ILLINOIS STATE BOARD OF EDUCATION

MATHEMATICS GRADE 8

Theory of Action: Academic standards represent a collective commitment around what students should learn each year. The state assessment asks students to demonstrate their knowledge, skills, and understanding related to these standards using a common measure. The resulting data allows us to see patterns in performance that should guide school and district improvement, helping identify areas of strength and opportunity.

Role of PLDs in Defining Proficiency: Performance level descriptors bridge the state assessment to classroom instruction and the systems of formative assessments that guide local instruction and choices about individual students. *Academic proficiency represents a range of observable student performance characteristics*. There are multiple pathways to proficiency, and students rely upon their strengths differently within that range of performance.

Proficiency and Difficulty: A student's ability to demonstrate proficiency is influenced by the complexity of the texts or stimuli presented, tasks they're asked to complete, and the contexts in which they are engaged. As student performance improves, students are typically able to handle more challenging texts/stimuli, tasks, and contexts, and are able to demonstrate their skills and knowledge more accurately and consistently.

Claim 1: Functions[i] *Student performance indicates the ability to ...*	
Above Proficient	Analyze and use functions, along with their notations, to interpret graphs from a real-world context. Interpret key features and examine graphs.
Proficient	Recognize functions as rules assigning exactly one output to each input; interpret function graphs and compare different representations (algebraic, graphical, numerical, and verbal forms); analyze characteristics of linear versus nonlinear functions; construct linear functions from various data forms; and describe their behavior and key features using appropriate mathematical terminology.
Approaching Proficient	Recognize functions and compare their properties when presented in different formats. Interpret the linear equation y =*mx*+*b*.
Below Proficient	Identify simple relationships between quantities. Recognize the linear equation y=*mx*+*b.*

Claim 2: The Number System[ii] *Student performance indicates the ability to ...*	
Above Proficient	Convert fractions with double-digit dividends and divisors into rational or irrational numbers, convert decimals with four or more decimal places into fractions, and compare rational and irrational numbers to three decimal places on a number line while identifying decimal repeats in the form of 0.*abcabc*.
Proficient	Convert fractions with double-digit dividends and single-digit divisors into rational or irrational numbers with decimal expansions up to three or more decimal places, convert decimals with three or more decimal places into fractions, and compare rational and irrational numbers to two decimal places on a number line.
Approaching Proficient	Convert simple fractions into rational and irrational numbers to the second decimal place, convert decimal expansions up to two places beyond the decimal into fractions, and compare rational and irrational numbers to one decimal place on a number line.
Below Proficient	Distinguish fractions as division, compare whole numbers on a number line, identify decimals, and locate rational numbers between square numbers on a number line.

Claim 3: Expressions & Equations[iii] *Student performance indicates the ability to ...*	
Above Proficient	Utilize properties of exponents, roots, and scientific notation to solve real-world problems; analyze and graph linear and proportional relationships; and solve multi-step equations and systems of linear equations graphically and algebraically.
Proficient	Use knowledge of proportional relationships, exponents, roots, and scientific notation to solve real-world and mathematical problems. Solve systems of linear equations using graphs, tables, and equations.
Approaching Proficient	Evaluate numerical expressions using properties of integer exponents, solve simple equations and inequalities, identify proportional relationships, graph lines, and solve systems of linear equations in two variables using graphs and substitution.
Below Proficient	Evaluate numerical expressions with positive exponents, recognize numbers in scientific notation, identify proportional relationships, determine slopes and y-intercepts from a graph, and solve equations with whole number coefficients.

Claim 4: Statistics and Probability[iv] *Student performance indicates the ability to ...*	
Above Proficient	Analyze scatter plots to identify patterns of association, informally fit and assess linear models, interpret slope and intercept in the context of bivariate data, and analyze two-way tables to describe associations between categorical variables.
Proficient	Analyze scatter plots and two-way tables to investigate and model patterns of association in bivariate data. Use linear equations to solve problems and interpret slope/intercept.
Approaching Proficient	Interpret scatter plots, identify lines of best fit, use linear equations, and construct/interpret two-way tables to analyze patterns of association in bivariate data.
Below Proficient	Recognize associations in scatter plots, identify the line of best fit for linear relationships, apply linear models to bivariate measurement data, and identify two-way tables to summarize categorical data.

Claim 5: Geometry[v] *Student performance indicates the ability to ...*	
Above Proficient	Apply the Pythagorean theorem to various multi-step problems, identify congruence through transformations of two-dimensional figures, articulate geometric concepts and proofs using advanced reasoning, and effectively generate and apply volume formulas for three-dimensional solids in both mathematical and real-world contexts.
Proficient	Solve problems involving the Pythagorean theorem through understanding of geometric transformations, congruence, and similarity; distinguish angle relationships; and calculate volumes.
Approaching Proficient	Determine missing side lengths of right triangles using the Pythagorean theorem. Relate geometric transformations with sequences using basic mathematical terminology.
Below Proficient	Recognize congruent figures, perform basic transformations, plot polygons, and apply the Pythagorean theorem. Recognize volume of 3-D shapes.

[i] Includes standards 8.F.1, 8.F.2, 8.F.3, 8.F.4, 8.F.5
[ii] Includes standards 8.NS.1, 8.NS.2
[iii] Includes standards 8.EE.1, 8.EE.2, 8.EE.3, 8.EE.4, 8.EE.5, 8.EE.6, 8.EE.7, 8.EE.7a, 8.EE.7b, 8.EE.8, 8.EE.8.a, 8.EE.8.b, 8.EE.8.c
[iv] Includes standards 8.SP.1, 8.SP.2, 8.SP.3, 8.SP.4,
[v] Includes standards 8.G.1a, 8.G.1b, 8.G.1c, 8.G.2, 8.G.3, 8.G.4, 8.G.5, 8.G.6, 8.G.7, 8.G.8, 8.G.9