



IMPACT

Mathematics

COURSE 3

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STANDARDS	PAGE REFERENCES
Grade Level Expectations	
M (N&O)-8-1 <i>Rational Numbers</i>	
Absolute value	
Demonstrate conceptual understanding of absolute value	See <i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 1) and <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 20)
Perfect square and cube roots	
Recognize perfect squares and cube roots	Student Edition: 185-187, 493 Teacher Guide: A 496; DU 494; E 185; I 185, 493; T 495; TT 186

STANDARDS	PAGE REFERENCES
Percent of change (increase and decrease)	
Describe change in terms of percent increase and decrease using explanation, models and other representations	Student Edition: 123-126, 140 #2, 141 #3, 142 #20-#23, 143 #2 Teacher Guide: AE 126; I 123, 127; MB 124, 127; RAL 126, 128, 129; TS 126; TT 125
M (N&O)-8-2 Magnitude in Numbers Rational numbers (fractions, decimals, percents) Common irrational numbers (ex. Pi, $\sqrt{2}$) Whole number and fractional bases with whole number exponents (3^2 , $(1/5)^2$) Square roots Absolute values Integers Scientific notation	
Order and compare across number formats	See <i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 13) and <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 43)
Connect numbers to quantities using number lines and equality or inequality symbols	See <i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 13) and <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 43)
M (N&O)-8-3 Mathematical Operations	
None at this grade	
M (N&O)-8-4 Solving Problems	
Proportional reasoning Percent increase or decrease Interest rates Mark ups or rates Squares and cubes and taking square and cube roots Order of operations (parentheses, brackets, exponents) Multiplication or division of integers	
Solve problems incorporating content as listed	Student Edition: 112-115, 140 #1, 185-187, 493 Teacher Guide: A 496; AE 118; DU 113, 114, 494; E 185; I 112, 185, 493; SS 115; T 495; TD 112; TT 186

STANDARDS	PAGE REFERENCES
<p><i>M (N&O)-8-5</i> Monetary Value</p>	
<p>None at this level</p>	
<p><i>M (N&O)-8-6</i> Mental Math</p> <p>Embed mental arithmetic throughout math instruction</p>	
<p>Mental computation strategies: Use compatible numbers Apply properties Use mental imagery Use patterns</p>	
<p>Mentally calculate benchmark perfect squares and square roots ($1^2, 2^2, \dots, 12^2, 15^2, 20^2, 100^2, 1000^2$)</p>	<p>Student Edition: 185-187, 493 Teacher Guide: A 496; DU 494; E 185; I 185, 493; T 495; TT 186</p>
<p>Determine part of a number using benchmark percents and related fractions (1%, 10%, 25%, 33 1/3%, 50%, 66 2/3%, 75%, 100%) ex. 33 1/3 % of 21 and 25% of 16</p>	<p>Student Edition: 112-115, 140 #1 Teacher Guide: AE 118; DU 113, 114; I 112; SS 115; TD 112</p>
<p><i>M (N&O)-8-7</i> Estimation</p> <p>Embed estimation throughout math instruction</p> <p>Estimation Tips, discounts and tax Non-perfect square roots between two whole numbers</p>	
<p>Identify when estimation is appropriate</p>	<p>Student Edition: 71-73, 107 #1 Teacher Guide: I 71; RAL 72; TT 73</p>
<p>Select an appropriate method of estimation</p>	<p>Student Edition: 71-73, 107 #1, 112-115, 140 #1 Teacher Guide: AE 118; DU 113, 114; I 71, 112; RAL 72; SS 115; TD 112; TT 73</p>

STANDARDS	PAGE REFERENCES
Determine the level of accuracy needed for a situation	<p>The following references may be expanded upon in classroom discussion to meet this objective.</p> <p>Student Edition: 112, 114</p> <p>Teacher Guide: DU 114; EP 112</p>
Analyze effect of estimate on accuracy of results	<p>The following references allow students to use graphs to estimate solutions to equations and may be expanded upon in classroom discussion to meet this objective.</p> <p>Student Edition: 71</p> <p>Teacher Guide: I 71</p>
Evaluate the reasonableness of solution	<p>Student Edition: <i>Math Link</i> 393 <i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 63)</p>
<p><i>M (N&O)-8-8</i> <i>Properties</i></p> <p><i>Embed properties throughout math instruction</i></p>	
<p>Number Properties: Odd and even numbers, positive and negative numbers, prime factorization, divisibility and remainders</p>	
Apply number properties to simplify computations and solve problems	<p>See <i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 22, 27), <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 9), and <i>Skills Intervention Worksheets, Course 3</i> © 2009 (Skill 22)</p>
<p>Field properties: commutative, associative, identity (including $2^0 \times 2^3 = 2^{0+3} = 2^3$), distributive, inverses (additive and multiplicative)</p>	
Demonstrate conceptual understanding of field properties as they apply to subsets of real numbers when addition and multiplication are not defined in the traditional ways (e.g., if $a \cdot b = a + b - 1$, is \cdot a commutative operation?)	<p>The following references may be expanded in classroom discussion to meet the needs of this objective.</p> <p>Student Edition: 209 #6, #7</p>

STANDARDS	PAGE REFERENCES
<p><i>M (G&M)-8-1</i> <i>Sorting and Classifying</i></p>	
<p>None at this grade</p>	
<p><i>M (G&M)-8-2</i> <i>Applies Theorems or Relationships</i></p>	
<p>Pythagorean Theorem</p>	
<p>Find missing side of a right triangle using Pythagorean Theorem</p>	<p>See <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 46).</p>
<p>Solve problems using Pythagorean Theorem</p>	<p>See <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 46)</p>
<p><i>M (G&M)-8-3</i> <i>3-Dimensional Shapes</i></p>	
<p>None at this level</p>	
<p><i>M (G&M)-8-4</i> <i>Congruency</i></p>	
<p>None at this level</p>	
<p><i>M (G&M)-8-5</i> <i>Similarity</i></p>	
<p>Volume, surface area of 3-D figures</p>	
<p>Determine the impact of scaling on volume and surface area of 3-D figures when line dimensions are multiplied by a constant factor</p>	<p>Student Edition: 171 Teacher Guide: DU 171</p>
<p>Similarity of triangles</p>	
<p>Determine the length of sides of similar triangles</p>	<p>See <i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 42, 43)</p>
<p>Growth and rate problems</p>	
<p>Solve problems involving growth and rate</p>	<p>Student Edition: 172-174, 175-184, 201 #7, 203 #33 Teacher Guide: A 179; DU 173, 176, 177; I 172; MB 173; QC 184; RAL 172, 174; TD 172; TS 175</p>

STANDARDS	PAGE REFERENCES
<p><i>M (G&M)-8-6</i> Volume and surface area</p> <p>Volume and surface area of rectangular prisms, triangular prisms, cylinders, pyramids and cones</p>	
<p>Determine the volume and surface area using formulas, models, or by solving related problems</p>	<p>Student Edition: 171 #8-#9, 392 #1-#3, 538-539 <i>Math Link</i> 538 Teacher Guide: AE 393; MC 392; TIO 538, TS 392</p>
<p>Express measures in appropriate units</p>	<p>Student Edition: 392, 538 #4</p>
<p><i>M (G&M)-8-7</i> Measurement</p> <p>Embed measurement throughout math instruction</p> <p>Length (inch, foot, centimeter, meter, yard, mile, kilometer, 12in=1ft, 100cm=1m, 3ft=1yd, 10mm=1cm, 1000mm=1m, to 1/16 inch, to 0.1 cm, to .001m,)</p> <p>Time (hour, day, year, 24hrs=1 day, 7 days=1 week, 365 days=1 year, 60 sec=1 min, 60min=1 hr, to 1 minute intervals)</p> <p>Temperature (Celsius and Farenheit to 1 degree)</p> <p>Capacity (quart, gallon, pint, liter 32oz=1qt, 4qts=1 gal., 2pts=1qt, 1000ml=1L, to 1oz)</p> <p>Mass (gram, kilogram)</p> <p>Weight (pound, ounces, 16oz=1lb., to 1oz)</p> <p>Angles and Rotation (degree, ° 360 = 1circle, ° 90 = right angle, to 2 degrees)</p>	
<p>Measure using appropriate units for length, time, temperature, capacity, mass and weight</p>	<p>Teacher Guide: TT 319</p>
<p>Solve problems and make conversions for length, time and mass</p>	<p>Student Edition: 168 #59-#61, 318 #6-#8, 319 #9-#11, 320 #13-#14, 369 #24 Teacher Guide: A 321; ML 174; TT 319</p>

STANDARDS	PAGE REFERENCES
<p><i>M (G&M)-8-8</i> Time</p>	
<p>None at this level</p>	
<p><i>M (G&M)-8-9</i> Spatial Relationships</p>	
<p>None at this level</p>	
<p><i>M (G&M)-8-10</i> Spatial Reasoning and Visualization</p>	
<p>None at this level</p>	
<p><i>M (F&A)-8-1</i> Patterns</p>	
<p>Identifies and extends to a variety of patterns (linear and non-linear) represented in models, tables, sequences, graphs and problem situations</p>	
<p>Generalize linear and common nonlinear relationships (nonrecursive explicit equation) to find a specific case</p>	<p>Student Edition: 7 #3-#4, 10 #3, 11 #9, 13 #1-#2, 16 #1, 17 #3, 21 #11, 22 #12</p> <p>Teacher Guide: AE 15; QC 22; QQ 23</p>
<p>Generalize a nonlinear relationship using words or symbols</p>	<p>Student Edition: <i>Share and Summarize</i> 15</p>
<p><i>M (F&A)-8-2</i> Rates of Change</p>	
<p>Linear relationships ($y=kx$ and $y=mx+b$) as a constant rate of change</p>	
<p>Solve problems involving relationship of slope and rate of change</p>	<p>Student Edition: 25 #1, 26 #2-#4, 29 #1, 31 #2</p> <p>Teacher Guide: QQ 34</p>
<p>Determine slopes and intercepts represented in graphs, tables, or problem situations</p>	<p>Student Edition: 27 #13, 28 #15-#18, 31 #1, 32 #8-#11, 33 #13, 34 #26-#27, 37 #16, 42 #1-#2, 43 #4-#5</p> <p><i>Share and Summarize</i> 28</p> <p>Teacher Guide: A 25, 28, 44; AE 27; E 29; I 25; RAL 29; SS 28, 30; TT 25, 28, 38</p>

STANDARDS	PAGE REFERENCES
Describe the meaning of slope and intercept in context	Student Edition: 8 #10, 48 #6, 53 #6c <i>Think and Discuss</i> 49 Teacher Guide: DU 48
Distinguish between linear relationships (constant rates of change) and nonlinear relationships (varying rates of change) represented in tables, graphs, equations, or problem situations	Student Edition: 34 #26-#27, 36 #1-#4, 53 #1-#5, 62 #22 <i>Share and Summarize</i> 38 <i>Think and Discuss</i> 35 Teacher Guide: TD 35; TT 36
Describe how a change in the value of one variable relates to a change in the value of the second variable in problem situations with constant and varying rates of change	Student Edition: 34 #26-#27, 36 #1-#4, 53 #1-#5, 62 #22, 63 #3 <i>Share and Summarize</i> 38 <i>Think and Discuss</i> 35 Teacher Guide: TD 35; TT 36
M (F&A)-8-3 Algebraic Expressions	
Algebraic expressions (including those with square roots, exponents, or rational numbers)	
Simplify algebraic expressions	Student Edition: 206-209, 210-213, 214 #3, 215 #8, 219 #7, 220 #9-#12, 225-226, 229-230, 231-233 Teacher Guide: A 209; AE 233; I 210; RA 207, 212, 228; SS 213; TD 226; TS 208, 213; TT 211
Evaluate an expression within an equation (find y when $x=4$, given $y=7\sqrt{x=2x}$)	Student Edition: 430-432
M (F&A)-8-4 Equality	
Equality	
Show equivalence between two expressions using models or different representations	Student Edition: 207 #1, 208 #5, 209 #6-#7, 213 #13, 219 #1, 221 #20-#25, 225, 227-228 <i>Share and Summarize</i> 233 <i>Think and Discuss</i> 206, 210, 224 Teacher Guide: AE 209; MB 225; RAL 207, 212; TD 206, 210; TS 211; TT 207

STANDARDS	PAGE REFERENCES
Solve formulas for a variable requiring one transformation ($tr d r t d = = / ;$)	<p>Student Edition: 324 #22</p> <p>Teacher Guide: RAL 436</p>
Solve multi-step linear equations with integer coefficients	<p>Student Edition: 312-316, 320 #15-#16, 322 #1-#10, 367 #3, 369 #12</p> <p><i>Share and Summarize</i> 316</p> <p><i>Think and Discuss</i> 312, 314</p> <p>Teacher Guide: AE 315; I 312; QQ 324; SS 316; TD 312, 314; TS 314</p>
Apply field properties, order of operations, or substitution to show whether two expressions are equivalent	<p>Student Edition: 208, 209, 210, 212-213, 214 #3, 215 #8, 219 #7, 220 #9-#12, 225-226, 229-230, 231-233</p> <p>Teacher Guide: AE 233; I 210; RA 207, 212, 228; SS 213; TD 226; TS 208, 213; TT 211</p>
Informally solve problems involving systems of linear equations in context	<p>Student Edition: 342-345, 346-348, 349-351, 352-355, 361 #3, 362 #5, 363 #8-#11, 368 #11, 369 #25</p> <p><i>Think and Discuss</i> 352, 353</p> <p>Teacher Guide: A 354; AE 350; I 343; RAL 343, 344; SS 351; TD 352, 353; TS 345, 351; TT 346, 350, 352; WU 345</p>

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<p><i>M (DSP)-8-1</i> <i>Interpret a Given Representation</i></p> <p>Consistent with skills in <i>M(DSP)-8-2</i></p>	
<p>Data interpretation Data representations: Line graphs Scatter plots (discrete linear relationships) Histograms Box-and-whisker plots</p>	
<p>Analyze data to: formulate or justify conclusions make predictions solve problems</p>	<p>Student Edition: 602-604, 611 #10-#14, 615 #6, 618 #10-#11, 623 #7 <i>Think and Discuss</i> 602, 605</p> <p>Teacher Guide: I 602; RAL 603; SS 604; TD 602, 605; TS 604; TT 604</p>
<p><i>M (DSP)-8-2</i> Analyze Data</p> <p>Patterns, trends or distributions in data Quartile values Estimated line of best fit</p>	
<p>Analyze patterns, trends or distributions in data using measures of central tendency (median, mean, mode), dispersion (range or variation), outliers, quartile values or estimated line of best fit to analyze situations or solve problems</p>	<p>Student Edition: 613 #2-#3, 619 #13</p> <p>Teacher Guide: A 612; TT 609</p>
<p>Evaluate the sample from which the statistics were developed (biased, random or non-random)</p>	<p>See <i>Impact Mathematics Course 2</i> © 2009 for the following references that may be used to meet this objective.</p> <p>Student Edition: 282, 284, 306, 307</p>

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<p><i>M (DSP)-8-3</i> <i>Organize and Display Data</i></p> <p>Consistent with skills in <i>M(DSP)-8-2</i></p> <p>Data representation: Scatter plots</p>	
Identify the best representation for data	See <i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 70) and <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 36, 41)
Organize and display data	<p>Student Edition: 605-607, 608-612, 614 #5</p> <p>Teacher Guide: A 612; RAL 609; SS 608, 612; TS 608; TT 605, 609; WU 609</p>
Answer questions related to the data	<p>Student Edition: 603 #3, 604 #4, 611 #13, 612 #22, 613 #2, 614 #4, 615 #6, 618 #10-#11, 623 #7 <i>Think and Discuss</i> 602, 605</p> <p>Teacher Guide: I 602; RAL 603; SS 604; TD 602, 605; TS 604; TT 604</p>
Analyze data to form and justify conclusions, make predictions and solve problems	<p>Student Edition: 602-604, 611 #10-#14, 615 #6, 618 #10-#11, 623 #7 <i>Think and Discuss</i> 602, 605</p> <p>Teacher Guide: I 602; RAL 603; SS 604; TD 602, 605; TS 604; TT 604</p>
Analyze data using measures of central Tendency	<p>Student Edition: 510 #10, 609 #2, 613 #2-#3, 619 #13</p> <p>Teacher Guide: A 612; TT 609</p>

STANDARDS	PAGE REFERENCES
<p><i>M (DSP)-8-4</i> Counting Techniques</p>	
	<p>Strategies: organized lists, tables, tree diagrams, models, Fundamental Counting Principle</p>
<p>Utilize counting techniques to solve combination and permutation (ordering) problems in context</p>	<p>Student Edition: 578-583, 584-588 <i>Share and Summarize</i> 588 <i>Think and Discuss</i> 578 Teacher Guide: AE 586; RAL 590; SS 588; TD 578; TS 579, 584; TT 579, 580</p>
<p><i>M (DSP)-8-5</i> Probability</p>	
	<p>Experimental and theoretical probability</p>
<p>Predict the theoretical probability of a situation</p>	<p>Student Edition: 584 #12-#17, 587 #9-#16, 588 #21-#24, 590 #8-#9, 592-600 Teacher Guide: A 594; SS 584; TS 587</p>
<p>Test predictions through experiments and simulations</p>	<p><i>Skills Intervention Worksheets, Course 1</i> © 2009 (Skill 80) <i>Skills Intervention Worksheets, Course 2</i> © 2009 (Skill 35) Theoretical Probability can be found on: Student Edition: 584 #12-#17, 587 #9-#16, 588 #21-#24, 590 #8-#9, 592-600 Teacher Guide: A 594; SS 584; TS 587</p>
<p>Compare and contrast theoretical and experimental probability</p>	<p>Student Edition: 592 #1</p>
<p>Determine the probability (theoretical or experimental) of an event in a problem solving situation</p>	<p>Student Edition: 584 #12-#17, 587 #9-#16, 588 #21-#24, 590 #8-#9, 593 #1, 595 #1, 596 #3-#4, 598 #10, 600 #14 Teacher Guide: A 594; SS 584; TS 587</p>

STANDARDS	PAGE REFERENCES
<p><i>M (DSP)-8-6</i> <i>Experimental Design</i></p> <p>Consistent with skills in M(DSP)-8-2</p>	
<p>Independent experimental design (In response to a teacher or student generated question or hypothesis)</p>	
<p>Determine most effective method of data collection (survey, observation, experimentation)</p>	<p>Student Edition: 621 #15</p>
<p>Collect, organize and display data</p>	<p>Organizing and displaying data can be found on: Student Edition: 605-607, 608-612, 614 #5 Teacher Guide: A 612; RAL 609; SS 608, 612; TS 608; TT 605, 609; WU 609</p>
<p>Analyze data to draw conclusions and make predictions about question or hypothesis being tested</p>	<p>Student Edition: 602-604, 611 #10-#14, 615 #6, 618 #10-#11, 623 #7 <i>Think and Discuss</i> 602, 605 Teacher Guide: I 602; RAL 603; SS 604; TD 602, 605; TS 604; TT 604</p>
<p>Analyze the data considering limitations that could affect interpretation</p>	<p>Student Edition: 604 #1-#2, 620 #14, 621 #15, 625 #12</p>
<p>Ask new question based on results</p>	<p>All <i>Inquiry Investigations</i> in the textbook are based on the scientific method formula and may be used in conjunction with classroom discussion to meet this objective.</p> <p>The <i>Share & Summarize</i> and <i>Think and Discuss</i> special features can be expanded to have students ask thought provoking questions.</p>
<p>Make connections to real world situations</p>	<p>Student Edition: 584 #12-#17, 587 #9-#16, 588 #21-#24, 590 #8-#9, 593 #1, 595 #1, 596 #3-#4, 598 #10, 600 #14 Teacher Guide: A 594; SS 584; TS 587</p>