

Performance Level Descriptors

Mathematics

Grade 8

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Performance Level Descriptors

The Forward Exam is a summative assessment which provides information about what students know and can do in relation to the Wisconsin Academic Standards at each grade-level. Students receive a score based on their performance in each content area. The Student Performance Level is a categorical score.

Range performance levels are based on predetermined score ranges. The score ranges for each content area are set using a process in which Wisconsin educators carefully consider the academic standards, performance level descriptors, and test questions. There are four performance levels: *Developing*, *Approaching*, *Meeting*, and *Advanced*. The goal for all students is to score at the meeting or advanced level.

More-detailed descriptions of the specific concepts and skills are provided for each indicator in the **Performance Level Descriptors** (PLDs). Range PLDs are descriptions of the knowledge and skills expected at each of the four performance levels. The Range PLDs are based on the approved 2021 state-adopted content standards.

PLDs show a *progression of knowledge and skills* expected across the performance levels. It is important to understand that a student should demonstrate an understanding of the knowledge and skills within a performance level *as well as all content and skills in any performance levels that precede it, if any*. For example, a student who is meeting expectations should also possess the knowledge and skills described at the developing and approaching performance levels.

Policy Performance Level Descriptors			
Developing	Approaching	Meeting	Advanced
Student is at the beginning stages of developing the knowledge and skills described in the Wisconsin Academic Standards for their grade level needed to be on-track for future learning.	Student is approaching the knowledge and skill expectations described in the Wisconsin Academic Standards for their grade level needed to be on-track for future learning.	Student is meeting the knowledge and skill expectations described in the Wisconsin Academic Standards for their grade level and is on-track for future learning.	Student demonstrates a thorough understanding of the knowledge and skills described in the Wisconsin Academic Standards for their grade level and is on-track for future learning.

Range Performance Level Descriptors

The Number System			
Developing	Approaching	Meeting	Advanced
A student at this level can likely recognize a rational number, and	A student at this level can likely recognize an irrational number,	A student at this level can likely explain why a number is either rational or irrational based on its decimal expansion,	A student at this level can likely
recognize the fractional equivalent of a number with a decimal expansion that terminates.	rewrite, as a fraction, a number with a decimal expansion that terminates, and	rewrite, as a fraction, a number with a decimal expansion with one digit that repeats, and	rewrite, as a fraction, a number with a decimal expansion with more than one digit that repeats, and
	locate an approximation of an irrational number on a number line.	compare the size of two irrational numbers and locate an approximation for each on a number line.	explain how to find an approximation of an irrational number.
Expressions and Equations			
Developing	Approaching	Meeting	Advanced
A student at this level can likely Recognize and explain an exponent,	A student at this level can likely recognize two numerical expressions with integer exponents that are equivalent,	A student at this level can likely generate an equivalent numerical expression by applying a property of integer exponents,	A student at this level can likely generate an equivalent numerical expression by applying multiple properties of integer exponents,
evaluate the square roots of perfect squares less than 100,	evaluate the cubed roots of perfect cubes up to 64,	use square root and cube root symbols to represent solutions to equations $x^2 = p$ and $x^3 = p$, where p is a positive, rational number,	solve real-world problems involving the equations $x^2 = p$ and $x^3 = p$, where p is a positive, rational number,
choose units of appropriate size for very large or very small measurements,	express very large or very small numbers as a single digit times a power of 10,	compare very large or very small numbers that are expressed as single digits times a power of 10,	

		use technology to perform operations with numbers expressed in scientific notation,	use technology to solve real-world problems involving operations with numbers expressed in scientific notation, and
	determine the unit rate from the graph of a proportional relationship,	graph a proportional relationship and interpret the unit rate as the slope,	
	compare two proportional relationships represented in the same way,	compare two proportional relationships represented in different ways,	compare more than two proportional relationships represented in different ways,
	determine the slope of a non-vertical line using any two points on the graph,	explain using similar triangles why the slope is the same between any two distinct points on a non-vertical line,	
find the y-intercept of a line using the graph,	derive the equation $y = mx$ for line through the origin,	derive the equation $y = mx + b$ for a line intersecting the vertical axis at b ,	
	determine whether a linear equation in one variable has one solution, infinitely many solutions, or no solutions,	explain why a linear equation in one variable has one solution, infinitely many solutions, or no solutions,	create examples of linear equations in one variable that have one solution, infinitely many solutions, or no solutions, and
recognize a solution to a linear equation with rational coefficients, and	solve linear equations with rational coefficients,	solve linear equations with rational coefficients that require expanding expressions and collecting like terms,	create a linear equation with a specific solution with rational coefficients that requires expanding expressions and collecting like terms.
	determine whether a system of two linear equations has one solution, no solution, or infinitely many solutions when given the graphs, and	solve a system of two linear equations in two variables by graphing or analyzing tables, and	

determine whether a point is a solution to a system of two linear equations when given the graphs.	identify a system of two linear equations in two variables that can be used to solve a real-world problem.	write a system of two linear equations in two variables and use it to solve a real-world problem.	
Functions			
Developing	Approaching	Meeting	Advanced
A student at this level can likely	A student at this level can likely	A student at this level can likely	A student at this level can likely
identify a property of a function when given a graph, and	identify a relation that is a function,	explain why a relation is function,	
identify a function as linear or non-linear when given a graph.	identify a property of a function when given a table, equation, or set of ordered pairs,	compare properties of two functions represented in different ways,	compare properties of three or more functions represented in different ways, and
	identify a function as linear or non-linear when given a table, equation, or set of ordered pairs,	explain why a function is linear or non-linear when given a table, equation, or set of ordered pairs,	
	determine the rate of change or initial value of a function that models a linear relationship between two quantities, and	interpret a rate of change and initial value of a function in terms of the situation it models,	
		construct a function to model a linear relationship between two quantities, and	construct a function to model a relationship between two quantities when the relationship is described verbally and graphically.
	describe qualitatively the functional relationship between two quantities that are represented graphically.	sketch a graph that shows the qualitative features of a function that has been described verbally.	

Geometry			
Developing	Approaching	Meeting	Advanced
A student at this level can likely describe a reflection or translation of an angle or line segment verbally or visually,	A student at this level can likely describe a reflection, translation, or rotation of an angle or line segment verbally or visually,	A student at this level can likely describe a reflection, translation, or rotation of an angle, line segment, line, or parallel lines verbally or visually,	A student at this level can likely describe a reflection, translation, or rotation of an angle, line segment, line, or parallel lines with words and pictures verbally or visually,
identify two two-dimensional figures that are congruent,	identify a rotation, reflection, or translation that shows congruence between two two-dimensional figures,	identify a sequence of two rotations, reflections, or translations that shows congruence between two two-dimensional figures,	identify or generate a sequence of three or more rotations, reflections, or transformations that shows congruence between two two-dimensional figures,
identify two two-dimensional figures that are similar, and	identify a rotation, reflection, or translation and the dilation that shows similarity between two two-dimensional figures,	identify a sequence of two rotations, reflections, or translations and the dilation that shows similarity between two two-dimensional figures,	identify or generate a sequence of three or more rotations, reflections, or translations and the dilation that shows similarity between two two-dimensional figures,
describe the effect of a translation on a two-dimensional figure using coordinates.	describe the effect of a reflection or translation on a two-dimensional figure using coordinates,	describe the effect of a dilation, rotation, reflection, or translation on a two-dimensional figure using coordinates,	describe the effect of multiple dilations, rotations, reflections, or translations on a two-dimensional figure using coordinates,
	identify congruent angles when parallel lines are cut by a transversal,	determine unknown measures of angles when parallel lines are cut by a transversal,	
		determine unknown measures of angles using facts about the angle sum and exterior angles of triangles as well as the angle-angle criterion for similarity of triangles,	

	use the side lengths of a triangle to determine whether it is a right triangle, and	explain the relationship between the lengths of the legs and the length of the hypotenuse in a right triangle,	
	apply the Pythagorean Theorem to determine an unknown hypotenuse in a triangle.	apply the Pythagorean Theorem to determine an unknown leg in a triangle and to find the distance between two points in a coordinate system, and	apply the Pythagorean Theorem to determine an unknown value in a three-dimensional figure, and
		use formulas to determine the volumes of cones, cylinders, and spheres.	explain the relationship among the formulas for the volumes of cones, cylinders, and spheres.
Statistics and Probability			
Developing	Approaching	Meeting	Advanced
A student at this level can likely identify outliers or clustering on a scatter plot,	A student at this level can likely identify patterns of association on a scatter plot,	A student at this level can likely construct a scatter plot and interpret it,	A student at this level can likely interpret two different scatter plots and make comparisons between their patterns, and
		informally fit a straight line to model the relationship between two quantities represented on a scatter plot,	evaluate and explain whether a particular straight line adequately models the relationship between two quantities represented on a scatter plot.
interpret the y-intercept of the equation of a linear model in the context of bivariate data, and	interpret the slope and y-intercept of the equation of a linear model in the context of bivariate data,	use the equation of a linear model in the context of bivariate data to solve problems,	
determine a missing value in a two-way table summarizing bivariate data.	determine multiple missing values in a two-way table summarizing bivariate data, and	construct a two-way table summarizing bivariate data, and	

	calculate relative frequencies for rows or columns in a two-way table summarizing bivariate data.	calculate and interpret relative frequencies for rows and columns in a two-way table summarizing bivariate data.	
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