Mathematics
123456789

"I Can"
Mascoma Standards
8th Grade Math

I Can Use Expressions and Equations to Help Me Understand Math

☐ I can use properties of integer exponents, including zero and negative exponents to evaluate and simplify numerical expressions containing exponents. 8.EE.1

$$4^2 4^3 = 4^{2+3}$$
$$= 4^5$$

☐ I can solve equations of the form $x^2 = p$ and $x^3 = n$ using square or cube roots . 8.EE.2

☐ I can find square roots and cube roots of perfect squares and perfect cubes.
8.EE.2

☐ I can estimate very large and very small quantities using a single digit times a power of 10. 8.EE.3

☐ I can compare two quantities written as a single digit times a power of 10. 8.EE.3

☐ I can perform operations with number expressed in scientific notation, including problems where both decimal and scientific notation are used. 8.EE.4

☐ I can use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. 8.EE.4

DECIMAL NOTATION	SCIENTIFIC NOTATION
2	2×10^0
300	3×10^2
4,321.768	4.321768×10^3
−53,000	$−5.3 \times 10^4$
6,720,000,000	6.72×10^9
0.2	2×10^{-1}
0.000 000 007 51	7.51×10^{-9}
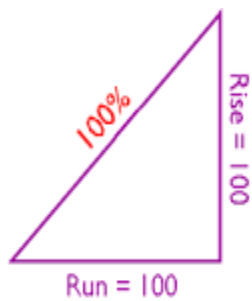
Percent slope
= (rise / run) × 100
= (100 ÷ 100) × 100
= 100

Percent slope
= (rise / run) × 100
= (50 ÷ 100) × 100
= 50

☐ I can interpret scientific notation that has been generated by technology. 8. EE.4

☐ I can graph proportional relationships and interpret the unit rate as slope. 8.EE.5

☐ I can calculate slope on a graph using similar triangles. 8.EE.6

☐ I can explain why slope is the same between any two distinct points on a non-vertical line using similar triangles. 8.EE.6

☐ I can derive the equations $y=mx$ and $y=mx+b$. 8.EE.6

☐ I can solve equations using the distributive property, combining like terms, and equations with variables on both sides. 8.EE.7a

☐ I can explain linear equations in one variable that give one solution, many solutions, or no solution. 8.EE.7a

☐ 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
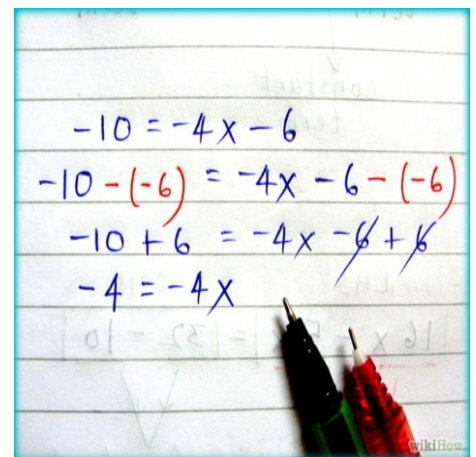
I Can Use Geometry to Help Me Understand Math

☐ 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
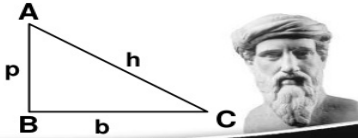
PYTHAGORAS THEOREM

iTutor

➢ In a right angled triangle   three sides: Hypotenuse, Perpendicular and Base. The base and the perpendicular make an angle is 90^0. So, according to Pythagorean theorem:

$$(Hypotenuse)^2 = (Perpendicular)^2 + (Base)^2$$

Pythagoras Theorem Proof:

Given: ΔABC is a right angled triangle where $<B = 90^0$ And $AB = P$, $BC = b$ and $AC = h$

To Prove: $h^2 = p^2 + b^2$

☐ 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

Scatter Plot showing Observed versus Forecast Values
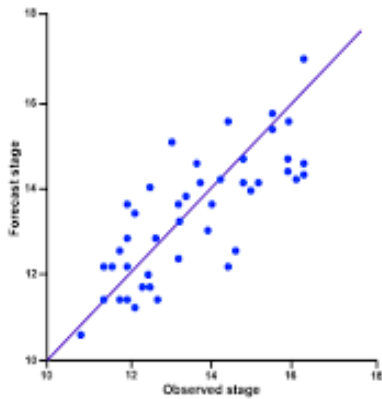
❑ I can write the equation of a line of best fit and use it to make predictions. 8.SP.2

❑ 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.NS.2

RATIONAL NUMBERS

INTEGERS

IRRATIONAL NUMBERS

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I Can Use the Number System to Help Me Understand Math

☐ I Can explain what a function is. 8.F.1
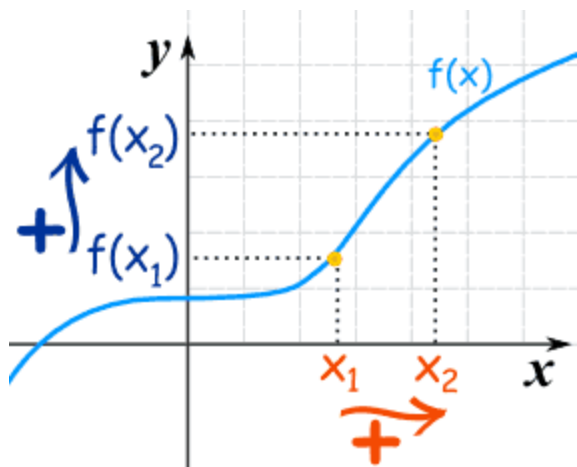
☐ I Can determine if a table, graph, or set of ordered pairs is or is not a function and justify my conclusion. 8.F.1

☐ 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