SRPSD Grade 8 Math Rubrics

Part A: Number Strand

N8.1 Demonstrate understanding of the square and principle square root of whole numbers concretely or pictorially and symbolically.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to know the perfect squares.	Student knows the perfect squares.	Student is able to determine the approximate square root.	Student is able to determine the approximate square root and justify their answer.

N8.2 Expand and demonstrate understanding of percent greater than or equal to 0% (including fractional and decimal percent) concretely, pictorially, and symbolically.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to represent percent.	Student is able to represent fractional percent greater than or equal 0%.	Student is able to solve problems involving percent.	Student can apply percent to a real life situation and justify their decision.

N8.3 Demonstrate understanding of rates, ratios, and proportional reasoning concretely, pictorially, and symbolically.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance understanding ratios.	Student is able to use ratios to solve problems.	Student is able to solve problems involving rates.	Student is able to solve problems involving proportional reasoning.

N8.4 Demonstrate understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance in multiplying and dividing fractions.	Student is able to multiply and divide proper fractions	Student is able to multiply and divide improper fractions including mixed numbers. (concretely, pictorially, symbolically)	Student is able to create and solve problems involving multiplication and division of fractions (mixed numbers).

N8.5 Demonstrate understanding of multiplication and division of integers concretely, pictorially, and symbolically.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance in multiplying and dividing integers.	Student is able to multiply **or** divide integers. (concretely, pictorially, symbolically)	Student is able to multiply **and** divide integers. (concretely, pictorially, symbolically)	Student is able to apply their understanding of multiplying and dividing integers to a situational problem and/or order of operations.

Part B: Pattern & Relations Strand

P8.1 Demonstrate understanding of linear relations concretely, pictorially (including graphs), physically, and symbolically.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to create a table of values and graph a linear relation.	Student is able to create a table of values for a linear relation and graph it.	Student is able to distinguish between linear and non-linear relations.	Student is able to describe a linear relation in a real life situation and explain how to make it non-linear.

P8.2 Model and solve problems using linear equations of the form: $ax = b$ $\frac{x}{a} = b$ $a \neq 0$, $ax + b = c$, $\frac{x}{a} + b = c$ $a \neq 0$, $a(x + b) = c$ concretely, pictorially, and symbolically, where a, b, and c are integers.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to solve linear equations.	Student is able to solve one-step linear equations involving integers.	Student is able to solve two step linear equations involving integers.	Student is able to use a real life situation to solve an equation and verify the solution.

Part C: Shape & Space Strand

SS8.1 Demonstrate understanding of the Pythagorean Theorem concretely or pictorially and symbolically and by solving problems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance in using the Pythagorean Theorem.	Student is able to solve for the hypotenuse using the Pythagorean Theorem.	Student able to solve a problem using the Pythagorean Theorem.	Student is able to solve problems using the Converse of the Pythagorean Theorem.

SS8.2 Demonstrate understanding of the surface area of 3-D objects limited to right prisms and cylinders (concretely, pictorially, and symbolically) by analyzing views, sketching and constructing 3-D objects, nets, and top, side, and front views, generalizing strategies and formulae, analyzing the effect of orientation, and solving problems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to create nets for right prisms and cylinders.	Student is able to create nets of right prisms and/or cylinders.	Student is able to apply strategies to determine the surface area of right prisms and cylinders.	Student is able to solve problems involving surface area.

SS8.3 Demonstrate understanding of volume limited to right prisms and cylinders (concretely, pictorially, or symbolically) by relating area to volume, generalizing strategies and formulae ••analyzing the effect of orientation, and solving problems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to determine area and volume.	Student understands the relationship between area (2-D) and volume (3-D).	Student is able to apply strategies to determine the volume of right prisms and cylinders.	Student is able to solve problems involving volume.

SS8.4 Demonstrate an understanding of tessellation by: ••explaining the properties of shapes that make tessellating possible ••creating tessellations ••identifying tessellations in the environment.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance understanding what a tessellation is.	Student can define what a tessellation is.	Student can identify translations, rotations, and reflections or any combination of the three in a tessellation.	Student can design and create a tessellation involving more than one shape and explain how it tessellates.

Part D: Statistics & Probability Strand

SP8.1 Analyze the modes of displaying data and the reasonableness of conclusions.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to interpret a graph.	Student identifies which graph is the best for a situation.	Student identifies graphs that mislead the information and can suggest alternatives to remove the bias.	Student is able to represent a given situation using a graph that would bias the interpretation.

SP8.2 Demonstrate understanding of the probability of independent events concretely, pictorially, orally, and symbolically.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Student needs assistance to determine probability.	Student is able to solve a problem with two independent events.	Student is able solve a problem with three independent events.	Student is able to create and solve a problem including two or more independent events.