Student:_____ Subject: Math 9

Strand: Number – Number Concepts	
General Outcome #1: **Explain and illustrate the structure and the interrelationship of the sets of numbers within the rational number system**	**The big ideas/Enduring Understandings (Rocks)** **I can give examples of and define numbers that are** **natural,** **whole,** **integers,** **or rational.**
	Important to know and be able to do (Sand) **I can describe orally and in writing whether or not a number is rational.**
	I understand what the principal (positive) square root of a number is. **I can give examples of situations where answers would involve the positive (principal) square root.**
	Worth being familiar with (Water) **I can demonstrate that the root of a number can be positive or negative.**

Strand: Number – Number Concepts	
General Outcome #2: **Develop a number sense of powers with integral exponents and rational bases**	**The big ideas/Enduring Understandings (Rocks)** ❑ **Ican identify the base and the exponent of a power.** ❑ **I can identify the variable and coefficient of an algebraic expression**
	❑ **I can explain and identify the 3 exponent laws.**
	❑ **I can use the exponent laws to simplify algebraic expressions.** ❑ **I can express negative exponents as positive exponents.**
	Important to know and be able to do (Sand)
	Worth being familiar with (Water)

Strand: Number - Number Operations	
General Outcome #1: **Use a scientific calculator or a computer to solve problems involving rational numbers.**	**The big ideas/Enduring Understandings (Rocks)** **I can solve problems using rational numbers.**
	Important to know and be able to do (Sand) ❑ **I can show the steps involved in using a calculator to solve problems with rational numbers.**

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	Worth being familiar with (Water)

Strand: Number - Number Operations	
General Outcome #2: **Explain how exponents can be used to bring meaning to large and small numbers, and use calculators or computers to perform calculations involving these numbers**	**The big ideas/Enduring Understandings (Rocks)** ❑ **I can use the exponent laws to simplify expressions like $(x^2)(x^3) = x^5$** ❑ **I can use the exponent laws to evaluate expressions with number bases like $3^2 \times 3^3 = 3^5 = 243$** **Important to know and be able to do (Sand)** ❑ **I can use a calculator to solve problems with scientific notation and exponent laws.** **Worth being familiar with (Water)**

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Strand: Patterns and Relations – Variables and Equations				
General Outcome 1: Solve and verify linear equations and inequalities in one variable. #2. Generalize arithmetic operations from the set of rational numbers to the set of polynomials.	**The big ideas/Enduring Understandings (Rocks)**	**Still Learning**	**With Assistance**	**Can do Independently**
	I can illustrate the solution process for a single variable equation using algebra tiles or pictorially.			
	I can solve and verify single variable equations with rational numbers.			
	I can create equations to solve problems using let statements.			
	I can solve algebraically inequalities in one variable and display the solution on a number line.			
	I can substitute given values in an algebraic expression and then solve it.			
	I can use algebra tiles to show how to add and subtract expressions by combining like terms.			
	I can multiply, divide and factor monomials using algebra tiles and diagrams.			
	I can multiply, divide and factor binomials using algebra tiles and diagrams.			
	I can multiply, divide and factor trinomials using algebra tiles and diagrams.			
	I can multiply monomials.			
	I can multiply binomials.			
	I can multiply trinomials.			
	I can find common factors of algebraic expressions.			
	I can divide a polynomial by a monomial.			

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Strand: Shape and Space - Measurement				
General Outcome #1: Use trigonometric ratios to solve problems involving a right triangle.	**The big ideas/Enduring Understandings (Rocks)**	**Still Learning**	**With Assistance**	**Can do Independently**
	I can explain the meaning of the sine, cosine and tangent ratios in a right triangle.			
	I can show how to use trig ratios to solve right angle triangles.			
	I can use trig ratios to find an unknown side or an unknown angle of a right angle triangle using the sine, cosine or tangent ratios.			
	I can solve simple word problems that involve sine, cosine or tangent ratios to find an unknown angle or distance.			

Strand: Shape and Space -Measurement				
General Outcome 2: Describe the effects of dimension changes in related 2-D shapes and 3- D objects in solving problems involving area, perimeter, Surface area and volume.	**The big ideas/Enduring Understandings (Rocks)**	**Still Learning**	**With Assistance**	**Can do Independently**
	Students will be able to compare: ❑ **volumes of pyramids to prisms** ❑ **volumes of cones to cylinders.**			
	Important to know and be able to do (Sand)			
	Students will be able to compare how the volume changes as the surface area is modified (double, tripled) of similar 3-D objects.			
	Students will be able to compare how the area of a shape changes as the perimeter is modified (halved, doubled) of similar 2-D objects.			

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Strand: Shape and Space – 3D objects and 2D shapes				
General Outcome 1: Specify conditions under which triangles may be similar or congruent and use these conditions to	**The big ideas/Enduring Understandings (Rocks)**	**Still Learning**	**With Assistance**	**Can do Independently**
	I can explain why 2 triangles are similar and use this information to solve problems.			
	I can recognize and explain why 2 triangles are congruent and use this information to help to solve problems • **Can prove triangles are congruent using (SAS, SSS, ASA)**			

Strand: Shape and Space - Transformation				
General Outcome : Apply coordinate geometry and patterns to recognition to predict the effects of translations, rotations, reflections and dilations on 1-D lines and 2-D shapes	**The big ideas/Enduring Understandings (Rocks)**	**Still Learning**	**With Assistance**	**Can do Independently**
	I can draw the image of a 2-D shape after a: **1. translation (slide)** **2. reflection (flip)** **3. rotation (turn)** **4. dilatation (larger/smaller)** **5. combination of translations / reflections**			
	Important to know and be able to do (Sand)			
	I can identify the transformation that connects a shape with its image.			
	I can demonstrate that a shape and its dilatation image are similar.			
	I can demonstrate that a shape and its translated, reflected, rotated images are identical.			

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Strand: Statistics and Probability – Data Analysis				
General Outcome 1: Collect and analyze experimental results expressed in two variables, using technology, as required.	**The big ideas/Enduring Understandings (Rocks)**	**Still Learning**	**With Assistance**	**Can do Independently**
	Students will be able to create scatterplots comparing 2 variables.			
	Students will be able to identify the relationship between the 2 variables by observing the scatterplot.			
	Students will be able to identify line of best fit from the scatter plot by inspection.			
	Students will be able to identify line of best fit from the scatterplot by using technology.			
	Students will be able to draw conclusions from line of best fit.			
	Important to know and be able to do (Sand)			
	Students will be able to identify strengths and weaknesses for data collection methods.			
	Students will be able to identify between a biased and unbiased sample.			
	Worth being familiar with (water)	**Still Learning**	**With Assistance**	**Can do Independently**
	Students will be able to plan, do and write up and experiment showing the relationship between 2 variables.			
	Students will be assess the ways the media reports data to the public.			

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Strand: Statistics and Probability – Chance and Uncertainty				
General Outcome : Explain the use of probability and statistics in the solution of complex problems.	**The big ideas/Enduring Understandings (Rocks)**	**Still Learning**	**With Assistance**	**Can do Independently**
	Students will be able to use the probability formula.			
	Students will be able to solve problems involving the probability of 2 or more independent events.			
	Important to know and be able to do (Water)			
	Students will know the difference between theoretical and experimental probability.			
	Students will understand the role that probability and stats has in society.			

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