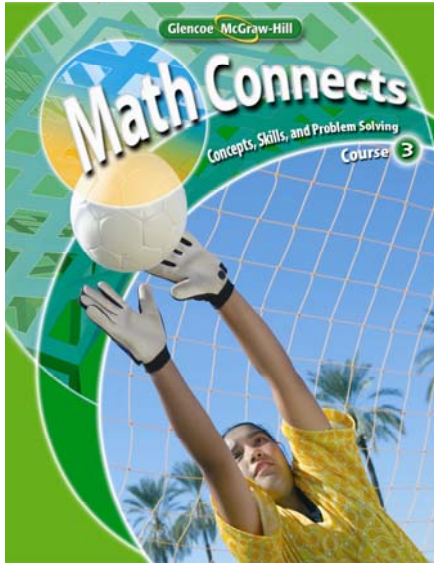




Glencoe

Academic Content Standards
Grade Eight



Math Connects

Concepts, Skills, and Problem Solving

Course 3

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Student Edition Correlation

STANDARDS	PAGE REFERENCES
Number, Number Sense and Operations Standard	
<i>Number and Number Systems</i>	
1. Use scientific notation to express large numbers and small numbers between 0 and 1.	Student Edition: 130-133, 147 #45, 151 #37 <i>Practice Test</i> 139 #19-#20 <i>Real-World Link</i> 82 <i>Study Guide and Review</i> 138 2-10 <i>Test Practice</i> 140 #7
2. Recognize that natural numbers, whole numbers, integers, rational numbers and irrational numbers are subsets of the real number system.	Student Edition: 84-89, 95 #39, 148, 155-159, 166 #35-#38, 171 #24 <i>Foldables</i> 179 <i>Mid-Chapter Quiz</i> 160 #21-#26 <i>Reading to Solve Problems</i> 90 <i>Review Vocabulary</i> 155 <i>Study Guide and Review</i> 189 3-4
<i>Meaning of Operations</i>	
3. Apply order of operations to simplify expressions and perform computations involving integer exponents and radicals.	Student Edition: 29-30, 32-34, 128 #32-#40, 163-164, 167, 175, 265 <i>Quick Review</i> 351 <i>Study Guide and Review</i> 182 3-6

STANDARDS	PAGE REFERENCES
4. Explain and use the inverse and identity properties and use inverse relationships (addition/subtraction, multiplication/division, squaring/square roots) in problem solving situations.	Student Edition: 31, 32 #25, 43 Example 5, 70 Example 1, 102-107, 112 #46-#48, 156, 163, 167, 168 <i>Study Tip</i> 103
<i>Computation and Estimation</i>	
5. Determine when an estimate is sufficient and when an exact answer is needed in problem situations, and evaluate estimates in relation to actual answers; e.g., very close, less than, greater than.	Student Edition: 148-151, 158 #30, 166 #39, 167 Example 1, 275-278, 354 Example 5 <i>Measurement Lab</i> 362 <i>Problem-Solving Investigation</i> 272-273
6. Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions.	Student Edition: 119-123, 157 Example 7, 158 #10, #29-#30, 171 #19, 254, 259, 263-267, 279, 281 <i>Problem-Solving Investigation</i> 152-153, 438-439 <i>Test Practice</i> 141
7. Find the square root of perfect squares, and approximate the square root of non-perfect squares as consecutive integers between which the root lies; e.g., $\sqrt{130}$ is between 11 and 12.	Student Edition: 144-147, 148-151, 163, 167, 168, 175 <i>Mid-Chapter Quiz</i> 160 <i>Study Guide and Review</i> 180 3-1, 3-2, 182 3-6
8. Add, subtract, multiply, divide and compare numbers written in scientific notation.	Student Edition: 130-133 <i>Practice Test</i> 139 #18-#20 <i>Study Guide and Review</i> 138 2-10 <i>Test Practice</i> 140 #2
Measurement Standard	
<i>Measurement Units</i>	
1. Compare and order the relative size of common U.S. customary units and metric units; e.g., mile and kilometer, gallon and liter, pound and kilogram.	Student Edition: 72 #22-#26 <i>Concepts and Skills Bank</i> 742-743
2. Use proportional relationships and formulas to convert units from one measurement system to another; e.g., degrees Fahrenheit to degrees Celsius.	Student Edition: 32 #23 <i>Concepts and Skills Bank</i> 744-745
<i>Use Measurement Techniques and Tools</i>	
3. Use appropriate levels of precision when calculating with measurements.	Student Edition: <i>Concepts and Skills Bank</i> 736

STANDARDS	PAGE REFERENCES
<p>4. Derive formulas for surface area and volume and justify them using geometric models and common materials. For example, find:</p> <ol style="list-style-type: none"> the surface area of a cylinder as a function of its height and radius; that the volume of a pyramid (or cone) is one-third of the volume of a prism (or cylinder) with the same base area and height. 	<p>Student Edition: 380, 386-391 <i>Measurement Lab</i> 385, 392 <i>Spreadsheet Lab</i> 397-398 <i>Study Guide and Review</i> 408 7-7</p>
<p>5. Determine surface area for pyramids by analyzing their parts.</p>	<p>Student Edition: 393-395, 400 Example 2 <i>Study Guide and Review</i> 408 7-8</p>
<p>6. Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.</p>	<p>Student Edition: 191, 192 #7, #22-#24, 193 #25-#27, 194, 199-200, 202 #19, #22 <i>Get Ready</i> 190, 194, 198</p>
<p>7. Apply proportional reasoning to solve problems involving indirect measurements or rates.</p>	<p>Student Edition: 194-197, 206, 208 #17-#22, #24, 209 #25-#27, 210-214, 232-235, 241 #27 <i>Study Guide and Review</i> 244 4-5, 246 4-9</p>
<p>8. Find the sum of the interior and exterior angles of regular convex polygons with and without measuring the angles with a protractor.</p>	<p>Student Edition: 316-319, 323 #20-#23 <i>Main Idea</i> 316 <i>Problem-Solving Investigation</i> 314-315 <i>Study Guide and Review</i> 344 6-3</p>
<p>9. Demonstrate understanding of the concepts of perimeter, circumference and area by using established formulas for triangles, quadrilaterals, and circles to determine the surface area and volume of prisms, pyramids, cylinders, spheres and cones. (Note: Only volume should be calculated for spheres and cones.)</p>	<p>Student Edition: 373-378, 380-384, 386-391, 393-395 <i>Concepts and Skills Bank</i> 741 <i>Measurement Lab</i> 385</p>
<p>10. Use conventional formulas to find the surface area and volume of prisms, pyramids and cylinders and the volume of spheres and cones to a specified level of precision.</p>	<p>Student Edition: 373-378, 380-384, 386-391, 393-395 <i>Concepts and Skills Bank</i> 741 <i>Measurement Lab</i> 385, 392</p>

STANDARDS	PAGE REFERENCES
Geometry and Spatial Sense Standard	
<i>Characteristics and Properties</i>	
1. Make and test conjectures about characteristics and properties (e.g., sides, angles, symmetry) of two-dimensional figures and three-dimensional objects.	Student Edition: 161 <i>Geometry Lab</i> 312, 385, 493
2. Recognize the angles formed and the relationship between the angles when two lines intersect and when parallel lines are cut by a transversal.	Student Edition: 307-308, 310 #28-#29, #36-#37 <i>Geometry Lab</i> 312-313 <i>Mid-Chapter Quiz</i> 326 #5-#8 <i>Study Guide and Review</i> 343 6-1
3. Use proportions in several forms to solve problems involving similar figures (part-to-part, part-to-whole, corresponding sides between figures).	Student Edition: 218-223, 225-230, 232-235, 236-241, 313 Example 2 <i>Geometry Lab</i> 224 <i>Spreadsheet Lab</i> 231
<i>Spatial Relationships</i>	
4. Represent and analyze shapes using coordinate geometry; e.g., given three vertices and the type of quadrilateral, find the coordinates of the fourth vertex.	Student Edition: 332-336, 337-341, 357 #41-#42 <i>Study Guide and Review</i> 345 6-6, 346 <i>Test Practice</i> 348 #1
<i>Transformations and Symmetry</i>	
5. Draw the results of translations, reflections, rotations and dilations of objects in the coordinate plane, and determine properties that remain fixed; e.g., lengths of sides remain the same under translations.	Student Edition: 225-230, 332-336, 337-341, 357 #41-#42 <i>Spreadsheet Lab</i> 231 <i>Study Guide and Review</i> 345 6-6, 346 <i>Test Practice</i> 348 #1
<i>Visualization and Geometric Models</i>	
6. Draw nets for a variety of prisms, pyramids, cylinders and cones.	Student Edition: 388, 393 <i>Measurement Lab</i> 385, 392 <i>Mini Lab</i> 380, 386 <i>Test Practice</i> 372 #27, 396 #20

STANDARDS	PAGE REFERENCES
Patterns, Functions and Algebra Standard	
<i>Use Patterns, Relations and Functions</i>	
1. Relate the various representations of a relationship; i.e., relate a table to graph, description and symbolic form.	Student Edition: <i>Algebra Lab</i> 474 <i>Get Ready</i> 427, 434, 528, 534 <i>Graphing Calculator Lab</i> 500-501 <i>Test Practice</i> 473
2. Generalize patterns and sequences by describing how to find the n th term.	Student Edition: 24-28, 33 #39, 464-468, 473 #30, 480 #32 <i>Mid-Chapter Quiz</i> 494 #1-#3 <i>Mini Lab</i> 29, 316 <i>Problem-Solving Investigation</i> 124-125 <i>Study Guide and Review</i> 519 9-1
3. Identify functions as linear or nonlinear based on information given in a table, graph or equation.	Student Edition: 475, 528-533, 534-537 <i>Graphing Calculator Lab</i> 500-501 <i>Study Guide and Review</i> 519 9-3, 564 10-1
<i>Use Algebraic Representations</i>	
4. Extend the uses of variables to include covariants where y depends on x .	Student Edition: 475-479, 481-486, 487-491, 495-499, 528-532, 534-537, 540-543 <i>Study Guide and Review</i> 519 9-3, 521 9-6
5. Use physical models to add and subtract monomials and polynomials, and to multiply a polynomial by a monomial.	Student Edition: 550-554, 555-558, LA6-LA8, LA9-LA11 <i>Study Guide and Review</i> 565 10-5, 10-6
6. Describe the relationship between the graph of a line and its equation, including being able to explain the meaning of slope as a constant rate of change and y -intercept in real-world problems.	Student Edition: 475-479, 481-486, 492 #32, 495-499 <i>Practice Test</i> 523 #9-#10 <i>Study Guide and Review</i> 520 9-4, 521 9-6
7. Use symbolic algebra (equations and inequalities), graphs and tables to represent situations and solve problems.	Student Edition: 512, 513 #10-#12 <i>Algebra Lab</i> 474 <i>Get Ready</i> 427, 469 <i>Graphing Calculator Lab</i> 500-501, 516-517, 544 <i>Problem-Solving Investigation</i> 508-509 <i>Test Practice</i> 444

STANDARDS	PAGE REFERENCES
8. Write, simplify and evaluate algebraic expressions (including formulas) to generalize situations and solve problems.	Student Edition: 29-34, 39 #51-#53, 57-61, 98 Example 5, 190-193, 290-293, 416-421, 422-426, 427-431, 434-437 <i>Algebra Lab</i> 432-433 <i>Problem-Solving Investigation</i> 438-439
9. Solve linear equations and inequalities graphically, symbolically and using technology.	Student Edition: 65-69, 70-73, 89 #57-#60, 119-122, 145 Example 4, 422-426, 441-444, 445-448, 449-453
10. Solve 2 by 2 systems of linear equations graphically and by simple substitution.	Student Edition: 502-507, 515 #33 <i>Problem-Solving Investigation</i> 509 #3 <i>Study Guide and Review</i> 520 9-7
11. Interpret the meaning of the solution of a 2 by 2 system of equations; i.e., point, line, no solution.	Student Edition: 505, 507 #25 <i>Study Guide and Review</i> 520 9-7
12. Solve simple quadratic equations graphically; e.g., $y = x^2 - 16$.	Student Edition: 534-537, 543 #32 <i>Mid-Chapter Quiz</i> 549 #12 <i>Mini Lab</i> 534 <i>Study Guide and Review</i> 564 10-2
13. Compute and interpret slope, midpoint and distance given a set of ordered pairs.	Student Edition: 175 Example 5, 176 #13, 177 #34, #38, #41, 481-486, 492 #32, 495-499 <i>Geometry Lab</i> 493 <i>Get Ready</i> 173
<i>Analyze Change</i>	
14. Differentiate and explain types of changes in mathematical relationships, such as linear vs. nonlinear, continuous vs. noncontinuous, direct variation vs. inverse variation.	Student Edition: 198-203, 204-209, 214 #36-#37, 487-491, 499 #47, 528-533, 537 #36-#39 <i>Mid-Chapter Quiz</i> 215 #10-#13 <i>Study Guide and Review</i> 243 4-3, 244 4-4
15. Describe and compare how changes in an equation affects the related graphs; e.g., for a linear equation changing the coefficient of x affects the slope and changing the constant affects the intercepts.	Student Edition: 485 #28, 495-499, 503 Example 2 <i>Graphing Calculator Lab</i> 501
16. Use graphing calculators or computers to analyze change; e.g., interest compounded over time as a nonlinear growth pattern.	Student Edition: <i>Graphing Calculator Lab</i> 500-501 <i>Spreadsheet Lab</i> 294, 589-590

STANDARDS	PAGE REFERENCES
Data Analysis and Probability Standard	
<i>Data Collection</i>	
<p>1. Use, create and interpret scatterplots and other types of graphs as appropriate.</p>	<p>Student Edition: 45 #49, 510-515, 576-580, 582-588, 605-610, 612-616 <i>Check</i> 15 <i>Concepts and Skills Bank</i> 749 <i>Graphing Calculator Lab</i> 516-517, 581, 611 <i>Problem-Solving Investigation</i> 574-575 <i>Spreadsheet Lab</i> 589-590 <i>Study Guide and Review</i> 522 9-9</p>
<p>2. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose; e.g., line graph for change over time, circle graph for part-to-whole comparison, scatterplot for relationship between two variants.</p>	<p>Student Edition: 511 Example 3-4, 617-621 <i>Concepts and Skills Bank</i> 749-750 <i>Mid-Chapter Quiz</i> 598 #5 <i>Problem-Solving Investigation</i> 574-575 <i>Spreadsheet Lab</i> 589-590 <i>Study Guide and Review</i> 626 11-8</p>
<p>3. Differentiate between discrete and continuous data and appropriate ways to represent each.</p>	<p>The concept of discrete data is used in the following counting examples. Student Edition: 632-636, 642 #37, 647 #27 <i>Probability Lab</i> 648-649</p>
<i>Statistical Methods</i>	
<p>4. Compare two sets of data using measures of center (mean, mode, median) and measures of spread (range, quartiles, interquartile range, percentiles).</p>	<p>Student Edition: 591-596, 599-604, 610 #30-#32, 616 #24-#25 <i>Spreadsheet Lab</i> 597 <i>Study Guide and Review</i> 624 11-4, 625 11-5</p>
<p>5. Explain the mean's sensitivity to extremes and its use in comparison with the median and mode.</p>	<p>Student Edition: 600, 602 #8, #16, #20, 603 #29, 604 #36-#37 <i>Concepts and Skills Bank</i> 751</p>
<p>6. Make conjectures about possible relationship in a scatterplot and approximate line of best fit.</p>	<p>Student Edition: 511 Example 3-4, 512 Example 5, #3-#4, 513 #10-#11, #13-#14, 514 #21, #24 <i>Graphing Calculator Lab</i> 517 Activity 2</p>

STANDARDS	PAGE REFERENCES
7. Identify different ways of selecting samples, such as survey response, random sample, representative sample and convenience sample.	Student Edition: 653-657 <i>Probability Lab</i> 648-649 <i>Problem-Solving Investigation</i> 650-651 <i>Study Guide and Review</i> 662 12-5
8. Describe how the relative size of a sample compared to the target population affects the validity of predictions.	Student Edition: 643-647, 653-657 <i>Probability Lab</i> 648-649 <i>Problem-Solving Investigation</i> 650-651 <i>Study Guide and Review</i> 661-662
9. Construct convincing arguments based on analysis of data and interpretation of graphs.	Student Edition: 577 Example 2-3, 578 #2-#4, 579-580, 584 Example 3, 587 <i>Problem-Solving Investigation</i> 574-575
<i>Probability</i>	
10. Calculate the number of possible outcomes for a situation, recognizing and accounting for when items may occur more than once or when order is important.	Student Edition: 637-642, 643-647 <i>Concepts and Skills Bank</i> 746-748 <i>Mid-Chapter Quiz</i> 652 #4-#9 <i>Probability Lab</i> 648-649 <i>Problem-Solving Investigation</i> 650, 651 #12 <i>Study Guide and Review</i> 660 12-2, 661
11. Demonstrate an understanding that the probability of either of two disjoint events occurring can be found by adding the probabilities for each and that the probability of one independent event following another can be found by multiplying the probabilities.	Student Edition: 637-642, 643-647 <i>Mid-Chapter Quiz</i> 652 #4-#9 <i>Probability Lab</i> 648-649 <i>Study Guide and Review</i> 660 12-2, 661