Study Guide and Intervention 82</i> <i>Practice: Skills 83</i> <i>Practice: Word Problems 84</i></p>
B. Compare data representations	
<p>compare different representations of the same data and evaluate how well each representation shows important aspects of the data</p> <p>ST MA 3 3.6 FR VII.d</p>	<p>Student Edition: 92-95</p> <p>Teacher Wraparound Edition: A 95; B 92; DI 92; I-CE 93</p> <p>Teacher Resources: <i>Study Guide and Intervention 102</i> <i>Practice: Skills 103</i> <i>Practice: Word Problems 104</i></p>
C. Represent data algebraically	
3. Develop and evaluate inferences and predictions that are based on data	
A. Develop and evaluate inferences	
<p>use observations about differences between samples to make <u>conjectures</u> about the populations from which the samples were taken</p> <p>ST MA 3 3.5 FR VII.e</p>	<p>Student Edition: 60-63, 345-347 <i>Hands-on Lab 344</i></p> <p>Teacher Wraparound Edition: A 347; B 60; DI 394</p> <p>Teacher Resources: <i>Reading to Learn Mathematics 75</i></p>
B. Analyze basic statistical techniques	

STANDARDS	PAGE REFERENCES
4. Understand and apply basic concepts of probability	
A. Apply basic concepts of probability	
use models to compute the probability of an event ST MA 3, 6 3.3 FR VII.h & g, X.c	Student Edition: 370-373, 393-395, 398-401 <i>Hands-on Lab</i> 397 <i>The Game Zone</i> 385 Teacher Wraparound Edition: A 373, 401; DI 399 Teacher Resources: <i>Study Guide and Intervention</i> 485, 515 <i>Practice: Skills</i> 486, 516 <i>Practice: Word Problems</i> 487, 517
B. Use and describe compound events	