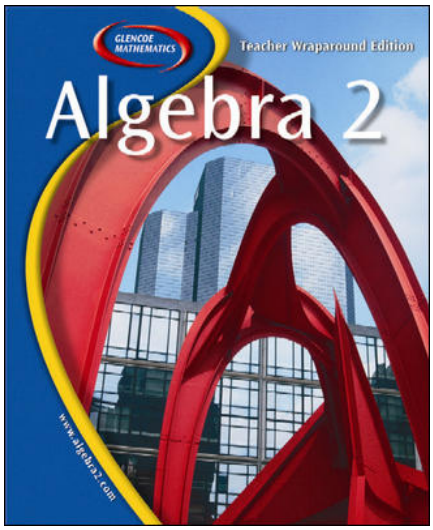
Glencoe

Math Grade 11
Assessment Anchors
and Eligible Content

Pennsylvania



Algebra 2

STANDARDS	PAGE REFERENCES
M11.A Numbers and Operations	
ASSESSMENT ANCHOR **M11.A.1 Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.**	
M11.A.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation). ***Reference: 2.1.8.A, 2.1.8.B, 2.1.11.A***	
M11.A.1.1.1 Find the square root of an integer to the nearest tenth using either a calculator or estimation.	**Student Edition:** 245-247, 254 #14, 259 Example 4, 263 Example 1, 362 Example 4 *Graphing Calculator Investigation* 268-269 **Teacher Wraparound Edition:** A 249; DI 247; IE 247, 264
M11.A.1.1.2 Express numbers and/or simplify expressions using scientific notation (including numbers less than 1).	**Student Edition:** 225, 226 #13-#17, 227 #44-#60, #63, 228 #65, 238 #66, 249 #62 *Extra Practice* 836 Lesson 5-1 *Practice Quiz* 238 #1-#2 **Teacher Wraparound Edition:** IE 225

Codes used for Teacher Wraparound Edition pages are the initial caps of headings on that page.

STANDARDS	PAGE REFERENCES
M11.A.1.1.3 Simplify square roots. (e.g., $\sqrt{24} = 2\sqrt{6}$)	**Student Edition:** 246 Example 1, 248 #28-#57, 250-256, 265 Example 4 **Teacher Wraparound Edition:** IE 246, 251, 252, 253, 265
M11.A.1.2 Apply number theory concepts to show relationships between real numbers in problem-solving settings. ***Reference: 2.1.8.E***	
M11.A.1.2.1 Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.	**Student Edition:** 239-244, 302 Example 3, 479-484, 504 #56-#61 *Algebra Activity* 240 *Extra Practice* 847 Lesson 9-2 **Teacher Wraparound Edition:** A 244; IE 240, 241, 480, 481
M11.A.1.3 Estimate the value of an irrational number. ***Reference: 2.2.8.C***	
M11.A.1.3.1 Locate/identify irrational numbers at the approximate location on a number line.	**Student Edition:** 11
M11.A.1.3.2 Compare and/or order any real numbers (rational and irrational may be mixed).	**Student Edition:** 11, 28, 33, 34, 36 Example 4, 37-38, 43 Example 6 *Graphing Calculator Investigation* 36 **Teacher Wraparound Edition:** IE 34, 36
ASSESSMENT ANCHOR **M11.A.2** **Understand the meanings of operations, use operations and understand how they relate to each other.**	
M11.A.2.1 Apply ratio and/or proportion in problem-solving situations. ***Reference: 2.2.11.A, 2.8.11.P***	
M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).	**Student Edition:** 69 Example 3, 82 Example 2, 111 Example 2, 131 Example 3, 472, 477 #44-#45, 507, 564-560 **Teacher Wraparound Edition:** IE 69, 507
M11.A.2.1.2 Solve problems using direct and inverse proportions.	**Student Edition:** 181 #58, 188 #65, 490 #63-#66, 492-497 *Getting Started* 471 #13-#24 **Teacher Wraparound Edition:** IE 493, 494

STANDARDS	PAGE REFERENCES
M11.A.2.1.3 Identify and/or use proportional relationships in problem-solving settings.	**Student Edition:** 181 #58, 188 #65, 490 #63-#66, 492-497 *Getting Started* 471 #13-#24 **Teacher Wraparound Edition:** IE 493, 494
M11.A.2.2 Use exponents, roots and/or absolute value to solve problems. ***Reference: 2.1.11.A***	
M11.A.2.2.1 Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value (may contain all types of real numbers - exponents should not exceed power of 10).	**Student Edition:** 28-32, 39 #59-#61, 222-227, 257-262, 360-364 **Teacher Wraparound Edition:** A 32; DI 226; H 28; IE 29, 223, 251, 252, 253
M11.A.2.2.2 Simplify/evaluate expressions involving multiplying with exponents (e.g., $x^6 * x^7 = x^{13}$), powers of powers (e.g., $(x^6)^7=x^{42}$) and powers of products $(2x^2)^3=8x^6$ (positive exponents only).	**Student Edition:** 222-228, 229-232, 233-237, 239-243 *Algebra Activity* 240 **Teacher Wraparound Edition:** AA 240; IE 222, 224, 229, 230, 240
ASSESSMENT ANCHOR **M11.A.3 Compute accurately and fluently and make reasonable estimates.**	
M11.A.3.1 Apply the order of operations in computation and in problem-solving situations. ***Reference: 2.2.8.A***	
M11.A.3.1.1 Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).	**Student Edition:** 6-10, 14 Example 4-Example 5, 16 #49-#58, 23, 36 Example 4, 183 Example 2, 294 Example 1 **Teacher Wraparound Edition:** GCI 7; IE 7, 13
M11.A.3.2 Use estimation strategies in problem-solving situations. ***Reference: 2.2.11.B, 2.2.11.D***	
M11.A.3.2.1 Use estimation to solve problems.	**Student Edition:** 59 Example 5, 225 Example 7, 296 Example 4, 335 #51, 507 Example 3 *Algebra Activity* 716 #4-#7 **Teacher Wraparound Edition:** IE 507

STANDARDS	PAGE REFERENCES
M11.B Measurement	
ASSESSMENT ANCHOR **M11.B.1 Apply appropriate techniques, tools and formulas to determine measurements.**	
M11.B.1.1 Use and/or compare measurements of angles. ***Reference: 2.3.11.A, 2.3.11.B***	
M11.B.1.1.1 Measure and/or compare angles in degrees (up to 360°) (protractor must be provided or drawn).	**Student Edition:** 709-714, 722 #25-#28 *Algebra Activity* 716 #4 **Teacher Wraparound Edition:** H 709; IE 710, 711, 712, 719; TT 719
M11.B.1.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system.) ***Reference: 2.3.8.A, 2.3.8.D***	
M11.B.1.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.	**Student Edition:** 18 #82, 22 Example 6, 25 #27-#28, 27 #83, 266 #12 *Mixed Problem Solving* 862 #4-#6 **Teacher Wraparound Edition:** IE 22 #6
M11.B.1.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.	**Student Edition:** 367 Example 3, 379 Example 2, 380 #11, 381 #39-#41, 615 #31 *Mixed Problem Solving* 866 #7-#8 **Teacher Wraparound Edition:** IE 379 #2
M11.B.1.2.3 Estimate area, perimeter or circumference of an irregular figure.	**Student Edition:** 67 #60, 187 #41, 335 #51
M11.B.1.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.	**Student Edition:** 26 #64, 255 #58, 367 Example 3, 380 #11, 381 #39, 382 #55 **Teacher Wraparound Edition:** IE 367 #3

STANDARDS	PAGE REFERENCES
M11.B.1.3 Describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure. ***Reference: 2.3.8.E***	
M11.B.1.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume. • How does changing the length of the radius of a circle affect the circumference of the circle? • How does changing the length of the edge of a cube affect the volume of the cube? • How does changing the length of the base of a triangle affect the area of the triangle?	**Student Edition:** 334 #45, 379 Example 2, 381 #41, 382 #55 *Mixed Problem Solving* 866 #8 **Teacher Wraparound Edition:** IE 379 #2
M11.C Geometry	
ASSESSMENT ANCHOR **M11.C.1 Analyze characteristics and properties of two- and three- dimensional geometric shapes and demonstrate understanding of geometric relationships.**	
M11.C.1.1 Identify and/or use parts of circles and segments associated with circles. ***Reference: 2.9.11.F***	
M11.C.1.1.1 Identify and/or use the properties of a radius, diameter and/or tangent of a circle (given numbers should be whole).	**Student Edition:** 9 #50, 426-431 *Extra Practice* 845 Lesson 8-3 **Teacher Wraparound Edition:** A 431; DI 428; IE 427, 428; TT 427; W 426
M11.C.1.1.2 Identify and/or use the properties of arcs, semicircles, inscribed angles and/or central angles.	**Student Edition:** 433, 434, 456 *Algebra Activity* 437
M11.C.1.2 Recognize and/or apply properties of angles, triangles and quadrilaterals. ***Reference: 2.9.8.D, 2.9.11.C***	
M11.C.1.2.1 Identify and/or use properties of triangles (e.g., medians, altitudes, angle bisectors, side/angle relationships, Triangle Inequality Theorem).	**Student Edition:** 113 #38, 184-185, 186 #14, 187 #41-#42, #44, 415 #35, #37, 612, 702-707 *Getting Started* 699 **Teacher Wraparound Edition:** IE 185, 703
M11.C.1.2.2 Identify and/or use properties of quadrilaterals (e.g., parallel sides, diagonals, bisectors, congruent sides/angles and supplementary angles).	**Student Edition:** 415 #36, 482 #13

STANDARDS	PAGE REFERENCES
M11.C.1.2.3 Identify and/or use properties of isosceles and equilateral triangles.	**Student Edition:** *Mixed Problem Solving* 869 #1-#4
M11.C.1.3 Use properties of congruence, correspondence and similarity in problem-solving settings involving two- and three- dimensional figures. ***Reference: 2.9.11.B***	
M11.C.1.3.1 Identify and/or use properties of congruent and similar polygons or solids.	**Student Edition:** *Prerequisite Skills* 817-819
M11.C.1.4 Solve problems involving right triangles using the Pythagorean Theorem. ***Reference: 2.10.11.B***	
M11.C.1.4.1 Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).	**Student Edition:** 720-721 Example 5, 777, 779 #2 *Getting Started* 699 #1-#4 *Prerequisite Skills* 820-821
ASSESSMENT ANCHOR **M11.C.2 Locate points or describe relationships using the coordinate plane.**	
M11.C.2.1 Solve problems using analytic geometry. ***Reference: 2.9.11.G***	
M11.C.2.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).	**Student Edition:** 412-416, 425 #5-#52, 441 *Algebra Activity* 417-418 *Practice Test* 467 #7-#9 *Study Guide and Review* 461-462 8-1 **Teacher Wraparound Edition:** DI 414; IE 413
M11.C.2.1.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic expressions; slope formula provided on the reference sheet).	**Student Edition:** 70-71, 77-78 Example 4, 101, 112 Example 5, 121 #42, 192 #25, 477 #46-#47 *Graphing Calculator Investigation* 70 **Teacher Wraparound Edition:** IE 71, 112 #5

STANDARDS	PAGE REFERENCES
M11.D Algebraic Concepts	
ASSESSMENT ANCHOR **M11.D.1 Demonstrate an understanding of patterns, relations and functions.**	
M11.D.1.1 Analyze and/or use patterns or relations. ***Reference: 2.8.11.Q, 2.8.11.A, 2.8.11.O***	
M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.	**Student Edition:** 81-86, 352 #56 *Graphing Calculator Investigation* 87-88, 359 *How* 63 **Teacher Wraparound Edition:** A 88; IE 82-83
M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.	**Student Edition:** 56-61, 63, 67 #64-#65, 89-94 **Teacher Wraparound Edition:** IE 58 #2, #3c, 59 #4c, 82
M11.D.1.1.3 Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).	**Student Edition:** 56-57, 58 Example 3b, 59 Example 4b, 60 #7-#13, 61 #23-#34, #36, #40, #44, 67 #64-#65 **Teacher Wraparound Edition:** IE 57
ASSESSMENT ANCHOR **M11.D.2 Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.**	
M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods. ***Reference: 2.8.8.F, 2.8.11.D, 2.8.11.H, 2.8.11.J, 2.8.11.N, 2.8.11.L, 2.8.11.K***	
M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).	**Student Edition:** 40-46 *Study Guide and Review* 50 1-6 **Teacher Wraparound Edition:** DI 42; IE 41-43; TT 41
M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.	**Student Edition:** 66 #51, 67 #55, #57, 84, 129, 294-299, 369 Example 3 *Algebra Activity* 136-137 *Graphing Calculator Investigation* 300 **Teacher Wraparound Edition:** IE 69, 71

STANDARDS	PAGE REFERENCES
M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).	**Student Edition:** 63-67, 75-80, 189, 191 *Getting Started* 109 #1-#6 *Graphing Calculator Investigation* 87-88 **Teacher Wraparound Edition:** A 67; H 63; IE 64-65, 76-77
M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).	**Student Edition:** 110-115, 116-121, 123-127 *Graphing Calculator Investigation* 128 **Teacher Wraparound Edition:** A 127; IE 111-112, 116-119, 124-125
M11.D.2.1.5 Solve quadratic equations using factoring (integers only – not including completing the square or the Quadratic Formula).	**Student Edition:** 294-299, 301-305, 306-312, 329-335 *Getting Started* 345 #1-#3 *Graphing Calculator Investigation* 300 **Teacher Wraparound Edition:** IE 295-296, 302, 307-309
M11.D.2.2 Simplify expressions involving polynomials. ***Reference: 2.8.11.S***	
M11.D.2.2.1 Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).	**Student Edition:** 229, 230-232, 236 #5, #11, 238 #62-#65 *Getting Started* 285 #5-#8 *Study Guide and Review* 277 5-2 **Teacher Wraparound Edition:** IE 229 #2, 230
M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is not equal to 0).	**Student Edition:** 239-243, 301-305, 338, 358, 377 #60-#62 *Graphing Calculator Investigation* 241 *Prerequisite Skills* 815-816 **Teacher Wraparound Edition:** IE 239-242
M11.D.2.2.3 Simplify algebraic fractions.	**Student Edition:** 86 #33-#36, 223, 226 #7-#12, 254 #29-#30, 475 Example 7, 481, 601-603 **Teacher Wraparound Edition:** IE 223, 475, 481

STANDARDS	PAGE REFERENCES
ASSESSMENT ANCHOR **M11.D.3 Analyze change in various contexts.**	
M11.D.3.1 Describe and/or determine change. ***Reference: 2.8.8.J, 2.11.8.B***	
M11.D.3.1.1 Identify, describe and/or use constant or varying rates of change.	**Student Edition:** 69 Example 3, 560-565 *Study Guide and Review* 570 10-6 **Teacher Wraparound Edition:** A 565; IE 69 #3, 561, 562
M11.D.3.1.2 Determine how a change in one variable relates to a change in a second variable (e.g., y=4/x, if x doubles, what happens to y?).	**Student Edition:** 69 Example 3, 560-565 *Study Guide and Review* 570 10-6 **Teacher Wraparound Edition:** A 565; IE 69 #3, 561, 562
M11.D.3.2 Compute and/or use the slope of a line. ***Reference: 2.8.11.J, 2.8.11.L***	
M11.D.3.2.1 Apply the formula for the slope of a line to solve problems (formula given on reference sheet).	**Student Edition:** 68-73, 75-79 *Algebra Activity* 83 *Graphing Calculator Investigation* 70 **Teacher Wraparound Edition:** DI 71; IE 69, 71, 83
M11.D.3.2.2 Given the graph of the line, 2 points on the line, or the slope and a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.	**Student Edition:** 68 Example 1, 69 Example 3, 71 #4-#6, 72 #15-#26, #29-#36, 86 #31-#32, 188 #66-#69, 637 #54-#55 *Study Guide and Review* 102 2-4 **Teacher Wraparound Edition:** IE 69, 76
M11.D.3.2.3 Compute the slope and/or y-intercept represented by a linear equation or graph.	**Student Edition:** 70 Example 4, 75-79, 82 Example 2 *Graphing Calculator Investigation* 70 **Teacher Wraparound Edition:** A 80; IE 77, 83

STANDARDS	PAGE REFERENCES
ASSESSMENT ANCHOR **M11.D.4 Describe or use models to represent quantitative relationships.**	
M11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables. ***Reference: 2.8.11.K, 2.8.11.Q***	
M11.D.4.1.1 Match the graph of a given function to its table or equation.	**Student Edition:** 82 Example 2, 84-85, 89-92, 96-98 *Graphing Calculator Investigation* 87-88, 91 **Teacher Wraparound Edition:** IE 82, 91, 96-97
M11.E Data Analysis and Probability	
ASSESSMENT ANCHOR **M11.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.**	
M11.E.1.1 Appropriately display and/or use data in problem-solving settings. ***Reference: 2.6.11.A, 2.6.8.E***	
M11.E.1.1.1 Create and/or use appropriate graphical representations of data, including box-and-whisker plots, stem-and-leaf plots or scatter plots.	**Student Edition:** 81, 83 #4-#5, 84 #6-#9, 85 #15, 95 #53, 99 #51, 598 #59, 667 #15-#16 *Prerequisite Skills* 824-827 **Teacher Wraparound Edition:** IE 82
M11.E.1.1.2 Analyze data and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots or scatter plots).	**Student Edition:** 82 Example 2, 83 #3-#5, 84-85, 95 #54-#55, 99 #52-#53, 598 #60-#61 *Prerequisite Skills* 824-827 **Teacher Wraparound Edition:** DI 82; H 81; IE 83
ASSESSMENT ANCHOR **M11.E.2 Select and/or use appropriate statistical methods to analyze data.**	
M11.E.2.1 Use measures of central tendency to describe a set of data. ***Reference: 2.6.8.A, 2.6.11.A***	
M11.E.2.1.1 Calculate or select the appropriate measure of central tendency (mean, mode or median) of a set of data given or represented on a table, line plot or stem-and-leaf plot.	**Student Edition:** 664-669, 671-675 *Prerequisite Skills* 822-823 **Teacher Wraparound Edition:** A 670, 675; IE 665, 672; W 664

STANDARDS	PAGE REFERENCES
M11.E.2.1.2 Calculate and/or interpret the range, quartiles and interquartile range of data.	**Student Edition:** *Prerequisite Skills* 823 The following pages also can be used to meet this standard. 664-669
M11.E.2.1.3 Describe how outliers affect measures of central tendency.	**Student Edition:** *Graphing Calculator Investigation* 666 *Prerequisite Skills* 826-827 *Study Tip* 83
ASSESSMENT ANCHOR **M11.E.3 Understand and/or apply basic concepts of probability or outcomes.**	
M11.E.3.1 Apply probability and/or odds to practical situations. ***Reference: 2.7.11.A, 2.7.11.E***	
M11.E.3.1.1 Find probabilities for independent, dependent or compound events and represent as a fraction, decimal or percent).	**Student Edition:** 652-657, 658-663 *Algebra Activity* 651 *Study Guide and Review* 689 **Teacher Wraparound Edition:** A 657; DI 654; H 658; IE 652-654, 659-660
M11.E.3.1.2 Find, convert and/or compare the probability and/or odds of a simple event.	**Student Edition:** 644-648 *Study Guide and Review* 688 12-3 **Teacher Wraparound Edition:** DI 646; IE 645-646; TNT 648; W 644
M11.E.3.2 Apply counting techniques in problem-solving settings. ***Reference: 2.7.8.A***	
M11.E.3.2.1 Determine the number of permutations and/or combinations or apply the fundamental counting principle (formula provided on the reference sheet).	**Student Edition:** 632-637, 638-643, 650 #70-#72 **Teacher Wraparound Edition:** A 643; DI 634, 640; H 638; IE 633-634, 639-640; TT 641

STANDARDS	PAGE REFERENCES
ASSESSMENT ANCHOR **M11.E.4 Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.**	
M11.E.4.1 Make predictions using data displays and probability. ***Reference: 2.7.8.E, 2.6.11.D***	
M11.E.4.1.1 Estimate or calculate to make predictions based on a circle, line, bar graph or given situation.	**Student Edition:** 82 Example 2, 83 #3-#5, 84-85, 95 #54-#55, 99 #52-#53, 598 #60-#61 *Prerequisite Skills* 824-827 **Teacher Wraparound Edition:** DI 82; H 81; IE 83
M11.E.4.1.2 Use probability to predict outcomes.	**Student Edition:** 644-650 *Study Guide and Review* 688 12-3 **Teacher Wraparound Edition:** DI 646; IE 645-646; TNT 648; W 644
M11.E.4.2 Analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions. ***Reference: 2.6.11.C, 2.6.11.D***	
M11.E.4.2.1 Draw, find and/or write an equation for a line of best fit for a scatter plot.	**Student Edition:** 81, 83 #4-#5, 84 #6-#9, 85 #15, 95 #53, 99 #51 **Teacher Wraparound Edition:** IE 82
M11.E.4.2.2 Make predictions using the equations or graphs of best-fit lines of scatter plots.	**Student Edition:** 82 Example 2, 83 #3-#5, 84-85, 95 #54-#55, 99 **Teacher Wraparound Edition:** DI 82; H 81; IE 83