Mathematics Grade 9

I Can Statements

	Math Makes Sense Correlation	Meets Standard of Excellence	Exceeds Acceptable Standard	Meets Acceptable Standard	Does Not Meet Acceptable Standard
		I know this so well I could teach someone	I know this fairly well	I can figure this out with help	This is too hard
GENERAL OUTCOME: Numbers					
Develop Number Sense					
I can demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by: • **representing repeated multiplication, using powers** • **using patterns to show that a power with an exponent of zero is equal to one** • **solving problems involving powers**	**Unit 2**				
I can demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents: • $(a^m)(a^n) = a^{m+n}$ • $a^m \div a^n = a^{m-n}$, m > n • $(a^m)^n = a^{mn}$ • $(ab)^m = a^m b^m$ • $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$, $b \neq 0$.	**Unit 2**				
I can demonstrate an understanding of rational numbers by: • **comparing and ordering rational numbers** • **solving problems that involve arithmetic operations on rational numbers** (maintenance and refine note: see grades 4-SO3. 5-SO5 & SO6, 7-SO5 and 8-SO6 number outcomes)	**Units 3**				
I can explain and apply the order of operations, including exponents, with and without technology (maintenance and refine note: see related grades 4-SO3, 5-SO-5 & SO6, 7-SO5 & SO6 and 8-SO6 & SO7 number outcomes)	**Unit 3**				
I can determine the square root of positive rational numbers that are perfect squares.	**Unit 1**				

GENERAL OUTCOME: Patterns & Relations Use patterns to describe the world and to solve problems					
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I can generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution	Unit 4				
I can graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems	Unit 4				
GENERAL OUTCOME: Patterns & Relations **Represent algebraic expressions in multiple ways**					
I can model and solve problems, using linear equations of the form: • $ax = b$ • $\frac{x}{a} = b, a \neq 0$ • $ax + b = c$ • $\frac{x}{a} + b = c, a \neq 0$ • $ax = b + cx$ • $a(x + b) = c$ • $ax + b = cx + d$ • $a(bx + c) = d(ex + f)$ • $\frac{a}{x} = b, x \neq 0$ where a, b, c, d, e and f are rational numbers	Unit 6				
I can explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context	Unit 6				
I can demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2).	Unit 5				
I can model, record and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially and symbolically (limited to polynomials of degree less than or equal to 2). (maintenance and refine note: see grades 4-SO3 & 7-SO6 number outcomes)	Unit 5				

I can model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically. (maintenance and refine note: see grades 5-SO5 & SO6, and 8-SO7 number outcomes)	**Unit 5**				
GENERAL OUTCOME: Shape and Space					
Use direct and indirect measurement to solve problems					
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I can solve problems and justify the solution strategy, using the following circle properties: • **the perpendicular from the centre of a circle to a chord bisects the chord** • **the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc** • **the inscribed angles subtended by the same arc are congruent** • **a tangent to a circle is perpendicular to the radius at the point of tangency**	Unit 8				
GENERAL OUTCOME: Shape and Space					
Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them					
I can determine the surface area of composite 3-D objects to solve problems	Unit 1				
I can demonstrate an understanding of similarity of polygons	Unit 7				
GENERAL OUTCOME: Shape and Space					
Describe and analyze position and motion of objects and shapes					
I can draw and interpret scale diagrams of 2-D shapes	Unit 7				
I can demonstrate an understanding of line and rotation symmetry	Unit 7				

GENERAL OUTCOME: Statistics and Probability Collect, display and analyze data to solve problems					
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I can describe the effect of: • bias • use of language • ethics • cost • time and timing • privacy • cultural sensitivity On the collection of data	Unit 9				
I can select and defend the choice of using either a population or a sample of a population to answer a question	Unit 9				
GENERAL OUTCOME: Statistics and Probability **Use experimental or theoretical probabilities to represent and solve problems involving uncertainty**					
I can demonstrate an understanding of the role of probability in society	Unit 9				