



Mathematics

Applications and Concepts

Course 1

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STANDARDS	PAGE REFERENCES
GRADE 6	
Number and Operations	
1. Understand numbers, ways of representing numbers, relationships among numbers and number systems	
A. Read, write and compare numbers	
<p>compare and order integers, positive rationals and percents, including finding their approximate location on a number line</p> <p>ST MA 5 3.3 FR IX.b</p>	<p>Student Edition: 108-110, 113 #30-#32, 198-201, 295 ex 4, 406 #35</p> <p>Teacher Wraparound Edition: A 110, 201; B 108; DI 108, 199</p> <p>Teacher Resources: <i>Practice: Skills</i> 129, 242 <i>Practice: Word Problems</i> 130, 243 <i>Study Guide and Intervention</i> 128, 241</p>

STANDARDS	PAGE REFERENCES
B. Represent and use rational numbers	
<p>recognize and generate equivalent forms of fractions, decimals and percents</p> <p>ST MA 1 3.3</p> <p>FR V.b</p>	<p>Student Edition: 202-205, 206-209, 212 #42-#57, 213 #13-#18, 400-403</p> <p>Teacher Wraparound Edition: A 205, 403; DI 207, 401</p> <p>Teacher Resources: <i>Practice: Skills 247, 252, 512</i> <i>Practice: Word Problems 248, 253, 513</i> <i>Study Guide and Intervention 246, 251, 511</i></p>
C. Compose and decompose numbers	
<p>recognize equivalent representations for the same number and generate them by <u>decomposing and composing numbers</u>, including expanded notation</p> <p>ST MA 1 3.6</p> <p>FR V.b</p>	<p>Student Edition: 103 ex 2, 104 #29-#36, 105 #44, 114 #4, 127 #6-#8, 129 #7-#9, 587 ex 4, 599 #11-#20</p> <p>Teacher Wraparound Edition: A 105</p> <p>Teacher Resources: <i>Practice: Skills 124</i> <i>Practice: Word Problems 125</i></p>
D. Classify and describe numeric relationships	
<p>use <u>factors</u> and <u>multiples</u> to describe relationships between and among numbers, including whole number <u>common factors and multiples</u></p> <p>ST MA 5 1.10</p> <p>FR IX.c</p>	<p>Student Edition: 14-17, 22 #10-#11, 27 #42-#44, 43 #24-#27, 45 #10-#12, 194-197 <i>The Game Zone 23</i></p> <p>Teacher Wraparound Edition: A 17, 197; B 14; DI 195; NS 196</p> <p>Teacher Resources: <i>Practice: Skills 12, 237</i> <i>Practice: Word Problems 13, 238</i> <i>Reading to learn Mathematics 14</i> <i>Study Guide and Intervention 11, 236</i></p>

STANDARDS	PAGE REFERENCES
2. Understand meanings of operations and how they relate to one another	
A. Represent operations	
B. Describe effects of operations	
describe the effects of addition and subtraction on fractions and decimals ST MA 1, 5 3.4, 4.1 FR V.a, IX.a	Student Edition: 238 #37-#38, 242 #2 <i>Hands-on Mini Lab 228</i> Teacher Wraparound Edition: B 121, 244
C. Apply properties of operations	
D. Apply operations on real and complex numbers	
3. Compute fluently and make reasonable estimates	
A. Describe or represent mental strategies	
B. Develop and demonstrate fluency	
C. Compute problems	
add and subtract positive rational numbers ST MA 1 1.10, 3.3 FR V.a	Student Edition: 228-231, 232 #6-#8, 235-238, 240-243, 244-247 Teacher Wraparound Edition: A 231, 238, 243; DI 229 Teacher Resources: <i>Practice: Skills 288, 293</i> <i>Practice: Word Problems 289, 294</i> <i>Reading to learn Mathematics 290</i> <i>Study Guide and Intervention 287, 292</i>
D. Estimate and justify solutions	
estimate and justify the results of addition and subtraction of positive rational numbers ST MA 1 3.3, 4.1 FR V.e & h	Student Edition: 116-119, 124 #44-#47, 128 #17-#27, 129 #20-#21, 138 #52-#54, 223-225, 231 #36 Teacher Wraparound Edition: A 119, 225; B 223; NS 224 Teacher Resources: <i>Practice: Skills 139, 283</i> <i>Practice: Word Problems 140, 284</i> <i>Study Guide and Intervention 138, 282</i>

STANDARDS	PAGE REFERENCES
E. Use proportional reasoning	
solve problems using equivalent ratios ST MA 1 3.3 FR V.c	Student Edition: 380-383, 384-385, 386-389, 393 #19-#20, 398 #3-#6 <i>The Game Zone</i> 399 <i>Spreadsheet Investigation</i> 390 Teacher Wraparound Edition: A 382; B 386; DI 381, 387 Teacher Resources: <i>Practice: Skills</i> 492, 497 <i>Practice: Word Problems</i> 493, 498 <i>Study Guide and Intervention</i> 491, 496
Algebraic Relationships	
1. Understand patterns, relations and functions	
A. Recognize and extend patterns	
B. Create and analyze patterns	
represent and describe patterns with tables, graphs, pictures, <u>symbolic rules</u> or words ST MA 4 1.6, 3.6 FR VIII.4.b, VIII.3	Student Edition: 362-365, 366-369, 372 #49-#54, 373 #20-#24 Teacher Wraparound Edition: A 365, 369; B 366; DI 363, 366 Teacher Resources: <i>Practice: Skills</i> 459, 464 <i>Practice: Word Problems</i> 460, 465 <i>Reading to learn Mathematics</i> 466 <i>Study Guide and Intervention</i> 458, 463
C. Classify objects and representations	
compare various forms of <u>representations</u> to identify a pattern ST MA 4 1.6 FR VIII.3.b	Student Edition: 27 #47, 39, 126 #9 <i>Hands-On Lab</i> 475 #2 <i>Problem-Solving Strategy</i> 33 #9, 280-281 Teacher Wraparound Edition: B 194; DI 40, 241; ICE 280

STANDARDS	PAGE REFERENCES
D. Identify and compare functions	
identify <u>functions</u> as <u>linear</u> or <u>nonlinear</u> from a table or graph ST MA 4 1.6, 3.6 FR VIII.b & c	Student Edition: 323 #38-#39, 369 #23-#24 Also see <i>Mathematics: Applications and Concepts Course 3</i> © 2006 pages 560-563.
E. Describe the effects of parameter changes	
2. Represent and analyze mathematical situations and structures using algebraic symbols	
A. Represent mathematical situations	
use variables to represent unknown quantities in expressions ST MA 4 1.6, 3.1 FR VIII.2e	Student Edition: 28-31 <i>Standardized Test Practice</i> 46 #10, 47 #21 <i>Study Guide and Review</i> 44 #38-#47 Teacher Wraparound Edition: A 31; B 28; DI 29 Teacher Resources: <i>Practice: Skills</i> 27 <i>Practice: Word Problems</i> 28 <i>Reading to Learn Mathematics</i> 29 <i>Study Guide and Intervention</i> 26
B. Describe and use mathematical manipulation	
recognize equivalent forms for simple algebraic expressions (associative, distributive properties) ST MA 5 3.6 FR IX.1	Student Edition: 333-336, 342 #42-#43, 347 #42, 348 #7-#10, 370 #11-#14, 373 #4-#5, 374 #6 <i>Hands-On Lab</i> 332 Teacher Wraparound Edition: A 336; B 333; DI 334 Teacher Resources: <i>Practice: Skills</i> 434 <i>Practice: Word Problems</i> 435 <i>Reading to Learn Mathematics</i> 436 <i>Study Guide and Intervention</i> 433
C. Utilize equivalent forms	
D. Utilize systems	

STANDARDS	PAGE REFERENCES
3. Use mathematical models to represent and understand quantitative relationships	
A. Use mathematical models	
<p>model and solve problems, using multiple representations such as graphs, tables, expressions and equations</p> <p>ST MA 4 1.6, 3.6 FR VIII.b</p>	<p>Student Edition: 362-365, 366-369, 372 #49-#54, 373 #20-#24</p> <p>Teacher Wraparound Edition: A 365, 369; B 366; DI 363, 366</p> <p>Teacher Resources: <i>Practice: Skills</i> 459, 464 <i>Practice: Word Problems</i> 460, 465 <i>Reading to Learn Mathematics</i> 466 <i>Study Guide and Intervention</i> 458, 463</p>
4. Analyze change in various contexts	
A. Analyze change	
<p>compare situations with constant or varying rates of change</p> <p>ST MA 2, 4 1.6, 4.1 FR VI.I, VIII.c</p>	<p>This standard can be met in <i>Mathematics: Applications and Concepts Course 3</i> © 2006 pages 160-165.</p>
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	
<p>identify the <u>properties of 1- 2- and 3-dimensional shapes</u> using the appropriate geometric vocabulary</p> <p>ST MA 2 1.10, 3.3 FR VI.2.a</p>	<p>Student Edition: 522-525, 539 #22-#23, 541 #10-#12, 543 #19, 564-566</p> <p><i>Hands-On Lab</i> 526-527</p> <p>Teacher Wraparound Edition: A 525; B 522, 564; DI 523</p> <p>Teacher Resources: <i>Practice: Skills</i> 665, 715 <i>Practice: Word Problems</i> 666, 716 <i>Reading to Learn Mathematics</i> 667, 717 <i>Study Guide and Intervention</i> 664, 714</p>
B. Apply geometric relationships	
<p>describe relationships between the <u>corresponding angles</u> and the length of <u>corresponding sides</u> of <u>similar triangles</u> (whole number scale factors)</p> <p>ST MA 2 1.6 FR VI.c</p>	<p>Student Edition: 534-536, 540 #32-#34, 541 #2, #14-#15</p> <p>Teacher Wraparound Edition: ICE 535</p>

STANDARDS	PAGE REFERENCES
C. Compose and decompose shapes	
2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
A. Use coordinate systems	
use coordinate geometry to construct geometric shapes ST MA 2 1.6, 1.8 FR VI.a	Student Edition: 329 #17-#19, 542 #4 <i>Hands-On Lab</i> 532-533 Teacher Wraparound Edition: DI 321
3. Apply transformations and use symmetry to analyze mathematical situations	
A. Use transformations on objects	
describe the transformation from a given <u>pre-image</u> to its image using the terms <u>reflection/flips</u> , <u>rotation/turn</u> and <u>translation/slide</u> ST MA 2 3.7 FR VI.b	Student Edition: 536 #16 <i>Hands-On Lab</i> 532 Teacher Wraparound Edition: A 533
B. Use transformations on functions	
C. Use symmetry	
create polygons and designs with <u>rotational symmetry</u> ST MA 2 1.6 FR VI.b	Student Edition: 529 ex 5-ex 6, 530 #7-#9, 531 #18-#24, 540 #28-#31 Teacher Wraparound Edition: TNT 528 Teacher Resources: <i>Practice: Skills</i> 670 <i>Practice: Word Problems</i> 671 <i>Study Guide and Intervention</i> 669
4. Use visualization, spatial reasoning and geometric modeling to solve problems	
A. Recognize and draw three-dimensional representations	
use spatial visualization to identify <u>isometric representations</u> of <u>mat plans</u> ST MA 2 3.3 FR VI.a	Student Edition: <i>Hands-On Lab</i> 567, 574, 575 <i>Hands-On Mini Lab</i> 570 Teacher Wraparound Edition: T 567; TNT 528

STANDARDS	PAGE REFERENCES
B. Draw and use visual models	
draw or use <u>visual models</u> to represent and solve problems ST MA 2 3.1 FR VI.d	Student Edition: 512 #22, 535 ex 3-ex 4, 547 ex 3, 549 #18, 554 #18-#20, 558 #16, 562 #13, 573 #21 <i>Problem-Solving Strategy</i> 520-521, 568-569 Teacher Wraparound Edition: A 521 Teacher Resources: <i>Practice: Word Problems</i> 701, 706, 711, 721
Measurement	
1. Understand measurable attributes of objects and the units, systems and processes of measurement	
A. Determine unit of measurement	
identify and justify an angle as acute, obtuse, straight or right ST MA 2 3.1, 4.1 FR VI.g	Student Edition: 507 ex 1-ex 2, 508 #7-#12, 518 #1, 525 #34-#36, 538 #8-#9, 541 #3-#5 <i>The Game Zone</i> 519 Teacher Wraparound Edition: B 506; DI 507 Teacher Resources: <i>Practice: Skills</i> 650 <i>Practice: Word Problems</i> 651 <i>Study Guide and Intervention</i> 649
B. Identify equivalent measures	
C. Tell and use units of time	
solve problems involving elapsed time (hours and minutes) ST MA 5 3.1 FR IX.d	Student Edition: 494-497, 500 #53-#60, 501 #22-#24, 502 #11, 503 #21, 509 #27, 512 #27-#28, 635 #15-#17 Teacher Wraparound Edition: A 497; DI 495; TNT 495 Teacher Resources: <i>Practice: Skills</i> 625 <i>Practice: Word Problems</i> 626 <i>Reading to Learn Mathematics</i> 627 <i>Study Guide and Intervention</i> 624
D. Count and compute money	

STANDARDS	PAGE REFERENCES
<p>2. Apply appropriate techniques, tools and formulas to determine measurements</p>	
<p>A. Use standard or non-standard measurement</p>	
<p>estimate a measurement using either <u>standard</u> or <u>non-standard</u> unit of measurement ST MA 2 1.6, 3.3 FR VI.e & f</p>	<p>Student Edition: 472 #3, #32, 479 #32, 484-485 ex 1-ex 4, 487 #27, #30, 558 #2 <i>The Game Zone</i> 483 <i>Hands-On Mini Lab</i> 484 #2 Teacher Wraparound Edition: DI 485; ICE 485</p>
<p>B. Use angle measurement</p>	
<p>select and use <u>benchmarks</u> to estimate measurements of 0-, 45-, 90-, 180-, 360-degree angles ST MA 2 3.4 FR VI.f & g</p>	<p>Student Edition: 510 Example 1, 511 #4-#5, 512 #8-#11, #20-#21, #23, 539 #15-#16 <i>Hands-On Mini Lab</i> 510 Teacher Wraparound Edition: B 510; ICE 511 Teacher Resources: <i>Practice: Skills</i> 655 <i>Reading to Learn Mathematics</i> 657 <i>Study Guide and Intervention</i> 654</p>
<p>C. Apply geometric measurements</p>	
<p>describe how to solve problems involving the area or perimeter of polygons ST MA 2 3.4, 4.1 FR VI.i & g</p>	<p>Student Edition: 39-41, 44 #56-#57, 45 #17-#18, 546-549 <i>Hands-On Lab</i> 464, 555 <i>Spreadsheet Investigation</i> 469 Teacher Wraparound Edition: A 41, 464, 469; DI 40 Teacher Resources: <i>Practice: Skills</i> 37, 700 <i>Practice: Word Problems</i> 38, 701 <i>Reading to Learn Mathematics</i> 39 <i>Study Guide and Intervention</i> 36, 699</p>

STANDARDS	PAGE REFERENCES
D. Analyze precision	
E. Use relationships within a measurement system	
<p>convert from one unit to another within a system of measurement (mass and weight)</p> <p>ST MA 2 1.6, 1.10 FR VI.e & f</p>	<p>Student Edition: 465 ex 1, 466 ex 2, 467 #3-#5, 490-493, 497 #36-#38, 498 #10-#15, 500 #42-#52, 501 #4-#15</p> <p>Teacher Wraparound Edition: A 493; DI 491</p> <p>Teacher Resources: <i>Practice: Skills</i> 600, 620 <i>Practice: Word Problems</i> 601, 621 <i>Reading to Learn Mathematics</i> 622 <i>Study Guide and Intervention</i> 599, 619</p>
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	
<p>formulate questions, design studies and collect data about a characteristic</p> <p>ST MA 3 1.2 FR VII.a</p>	<p>Student Edition: <i>Hands-On Lab</i> 426-427, 437 <i>WebQuest</i> 3, 377</p> <p>Teacher Wraparound Edition: A 59, 441; DI 51, 73, 448</p>
B. Classify and organize data	
C. Represent and interpret data	
<p>interpret circle graphs; create and interpret <u>stem-and-leaf plots</u></p> <p>ST MA 3 1.8 FR VII.b</p>	<p>Student Edition: 62-65, 69 #28-#29, 70 #6-#7, 72-75, 78 #22, 83 #24</p> <p>Teacher Wraparound Edition: A 73; B 72; DI 63, 73</p> <p>Teacher Resources: <i>Practice: Skills</i> 72, 82 <i>Practice: Word Problems</i> 73, 83 <i>Study Guide and Intervention</i> 71, 81</p>

STANDARDS	PAGE REFERENCES
2. Select and use appropriate statistical methods to analyze data	
A. Describe and analyze data	
<p>find the <u>range</u> and <u>measures of center</u>, including <u>median</u>, <u>mode</u> and <u>mean</u></p> <p>ST MA 3 3.2 FR VII.c</p>	<p>Student Edition: 76-78, 80-83, 89 #15-#18, 92 #17-#21, 93 #3-#4, 95 #2 <i>Spreadsheet Investigation</i> 79</p> <p>Teacher Wraparound Edition: A 78, 83; B 80</p> <p>Teacher Resources: <i>Practice: Skills</i> 87, 92 <i>Practice: Word Problems</i> 88, 93 <i>Reading to Learn Mathematics</i> 94 <i>Study Guide and Intervention</i> 86, 91</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: 86-89, 92 #22-#23, 93 #11-#12, 95 #15, 105 #50, 110 #31</p> <p>Teacher Wraparound Edition: A 89; B 86; DI 87</p> <p>Teacher Resources: <i>Practice: Skills</i> 97 <i>Practice: Word Problems</i> 98 <i>Reading to Learn Mathematics</i> 99 <i>Study Guide and Intervention</i> 96</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 2 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: 439 ex 1, 440 #2, 441 #18, 442 #10, 447 #21, 455 #24, 457 #16 <i>Hands-On Lab</i> 437</p> <p>Teacher Wraparound Edition: A 437; TCE 439; TNT 439</p> <p>Teacher Resources: <i>Reading to Learn Mathematics</i> 564</p>
B. Analyze basic statistical techniques	

STANDARDS	PAGE REFERENCES
<p>4. Understand and apply basic concepts of probability</p>	
<p>A. Apply basic concepts of probability</p>	
<p>use a model (diagrams, list, sample space or area model) to illustrate the possible outcomes of an event</p> <p>ST MA 3, 6 3.2 FR VII.g, X.c</p>	<p>Student Edition: 433-436, 441 #19, 442 #8-#9, 447 #22, 455 #16-#21, 457 #7, 458 #9, 459 #18 <i>Problem-Solving Strategy</i> 448-449</p> <p>Teacher Wraparound Edition: A 436; DI 433</p> <p>Teacher Resources: <i>Practice: Skills</i> 557 <i>Practice: Word Problems</i> 558 <i>Reading to Learn Mathematics</i> 559 <i>Study Guide and Intervention</i> 556</p>
<p>B. Use and describe compound events</p>	