

**Pennsylvania Department of Education
Grade 7 Mathematics Performance Level Descriptors**

<p>A seventh-grade student performing at the Below Basic Level demonstrates limited understanding of the concepts and ineffective application of the mathematical skills in the five Pennsylvania Mathematics Reporting Categories.</p>	<p>A seventh-grade student performing at the Basic Level solves simple or routine problems by applying skills and procedures in the five Pennsylvania Mathematics Reporting Categories.</p> <p>A student performing at the Basic Level:</p> <p>A. converts between and orders pairs of common fractions, decimals, percents, integers and mixed numbers; solves simple problems involving rational numbers, including proportions.</p> <p>B. adds and subtracts common measurements; converts simple measurements of length, weight and time; applies scales shown in maps and other models.</p> <p>C. identifies properties of circles and basic three-dimensional figures; recognizes properties of similarity; applies simple plotting techniques with ordered pairs.</p> <p>D. extends or completes a one-operation pattern of whole numbers; selects appropriate strategies to solve simple one-step equations.</p> <p>E. calculates basic measures of central tendency; determines experimental probabilities based on simple sets of data and events.</p>	<p>A seventh-grade student performing at the Proficient Level solves practical and real-world problems.</p> <p>A student performing at the Proficient Level:</p> <p>A. converts among and orders rational numbers; uses the order of operations to simplify numeric expressions involving whole numbers; solves problems involving proportions; uses operations on rational numbers to solve and simplify multi-step problems.</p> <p>B. uses problem-solving strategies and formulas to find measures of compound figures; converts measurements within a system; determines and applies scale factors in interpretations or conversions.</p> <p>C. uses properties of circles and relationships among line segments within three-dimensional figures to solve problems; solves problems involving similar polygons; plots points on the coordinate plane.</p> <p>D. extends or completes rational number patterns; identifies expressions, equations or inequalities that model problem situations; uses substitution to simplify algebraic expressions; solves one-step equations and problems involving constant rate of change.</p> <p>E. determines theoretical probability of occurrence of an event; analyzes and interprets graphical representations of data; evaluates problem situations to select appropriate measures of central tendency; draws conclusions from data displays or probability.</p>	<p>A seventh-grade student performing at the Advanced Level solves complex problems and demonstrates in-depth understanding of the skills, concepts and procedures in the five Pennsylvania Mathematics Reporting Categories.</p> <p>A student performing at the Advanced Level:</p> <p>A. uses rational number properties to evaluate and support solutions to complex problems; explains problem-solving techniques used in problems involving multiple operations and proportional reasoning.</p> <p>B. develops strategies, including non-routine methods, to find measures of complex figures; explains results of solutions using scale factors and conversion techniques.</p> <p>C. describes properties and relationships of parts of a circle; uses similarity and congruence to describe polygons and justify conclusions; describes relationships using the coordinate plane.</p> <p>D. uses mathematical terms to describe a pattern involving rational numbers; interprets expressions, equations or inequalities that model problem situations; explains the rate of change relationship of data displayed in a graph.</p> <p>E. generalizes and describes data shown in data displays; justifies strategies and solutions involved in calculating probability from sets of data; analyzes data from different sources in order to formulate predictions.</p>
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