

**Pennsylvania Department of Education
Grade 8 Mathematics Performance Level Descriptors**

<p>An eighth-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>An eighth-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. performs simple computations on fractions, integers and decimals, including powers; uses the order of operations to simplify basic numeric expressions.</p> <p>B. converts basic customary and metric units of length, capacity and time to one unit above or below (e.g., seconds to minutes); selects and uses correct formulas to calculate basic measures of simple two- and three-dimensional geometric objects.</p> <p>C. matches simple prisms with nets; recognizes properties of angles formed by intersecting lines; identifies or locates points on a coordinate plane.</p> <p>D. extends basic numeric or algebraic patterns; solves simple equations and uses substitution to check the accuracy of the solution; matches a linear graph to a table.</p> <p>E. identifies correct graphical representations for sets of data; calculates simple probability for mutually exclusive events; identifies basic correlations in scatter plots.</p>	<p>An eighth-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. calculates with complex rational numbers; solves rate and percent problems; uses rounding and estimation in problem settings, including problems involving percent; solves rate problems.</p> <p>B. uses formulas to determine number of sides and angle measures of polygons; converts basic measurements of objects and time to two units above or below; calculates surface areas and volumes of rectangular prisms.</p> <p>C. matches cones and pyramids with nets; uses properties of angles formed by parallel lines cut by a transversal; uses the Pythagorean Theorem to solve practical problems; plots points on a coordinate plane.</p> <p>D. matches or determines the rule (linear function) to describe values in a table; evaluates or simplifies expressions; solves equations or inequalities; matches an algebraic expression to a problem setting.</p> <p>E. draws conclusions from graphical representations of data; determines the permutations and combinations of data sets; makes predictions based on statistical and data displays.</p>	<p>An eighth-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. translates among equivalent representations of numbers; solves complex rate problems; determines and uses appropriate applications for estimation.</p> <p>B. determines and justifies appropriateness of measurements for given situations; develops and implements strategies to solve measurement problems involving multiple steps.</p> <p>C. justifies answers and conclusions by using properties of angles formed by intersecting lines; uses points on coordinate planes to describe geometric shapes and justifies solutions.</p> <p>D. describes patterns or functions; creates numeric or algebraic statements to model complex problems; represents linear functions graphically.</p> <p>E. determines the appropriateness of data displays; develops strategies to solve non-routine probability or outcome problems; justifies hypotheses and makes predictions based on data.</p>
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