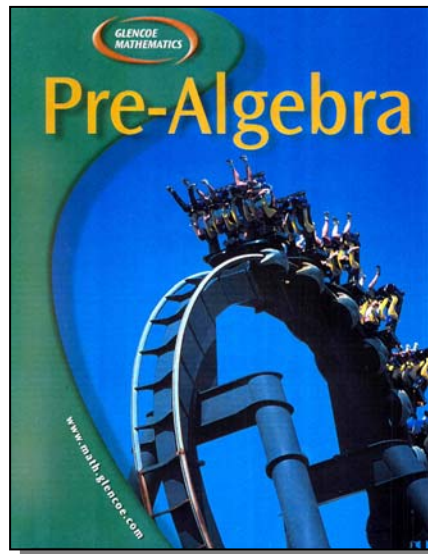


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INDIANA EDITION



alignment to

**Indiana
Academic Mathematics Standards
Grade 8**

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**ALIGNMENT TO
INDIANA ACADEMIC MATHEMATICS STANDARDS
GRADE 8**

OBJECTIVES	PAGE REFERENCES
Standard 1	
Number Sense	
<i>Students know the properties of rational and irrational numbers expressed in a variety of forms. They understand and use exponents, powers, and roots.</i>	
8.1.1 Read, write, compare, and solve problems using decimals in scientific notation.	SE: 186-190, 194 TWE: 186-190, 194
8.1.2 Know that every rational number is either a terminating or repeating decimal and that every irrational number is a non-repeating decimal.	SE: 205-209, 441-445 TWE: 205-209, 441-445
8.1.3 Understand that computations with an irrational number and a rational number (other than zero) produce an irrational number.	SE: 445 TWE: 445
8.1.4 Understand and evaluate negative integer exponents.	SE: 181-185, 194 TWE: 181-185, 194
8.1.5 Use the laws of exponents for integer exponents.	SE: 153-157, 174, 175-179, 181-190, 194, 683-686 TWE: 153-157, 174, 175-179, 181-190, 194, 683-686
8.1.6 Use the inverse relationship between squaring and finding the square root of a perfect square integer.	SE: 436-440, 483 TWE: 436-440, 483
8.1.7 Calculate and find approximations of square roots.	SE: 436-440, 483 TWE: 436-440, 483

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OBJECTIVES	PAGE REFERENCES
Standard 2	
Computation	
<i>Students compute with rational numbers expressed in a variety of forms. They solve problems involving ratios, proportions, and percentages.</i>	
8.2.1 Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) in multi-step problems.	SE: 9-10, 67-68, 78-79, 82-84, 212-214, 217-219, 223, 234-236 TWE: 9-10, 67-68, 78-79, 82-84, 212-214, 217-219, 223, 234-236
8.2.2 Solve problems by computing simple and compound interest.	SE: 300-302, 303 TWE: 300-302, 303
8.2.3 Use estimation techniques to decide whether answers to computations on a calculator are reasonable.	This objective is addressed throughout the text. See the following: SE: 6-8, 121, 288, 294-296, 298-299, 437-440, 586, 712, 714 TWE: 6-8, 121, 288, 294-296, 298-299, 437-440, 586, 712, 714
8.2.4 Use mental arithmetic to compute with common fractions, decimals, powers, and percents.	SE: 8-10, 186-190, 201, 282, 293-297 TWE: 8-10, 186-190, 201, 282, 293-297

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OBJECTIVES	PAGE REFERENCES
Standard 3	
Algebra and Functions	
<i>Students solve simple linear equations and inequalities. They interpret and evaluate expressions involving integer powers. They graph and interpret functions. They understand the concepts of slope and rate.</i>	
8.3.1 Write and solve linear equations and inequalities in one variable, interpret the solution or solutions in their context, and verify the reasonableness of the results.	SE: 110-114, 115-119, 120-124, 126-130, 244-248, 330-333, 334-338, 340-344, 345-349, 350-354, 355-359 TWE: 110-114, 115-119, 120-124, 126-130, 244-248, 330-333, 334-338, 340-344, 345-349, 350-354, 355-359
8.3.2 Solve systems of two linear equations using the substitution method and identify approximate solutions graphically.	SE: 414-418 TWE: 414-418
8.3.3 Interpret positive integer powers as repeated multiplication and negative integer powers as repeated division or multiplication by the multiplicative inverse.	SE: 153-157, 181-185 TWE: 153-157, 181-185
8.3.4 Use the correct order of operations to find the values of algebraic expressions involving powers.	SE: 153-157 TWE: 153-157
8.3.5 Identify and graph linear functions and identify lines with positive and negative slope.	SE: 375-379, 381-385, 387-391, 392, 398-401, 402-403 TWE: 375-379, 381-385, 387-391, 392, 398-401, 402-403
8.3.6 Find the slope of a linear function given the equation and write the equation of a line given the slope and any point on the line.	SE: 398-401, 404-408 TWE: 398-401, 404-408
8.3.7 Demonstrate an understanding of rate as a measure of one quantity with respect to another quantity.	SE: 265-268, 386, 387-391, 392, 393-397 TWE: 265-268, 386, 387-391, 392, 393-397
8.3.8 Demonstrate an understanding of the relationships among tables, equations, verbal expressions, and graphs of linear functions.	SE: 87-79, 126-130, 368, 374, 375-379 TWE: 87-79, 126-130, 368, 374, 375-379

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OBJECTIVES	PAGE REFERENCES
8.3.9 Represent simple quadratic functions using verbal descriptions, tables, graphs, and formulas and translate among these representations.	SE: 687-691, 692-696, 697 TWE: 687-691, 692-696, 697
8.3.10 Graph functions of the form $y = nx^2$ and $y = nx^3$ and describe the similarities and differences in the graphs.	SE: 692-696, 697 TWE: 692-696, 697
Standard 4	
Geometry	
<i>Students deepen their understanding of plane and solid geometric shapes and properties by constructing shapes that meet given conditions, by identifying attributes of shapes, and by applying geometric concepts to solve problems.</i>	
8.4.1 Identify and describe basic properties of geometric shapes: altitudes, diagonals, angle and perpendicular bisectors, central angles, radii, diameters, and chords.	SE: 498-499, 500-504, 513-517, 520, 527-531, 533-538 TWE: 498-499, 500-504, 513-517, 520, 527-531, 533-538
8.4.2 Perform simple constructions, such as bisectors of segments and angles, copies of segments and angles, and perpendicular segments. Describe and justify the constructions.	SE: 498-499 TWE: 498-499
8.4.3 Identify properties of three-dimensional geometric objects (e.g., diagonals of rectangular solids) and describe how two or more figures intersect in a plane or in space.	SE: 556-561 TWE: 556-561
8.4.4 Draw the translation (slide), rotation (turn), reflection (flip), and dilation (stretches and shrinks) of shapes.	SE: 505, 506-511, 512 TWE: 505, 506-511, 512
8.4.5 Use the Pythagorean Theorem and its converse to solve problems in two and three dimensions.	SE: 458-459, 460-464, 465 TWE: 458-459, 460-464, 465

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OBJECTIVES	PAGE REFERENCES
Standard 5	
Measurement	
<i>Students convert between units of measure and use rates and scale factors to solve problems. They compute the perimeter, area, and volume of geometric objects. They investigate how perimeter, area, and volume are affected by changes of scale.</i>	
8.5.1 Convert common measurements for length, area, volume, weight, capacity, and time to equivalent measurements within the same system.	SE: 171-172, 213-214, 718-719, 720-721 TWE: 171-172, 213-214, 718-719, 720-721
8.5.2 Solve simple problems involving rates and derived measurements for attributes such as velocity and density.	SE: 131, 135, 212-214, 217-219, 265-268 TWE: 131, 135, 212-214, 217-219, 265-268
8.5.3 Solve problems involving scale factors, area, and volume using ratio and proportion.	SE: 157, 276-280, 565, 572, 577, 583, 584-588 TWE: 157, 276-280, 565, 572, 577, 583, 584-588
8.5.4 Use formulas for finding the perimeter and area of basic two-dimensional shapes and the surface area and volume of basic three-dimensional shapes, including rectangles, parallelograms, trapezoids, triangles, circles, prisms, cylinders, spheres, cones, and pyramids.	SE: 132-136, 157, 518-519, 520-525, 533-538, 563-567, 568-572, 573-577, 578-582, 583, 584-588 TWE: 132-136, 157, 518-519, 520-525, 533-538, 563-567, 568-572, 573-577, 578-582, 583, 584-588
8.5.5 Estimate and compute the area and volume of irregular two- and three-dimensional shapes by breaking the shapes down into more basic geometric objects.	SE: 518-519, 539-543, 548, 564, 573-577, 578 TWE: 518-519, 539-543, 548, 564, 573-577, 578

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Standard 6	
Data Analysis and Probability	
<i>Students collect, organize, represent, and interpret relationships in data sets that have one or more variables. They determine probabilities and use them to make predictions about events.</i>	
8.6.1 Identify claims based on statistical data and, in simple cases, evaluate the reasonableness of the claims. Design a study to investigate the claim.	SE: 275, 309, 634, 565 TWE: 275, 309, 634, 565
8.6.2 Identify different methods of selecting samples, analyzing the strengths and weaknesses of each method, and the possible bias in a sample or display.	SE: 275, 309, 315, 630-633, 634 TWE: 275, 309, 315, 630-633, 634
8.6.3 Understand the meaning of, and be able to identify or compute the minimum value, the lower quartile, the median, the upper quartile, the interquartile range, and the maximum value of a data set.	SE: 238-242, 243, 612-616, 617-621 TWE: 238-242, 243, 612-616, 617-621
8.6.4 Analyze, interpret, and display single- and two-variable data in appropriate bar, line, and circle graphs; stem-and-leaf plots; and box-and-whisker plots and explain which types of display are appropriate for various data sets.	SE: 452, 617-621, 622, 623-628, 629, 722-723 TWE: 452, 617-621, 622, 623-628, 629, 722-723
8.6.5 Represent two-variable data with a scatterplot on the coordinate plane and describe how the data points are distributed. If the pattern appears to be linear, draw a line that appears to best fit the data and write the equation of that line.	SE: 39, 40-44, 45, 409-413 TWE: 39, 40-44, 45, 409-413
8.6.6 Understand and recognize equally likely events.	SE: 310-314, 315, 636-639 TWE: 310-314, 315, 636-639
8.6.7 Find the number of possible arrangements of several objects by using the Basic Counting Principle.	SE: 636-639, 640, 641-645 TWE: 636-639, 640, 641-645

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Standard 7	
Problem Solving	
<i>Students make decisions about how to approach problems and communicate their ideas.</i>	
8.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.	This objective is addressed throughout the text. See, for example: SE: 6-10, 35-38, 39, 40-44, 175-179, 181-185, 186-189, 249-252, 253 TWE: 6-10, 35-38, 39, 40-44, 175-179, 181-185, 186-189, 249-252, 253
8.7.2 Make and justify mathematical conjectures based on a general description of a mathematical question or problem.	SE: 39, 62, 180, 253, 275, 392, 453, 492, 528, 640 TWE: 6-10, 35-38, 39, 40-44, 175-179, 181-185, 186-189, 249-252, 253
8.7.3 Decide when and how to divide a problem into simpler parts.	SE: 158, 249-252, 253, 293-297, 393-397, 573-577, 578-582, 706 TWE: 158, 249-252, 253, 293-297, 393-397, 573-577, 578-582, 706
<i>Students use strategies, skills, and concepts in finding and communicating solutions to problems.</i>	
8.7.4 Apply strategies and results from simpler problems to solve more complex problems.	This objective is addressed throughout the text in the Critical Thinking exercises that are found in every lesson and the Algebra Connection examples. See, for example: SE: Critical Thinking—230, 333, 385, 397 Algebra Connections—25, 58, 77, 150, 161, 166, 170, 217, 221, 227 TWE: Critical Thinking—230, 333, 385, 397 Algebra Connections—25, 58, 77, 150, 161, 166, 170, 217, 221, 227
8.7.5 Make and test conjectures by using inductive reasoning.	SE: 6-10, 39, 62, 180, 253, 275, 392, 453, 492, 528, 640 TWE: 6-10, 39, 62, 180, 253, 275, 392, 453, 492, 528, 640

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8.7.6 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.	This objective is addressed throughout the text in the Writing in Math exercises that are found in every lesson. See, for example: SE: 74, 162, 219, 391, 445 TWE: 74, 162, 219, 391, 445
8.7.7 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.	This objective is addressed throughout the text. See, for example: SE: 6-10, 589, 590-594 TWE: 6-10, 589, 590-594
8.7.8 Select and apply appropriate methods for estimating results of rational-number computations.	SE: 6-10, 233, 293-297, 298-302, 570, 712, 714, 716, 717 TWE: 6-10, 233, 293-297, 298-302, 570, 712, 714, 716, 717
8.7.9 Use graphing to estimate solutions and check the estimates with analytic approaches.	SE: 414-418, 419-422 TWE: 414-418, 419-422
8.7.10 Make precise calculations and check the validity of the results in the context of the problem.	This objective is addressed throughout the text. See, for example: SE: 6-10, 71, 127, 187, 212, 234, 272, 335, 347, 415, 454, 473, 534, 586, 643, 684 TWE: 6-10, 71, 127, 187, 212, 234, 272, 335, 347, 415, 454, 473, 534, 586, 643, 684
<i>Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.</i>	
8.7.11 Decide whether a solution is reasonable in the context of the original situation.	SE: 6-10, 71, 127, 187, 212, 234, 272, 335, 347, 415, 454, 473, 534, 586, 643, 684 TWE: 6-10, 71, 127, 187, 212, 234, 272, 335, 347, 415, 454, 473, 534, 586, 643, 684
8.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.	This objective is addressed throughout the text in the Concept Check and Guided Practice exercises that are found in every lesson. See, for example: SE: 77, 105, 171, 228, 266, 336, 421, 468, 523, 541, 559, 580, 625, 637, 689 TWE: 77, 105, 171, 228, 266, 336, 421, 468, 523, 541, 559, 580, 625, 637, 689

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