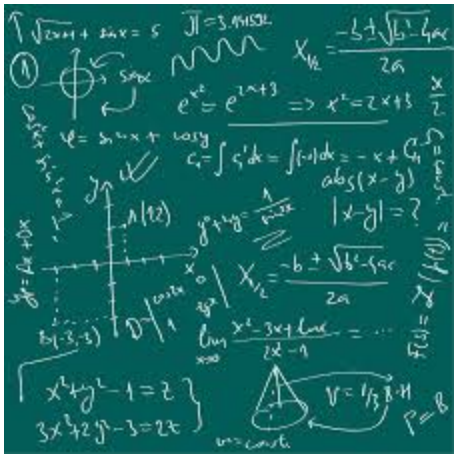


"I Can¨ Mascoma Standards
High School Math

I Can Use Complex Numbers to Help Me Understand Math

☐ I can recognize a complex number *i* where $i^2 = -1$ and $i = \sqrt{1}$ (NQ.9-12. CN. 1)

☐ I can represent every complex number in the form $a + bi$, where a and b are real numbers. (NQ.9-12. CN. 1)

☐ I can add and subtract complex numbers using the commutative and associative properties. (NQ.9-12. CN. 2)

☐ I can multiply complex numbers using the commutative, associative, and distributive properties. (NQ.9-12. CN. 2)

☐ I can use the equation $i^2 = -1$ to prove that $i^4 = i^8 = i^{4k}$ where k is a positive integer. (NQ.9-12. CN. 2)

☐ I can use the equation $i^2 = -1$ to prove that $i^{-5} = i^{-9} = i^{-4k-3}$ where k is a positive integer.. (NQ.9-12. CN. 2)

☐ I can determine the conjugate of a complex number and determine the quotients of a set of complex numbers by using the conjugate of the denominator. (NQ.9-12. CN. 3)

☐ I can use the equations $(\sqrt{(a^2 + b^2)} = r)$ to determine the modulus, r, of a complex number. (NQ.9-12. CN. 3)

Keywords: complex number, a+bi, commutative, associative, distributive, properties, conjugate, modulus, quotient

☐ I can represent complex numbers on the complex plane in rectangular form. (NQ. 9-12. CN. 4)

☐ I can represent complex numbers on the complex plane in polar form. (NQ. 9-12. CN. 4)

☐ I can explain why rectangular and polar forms of a complex number represent the same number. (NQ. 9-12. CN.4)

☐ I can represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on a complex plane. (NQ. 9-12. CN.5)

☐ I can use properties of this representation for computing, for example, $(-1 + \sqrt{3}i)^3 = 8$ because $(-1 + \sqrt{3})$ has modulus 2 and argument 120°. (NQ. 9-12. CN.5)

☐ I can determine whether it is desirable to use polar or rectangular form to add, subtract, multiply, or divide complex numbers. (NQ. 9-12. CN.4)

☐ I can calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints. (NQ. 9-12. CN.5)

Keywords: complex number, a+bi, commutative, associative, distributive, properties, conjugate, modulus, quotient, polar, rectangular, form, plane

☐ I can solve for a given variable in terms of another variable. 8.EE.8

☐ I can explain a system of linear equations graphically or algebraically, including those that have one solution, many solutions, or no solution. 8.EE.8b

☐ I can solve real-world problems involving a system of linear equations. 8.EE.8c

I Can Use Geometry to Help Me Understand Math

☐ I can use the properties of translations, rotations, and reflections on line segments, angles, parallel lines, or geometric figures. 8.G.4

☐ I can show and explain that two figures are congruent using transformations. 8.G.4

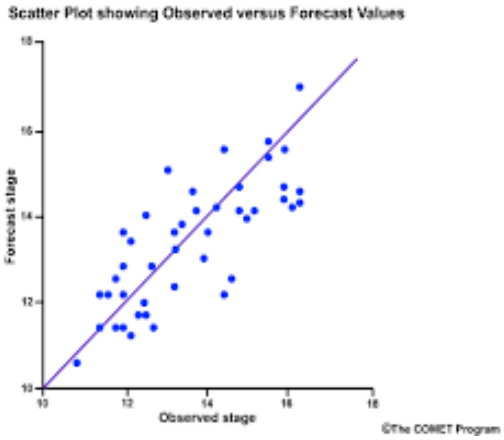
☐ I can determine the new coordinate of a figure give a dilation, translation, rotation or reflection. 8.G.3

☐ I can show and explain how the angle-sum and exterior-angle theorems of a triangle are true. 8.G.1b

☐ I can identify angle pairs created by parallel lines cut by a transversal and explain which angle pairs are congruent or supplementary and why. 8.G.1b

☐ I can give or explain a proof of the Pythagorean Theorem and its converse. 8.G.6

☐ I can apply the Pythagorean Theorem in real-world situations or drawings to find unknown side lengths in right triangles in two and three dimensions. 8.G.7



☐ I can use the Pythagorean Theorem to find the distance between two points on a coordinate system. 8.G.8

☐ I can describe patterns in special right triangles. 8.G.5

☐ I can use formulas for volumes to solve real world and mathematical problems involving cones, cylinders, and spheres. 8.G.9

I can use Statistics and Probability to Help Me Understand Math

☐ I can construct and interpret scatter-plots and describe the relationships shown in a scatter plot (clustering, outliers, positive/negative associations, linear/nonlinear associations). 8.SP.1

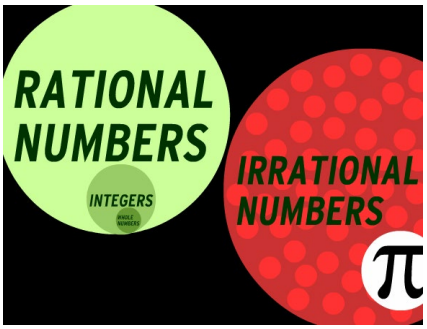
☐ I can sketch a line of best fit on a scatter plot, justify the location of the line, and explain why or why not a given line is a good fit. 8. SP.2

☐ I can write the equation of a line of best fit and use it to make predictions. 8.SP.2

☐ I can explain what the slope and y-intercept mean in terms of the situation. 8.SP.4

☐ I can construct two-way frequency and relative frequency tables to summarize bivariate categorical data. 8. SP.3

☐ I can describe, interpret, and justify inferences in patterns of association between the two variables in two-way frequency and relative tables. 8.SP.4



I can Use the Number System to Help Me Understand Math

☐ I can explain the difference between a rational and an irrational number. 8.NS.1

☐ I can convert either repeating or terminating decimals into a fraction. 8.NS.1

□ I can write a decimal approximation for an irrational number to a given decimal place. 8.NS.1

□ I can place rational and irrational numbers on a number line. 8.NS.2

□ I can estimate the value of an expression that includes an irrational number and justify my estimation. 8.MS.2

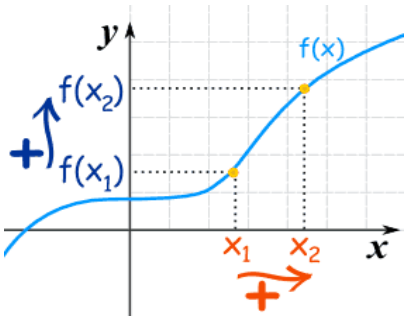
I can Use the Number System to Help Me Understand Math

□ I can explain what a function is. 8.F.1

□ I can determine if a table, graph, or set of ordered pairs is or is not a function and justify my conclusion. 8.F.1

□ I can distinguish between linear and nonlinear functions given a table, graph, or equation and justify my conclusion. 8.F.3

□ I can determine which of two functions (represented algebraically, graphically, and numerically in tables or by verbal descriptions) has the greater rate of change. 8.F.4



□ I can write the equation of a line (in the form y=mx + b) given a point and a slope, 2 points, a table, or the graph of the line. 8.F.3

□ I can explain a real world situation from an equation, table, or graph (explain the rate of change/slope and the y intercept in context-linear only). 8.F.5

□ I can describe a relationship as increasing or decreasing, linear or nonlinear, from an equation, table or graph. 8.F.5