



# Algebra

Concepts and Applications

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## STANDARDS

## PAGE REFERENCES

### 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 rational and irrational numbers, including finding their approximate locations on a number line

##### Student Edition:

52, 53, 94, 601  
*Chapter Test* 89 #2-#4, 135 #3-#6, 633 #7, #8  
*Check for Understanding* 55 #8-#11, 56 #12-#14, 97 #9, 98 #10-#15, 603 #8-#11  
*Example* 53, 54, 95, 96, 602  
*Exercises* 56 #18-#38, 98, 604 #29-#40, #53, #54  
*Extra Practice* 694, 696, 720  
*Mixed Review* 74 #57-#59, 159 #56-#58, 611 #33-#35  
*Preparing for Standardized Tests* 137 #4, 379 #2  
*Prerequisite Skills Review* 691  
*Quiz* 63 #1-#4, 116 #1-#3, 611 #5  
*Reading Algebra* 53  
*Standardized Test Practice* 79 #60, 109 #41, 127 #51, 179 #39, 269 #41, 315 #49, 365 #51  
*Study Guide and Assessment* 86 #11-#16, 132 #11-#17, 630 #15-#18

##### Teacher Wraparound Edition:

EA 56; ICE 53, 54, 95, 96, 602; RA 97; TT 95

STANDARDS	PAGE REFERENCES
<b>B Represent and use rational numbers</b>	
use real numbers and various models, drawing, etc. to solve problems. <b>10</b>	<b>Student Edition:</b> <i>Check for Understanding</i> 68 #3, 73 #2 <i>Exercises</i> 610 #30 <i>Hands-On Algebra</i> 25, 66, 141, 362, 388, 478, 511, 560 <i>Problem Solving Strategy Workshop</i> 755, 759 <i>Real-World Example</i> 119
<b>C Compose and decompose numbers</b>	
*use a variety of representations to demonstrate an understanding of very large and very small numbers	<b>Student Edition:</b> 94, 352, 353 <i>Chapter Test</i> 377 #12-#15 <i>Check for Understanding</i> 355 <i>Example</i> 353, 354 <i>Exercises</i> 355 <i>Extra Practice</i> 708 <i>Mixed Review</i> 361 #46-#49, 365 #44-#46, 387 #66, 425 #67, 539 #41 <i>Physics Link</i> 354 <i>Study Guide and Assessment</i> 375 #37-#42 <b>Teacher Wraparound Edition:</b> ICE 353, 354; ML 352; RA 354; T 352
<b>D Classify and describe numeric relationships</b>	
<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>	
*describe the effects of operations, such as multiplication, division, and computing powers and roots on the magnitude of quantities	The following references can be extended through teacher/class discussion to meet this objective. <b>Student Edition:</b> 75, 82, 140, 141, 142, 154, 155, 341, 347, 352 <i>Check Your Readiness</i> 139 <i>Prerequisite Skills Review</i> 686

STANDARDS	PAGE REFERENCES
C Apply properties of operations	
D Apply operations on real and complex numbers	
<p>*apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases</p>	<p><b>Student Edition:</b>  64, 71, 75, 76, 82, 140, 141, 154-155  <i>Chapter Test</i> 89 #8-#19, 135 #7-#12  <i>Check for Understanding</i> 68, 73, 77-78, 84, 102, 144, 157  <i>Example</i> 65-67, 71, 72, 75-77, 83, 100-101, 140, 142, 154, 155  <i>Exercises</i> 68, 73, 78, 84, 102-103, 144, 157  <i>Extra Practice</i> 695-696, 698, 699  <i>Preparing for Standardized Tests</i> 91 #8  <i>Quiz</i> 79, 116 #5, 159 #1-#3, #7-#9  <i>Study Guide and Assessment</i> 87 #25-#32, #37-#42, 88 #47-#50, #55-#58, 133 #18-#22, 180 #11-#14, 181 #21-#24</p> <p><b>Teacher Wraparound Edition:</b>  ICE 65, 66, 71, 72, 75, 76, 83, 100, 101, 140, 142, 155</p>
<b>3. Compute fluently and make reasonable estimates</b>	
A Describe or represent mental strategies	
B Develop and demonstrate fluency	
C Compute problems	
D Estimate and justify solutions	
<p>*judge the reasonableness of numerical computations and their results</p>	<p>The following references use the concept of solving equations to meet this objective.</p> <p><b>Student Edition:</b>  24-25  <i>Example</i> 167  <i>Problem-Solving Strategy Workshop</i> 760  <i>Real-World Example</i> 119, 161, 166  <i>Tech Link</i> 166</p>

STANDARDS	PAGE REFERENCES
<b>E Use proportional reasoning</b>	
*solve problems involving proportions	<p><b>Student Edition:</b>  188, 199, 266, 272  <i>Chapter Test</i> 233 #3-#12, 279 #20-#23  <i>Check for Understanding</i> 191 #6-#11, 201-202, 269 #11-#13, 274 #10-#13  <i>Example</i> 189, 198, 199, 267, 272  <i>Exercises</i> 192 #16-#36, 196-197, 202, 268 #21-#30, 269 #32, #33, 274  <i>Extra Practice</i> 701, 704-705  <i>Mixed Problem Solving</i> 726  <i>Mixed Review</i> 197 #18, 203 #48, 255 #45-#47, 275 #31, 289 #31, 315 #42, 345 #55-#58, 356 #60, 444 #50, #51  <i>Quiz</i> 203  <i>Real-World Example</i> 195, 200, 267, 273  <i>Standardized Test Practice</i> 513 #53, 529 #71, 629 #45  <i>Study Guide and Assessment</i> 231 #11-#25, 278</p> <p><b>Teacher Wraparound Edition:</b>  ICE 189, 195, 199, 200, 267, 272, 273</p>
<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>	
generalize patterns using explicitly or recursively defined functions	<p><b>Student Edition:</b>  258  <i>Check for Understanding</i> 260 #9-#12  <i>Exercises</i> 260 #29-#45  Also see <i>Glencoe Algebra 2</i> © 2008, pages 658-662.</p>
<b>C Classify objects and representations</b>	
compare and contrast various forms of representations of patterns	<p>The following page references can be used during teacher/class discussion to meet this objective.</p> <p><b>Student Edition:</b>  341, 489  <i>Example</i> 332  <i>Exercises</i> 315 #40  <i>Preparing for Standardized Test</i> 455 #8  <i>Standardized Test Practice</i> 69 #73, 170 #49</p>

STANDARDS	PAGE REFERENCES
<b>D Identify and compare functions</b>	
understand and compare the properties of linear and nonlinear functions	<p><b>Student Edition:</b>  250, 458  <i>Check for Understanding</i> 254 #3-#5  <i>Example</i> 250-251  <i>Exercises</i> 254 #13-#21, 289 #30</p> <p><b>Teacher Wraparound Edition:</b>  ICE 251; ML 250</p>
<b>E Describe the effects of parameter changes</b>	
describe the effects of parameter changes on linear, exponential growth/decay and quadratic functions including intercepts	<p><b>Student Edition:</b>  310, 316, 318, 464, 489  <i>Check for Understanding</i> 319 #8, #9, 461 #2, 466  <i>Example</i> 318, 464-465, 490  <i>Exercises</i> 320 #23-#28, 463 #44, 466 #25, #26, #29, 493 #26</p> <p><b>Teacher Wraparound Edition:</b>  A 295; ICE 318, 464, 465, 490; RA 465</p>
<b>2. Represent and analyze mathematical situations and structures using algebraic symbols</b>	
<b>A Represent mathematical situations</b>	
use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities	<p><b>Student Edition:</b>  <i>Check for Understanding</i> 126 #17, 169 #15  <i>Exercises</i> 7 #42, 29 #17, 126 #41, #42, #44, 145 #52, 151 #28, 164 #37, #48, 170 #39, #41, 174 #35, 179 #32  <i>Mixed Problem Solving</i> 725  <i>Mixed Review</i> 145 #52, 179 #37  <i>Quiz</i> 127 #5  <i>Standardized Test Practice</i> 164 #48, 340 #53, 444 #52, 487 #33, 605 #72</p>

## STANDARDS

## PAGE REFERENCES

**B Describe and use mathematical manipulation**

describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions

**Student Edition:**

15, 20, 341, 342, 347

*Chapter Test* 47 #16-#18, 377 #8-#11, 415 #8-#21, 453 #12-#25

*Check for Understanding* 22 #8-#13, 344 #3-#14, 350 #6-#13, 392 #9-#16, 396 #4-#12, 402 #10-#19, 432 #10-#15, 438 #9-#17, 443 #3-#11, 642 #13-#21

*Check Your Readiness* 381, 457 #13-#18, 599 #13-#24, 637 #7-#24

*Exercises* 22 #15-#33, 344 #16-#43, 350 #19-#42, 392 #18-#41, 397 #18-#44, 403 #21-#52, 432 #19-#36, 438 #19-#45, 443 #13-#40, 642 #32-#58

*Extra Practice* 693, 708, 710-711, 712

*Mixed Review* 29 #20-#23, 57 #54-#59, 444 #45-#48

*Preparing for Standardized Tests* 235 #6, #10

*Quiz* 351 #6-#9, 398 #3, #4

*Study Guide and Assessment* 45 #26-#31, 375 #21-#28, #31-#36, 413, 451

**C Utilize equivalent forms**

use and solve equivalent forms of equations (linear, absolute value, and quadratic)

The following page references can be expanded through teacher/class discussion to meet this objective.

**Student Edition:**

122, 123, 128, 290, 291, 296, 297, 458, 474

*Check for Understanding* 125 #2-#4

*Standardized Test Practice* 398 #78

STANDARDS	PAGE REFERENCES
<p><b>D Utilize systems</b></p> <p>use and solve systems of linear equations or inequalities with 2 variables</p>	<p><b>Student Edition:</b>            550, 560, 566, 572, 586  <i>Chapter Test</i> 595 #3-#5, #9-#11, #15-#23  <i>Check for Understanding</i> 552 #4-#7, 564 #4-#9, 570 #7-#12, 576 #7-#12, 589 #7-#10  <i>Example</i> 550, 561-563, 566, 568, 572, 574, 587  <i>Exercises</i> 553 #9-#20, 564 #11-#30, 570 #14-#31, 576 #14-#33, 589 #12-#25  <i>Extra Practice</i> 718, 719, 720  <i>Graphing Calculator Exploration</i> 551, 558  <i>Mixed Review</i> 559 #30, 565 #35, 577 #37-#40, 585 #27, 590 #32, 605 #60, 611 #36, 629 #41, 649 #49-#51, 673 #47-#49  <i>Quiz</i> 565 #1-#4  <i>Real-World Example</i> 567, 573  <i>Standardized Test Practice</i> 667 #63  <i>Study Guide and Assessment</i> 592, 593 #21-#38, 594 #46-#50</p> <p><b>Teacher Wraparound Edition:</b>            ICE 550, 551, 561, 562, 563, 567, 568, 572, 573, 574, 587</p>
<p><b>3. Use mathematical models to represent and understand quantitative relationships</b></p>	
<p><b>A Use mathematical models</b></p> <p>identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem</p>	<p>The following references can be used during teacher/class discussion to meet this objective.</p> <p><b>Student Edition:</b>  <i>Applications and Problem Solving</i> 330 #41  <i>Check for Understanding</i> 293 #14, 492 #9  <i>Exercises</i> 300 #47, 315 #38, #39, 320 #32, 462 #42, #43, 467 #27, #28, 472 #24, #25, 493 #24, #25  <i>Preparing for Standardized Tests</i> 333 #1, #10</p>

STANDARDS	PAGE REFERENCES
<b>4. Analyze change in various contexts</b>	
<b>A Analyze change</b>	
analyze linear and quadratic functions by investigating rates of change, intercepts and zeros	<b>Student Edition:</b> 284, 285, 296, 310, 468 <i>Check for Understanding</i> 299 #1, #2, 314 #2, 461 #2, #3, 466 #2, 471 #1 <i>Exercises</i> 289 #28, 301 #48, 315 #38, 463 #44, 467 #25, #26, #29, 473 #27, 477 #35, 553 #25 <b>Teacher Wraparound Edition:</b> TT 285
<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</b>	
<b>A Describe and use geometric relationships</b>	
<b>B Apply geometric relationships</b>	
*apply geometric properties such as similarity and angle relationship to solve multi-step problems in 2 dimensions	<b>Student Edition:</b> <i>Example</i> 546 <i>Exercises</i> 179 #34, 255 #41 <i>Preparing for Standardized Tests</i> 547 #1
<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>	
<b>3. Apply transformations and use symmetry to analyze mathematical situations</b>	
<b>A Use transformations on objects</b>	
<b>B Use transformations on functions</b>	
<b>C Use symmetry</b>	

STANDARDS	PAGE REFERENCES
<b>4. Use visualization, spatial reasoning and geometric modeling to solve problems</b>	
A Recognize and draw three-dimensional representations	
B Draw and use visual models	
*draw or use visual models to represent and solve problems	<b>Student Edition:</b> 366 <i>Applications and Problem Solving</i> 414 <i>Chapter Investigation</i> 372, 410 <i>Example</i> 378 <i>Exercises</i> 370 #34, #35, 408 #34, 610 #30, 623 #37 <i>Hands-On Algebra</i> 25
<b>Measurement</b>	
<b>1. Understand measurable attributes of objects and the units, systems and processes of measurement</b>	
A Determine unit of measurement	
B Identify equivalent measures	
C Tell and use units of time	
D Count and compute money	
<b>2. Apply appropriate techniques, tools and formulas to determine measurements</b>	
A Use standard or non-standard measurement	
B Use angle measurement	
C Apply geometric measurements	
D Analyze precision	
*describe the effects of operations, such as multiplication, division and computing powers and roots on magnitudes of quantities and effects of computation on precision which include the judging of reasonable of numerical computations and their results	The following measurement references can be expanded through teacher/class discussion to meet this objective. <b>Student Edition:</b> <i>Check for Understanding</i> 191 #12, #13, 268 #13, 344 #15 <i>Example</i> 190 <i>Exercises</i> 192 #39-#47, 268 #28-#30 <i>Real-World Example</i> 267, 532 <b>Teacher Wraparound Edition:</b> ICE 190, 267

STANDARDS	PAGE REFERENCES
<b>E Use relationships within a measurement system</b>	
*use unit analysis to solve problems	<b>Student Edition:</b> 190 <i>Check for Understanding</i> 192 #14, #15 <i>Exercises</i> 192 #48 <i>Real-World Example</i> 190, 191 <i>Standardized Test Practice</i> 529 #71 <b>Teacher Wraparound Edition:</b> ICE 190, 191
<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>	
formulate questions and collect data about a characteristic which include sample spaces and distributions	<b>Student Edition:</b> 32, 106 <b>Teacher Wraparound Edition:</b> FA 108; FC 109; ML 32, 104
<b>B Classify and organize data</b>	
<b>C Represent and interpret data</b>	
select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape	The following data display references can be extended to meet this objective. <b>Student Edition:</b> 38, 39, 40 <i>Chapter Investigation</i> 210 <i>Check for Understanding</i> 41-42 <i>Example</i> 40 <i>Exercises</i> 42-43 <i>Mixed Review</i> 63 #40 <i>Real-World Example</i> 38, 39, 41 <i>Standardized Test Practice</i> 463 #52, 611 #42 <b>Teacher Wraparound Edition:</b> ICE 39, 40, 41; ML 38

STANDARDS	PAGE REFERENCES
<b>2. Select and use appropriate statistical methods to analyze data</b>	
<b>A Describe and analyze data</b>	
<p>apply statistical measures of center to solve problems</p>	<p><b>Student Edition:</b>  104, 105, 106  <i>Chapter Test</i> 105 #13  <i>Check for Understanding</i> 108 #15  <i>Example</i> 106  <i>Exercises</i> 109 #32-#35  <i>Graphing Calculator Exploration</i> 105  <i>Mixed Problem Solving</i> 725 #3  <i>Mixed Review</i> 121 #42  <i>Real-World Example</i> 104, 105, 106, 107  <i>Standardized Test Practice</i> 351 #57</p> <p><b>Teacher Wraparound Edition:</b>  ICE 105, 106, 107</p>
<b>B Compare data representations</b>	
<b>C Represent data algebraically</b>	
<p>given a scatterplot, determine an equation for a line of best fit</p>	<p>The following page references for scatter plots can be expanded to meet this objective.</p> <p><b>Student Edition:</b>  302-307  <i>Chapter Investigation</i> 308-309</p>
<b>3. Develop and evaluate inferences and predictions that are based on data</b>	
<b>A Develop and evaluate inferences</b>	
<p>make conjectures about possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data</p>	<p><b>Student Edition:</b>  303  <i>Chapter Test</i> 331 #12  <i>Check for Understanding</i> 305 #4-#6  <i>Exercises</i> 306 #7-#17  <i>Quiz</i> 321 #1  <i>Real-World Example</i> 303, 304  <i>Standardized Test Practice</i> 623 #46  <i>Study Guide and Assessment</i> 329 #26, #27</p> <p><b>Teacher Wraparound Edition:</b>  ICE 303, 304; T 303</p>

STANDARDS	PAGE REFERENCES
B Analyze basic statistical techniques	
<b>4. Understand and apply basic concepts of probability</b>	
A Apply basic concepts of probability	
B Use and describe compound events	