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The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	8.NS.1	Understand informally that every number has a decimal expansion; rational numbers have decimal expansions that terminate in 0s or eventually repeat, and conversely.	Maopopo mōhalu he unuhi kekimala ko nā helu a pau; a he unuhi kekimala ko nā helu rational e pau ana ma ka 0 a i ʻole e pīnaʻi ana, and conversely?.	No good word for rational number in Hawaiian. Māmaka has helu puʻunaue koena ʻole but we think this term does not reflect an appropriate math definition. haʻi loaʻa = hopena o ka hoʻomakalakala ʻana what does “and conversely” mean or refer to? irrational numbers? a pēlā pū me nā helu irrational nō hoʻi
		8.NS.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., (pi)^2). For example, by truncating the decimal expansion of sqrt2 (square root of 2), show that	Kokekau/Hoʻokokoke helu ma kahi o nā helu irrational e hoʻohālikelike i ka nui o nā helu irrational, e huli a loaʻa kahi kūpono o ia helu ma ke kaha laina helu, a e koho/kuhi i ka waiwai o ka haʻihelu. (laʻana: (pi)^2).	

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			sqrt2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.		
Expressions and Equations	Work with radicals and integer exponents.	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 3^2 × 3^(-5) = 3^(-3) = 1/(3^3) = 1/27.	ʻIke leʻa a hoʻohana i nā ʻanopili o ka helu integer pāhoʻonui e hoʻopuka i nā haʻihelu kaulike. E like me 3^2 × 3^(-5) = 3^(-3) = 1/(3^3) = 1/27.	No good word for integer. Māmaka says it is helu piha, but that is also whole number, which doesn't jive with the mathematical definition
		8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form x^2 = p and x^3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that sqrt2 is irrational.	Hoʻohana i nā hōʻailona no ke kumu pāhoʻonui lua a me ke kumu pāhoʻonui kolu e hōʻike i ka hāʻina no ka haʻihelu ma ke kino x^2 = p a me x^3 = p, ʻoiai he p ka helu rational ʻiʻo. Ana i ke kumu pāhoʻonui lua o nā helu pāhoʻonui lua poʻokela liʻiliʻi a i ke kumu pāhoʻonui kolu o nā helu pāhoʻonui kolu poʻokela liʻiliʻi. ʻIke leʻa, he helu irrational ke kumu pāhoʻonui lua o 2.	
		8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is	Hoʻohana i nā helu i hōʻike ʻia ma ke ʻano he helu kikohoʻe hoʻokahi i hoʻonui ʻia me ka helu interger pāhoʻonui 10 no ke koho ʻana i kekahi nui nunui a i ʻole kekahi nui liʻiliʻi, a hōʻike i ka pāhoʻonui o ia	

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			than the other. For example, estimate the population of the United States as 3 × 10^8 and the population of the world as 7 × 10^9, and determine that the world population is more than 20 times larger.	nui i kekahi nui hou aku.	
		8.EE.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	Hana hoʻomākalakala i nā helu i hōʻike ʻia ma ke kauhelu ʻepekema/akeakamai, a me nā polopolema/nane haʻi e hoʻohana ana i ke kauhelu kekimala a ʻepekema/akeakamai. Hoʻohana i ke kauhelu ʻepekema a koho i ke anakahi kūpono no ke ana ʻana i ka nui nunui a me nā nui liʻiliʻi.	
	Understand the connections between proportional relationships, lines, and linear equations.	8.EE.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	Kākuhi i ka pilina lakio like, me ka wehewehe ʻana i ka lakio anakahi ma ke ʻano he ihona o ka pakuhi. Hoʻohālikelike i ʻelua pilina ʻokoʻa o ka lakio like i hōʻike ʻia ma nā ʻano ʻokoʻa.	
		8.EE.6	Use similar triangles to explain why the slope m is the same	Hoʻohana i nā huinakolu ʻano like no ka wehewehe ʻana i ke kumu o	Linear equations- pili

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			between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y =mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.	ka ihona o m he like a like me ke kaʻawale o ʻelua kiko kikoʻī/pilikahi ma ke kaha laina kū ʻole ma ka papa kuhikuhina; loaʻa ka haʻihelu y =mx no ke kaha laina ma ka piko pakuhi a me ka haʻihelu y = mx + b no ke kaha laina huina pā i ka iho kū ma b.	laina?
	Analyze and solve linear equations and pairs of simultaneous linear equations.	8.EE.7	Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms	Hoʻomākalakala i nā haʻihelu kūlana kahi o hoʻokahi hualau. a. Hāʻawi i ka laʻana o ka haʻihelu kūlana kahi o hoʻokahi hualau me hoʻokahi haʻina, me nā haʻina pau ʻole, a i ʻole me ka haʻina ʻole. Hōʻike i ke ʻano haʻina e loaʻa ma o ka hoʻololi ʻana i ia haʻihelu i kekahi ʻano i nōhie/maʻalahi mai, a i ka puka ʻana o kekahi haʻihelu kaulike ma ke ʻano x = a, a = a, *a i ʻole* a = b (ʻoiai he helu ʻokoʻa ke a *a me* ka b). i. Hoʻomākalakala i nā haʻihelu kūlana kahi o nā kaʻilau rational, a me nā haʻihelu no lākou ka haʻina e pono ai ka unuhi kūana ʻana i nā haʻihelu ma ka hoʻohana ʻana i ke ʻanopili hoʻoili a me ka ʻohi ʻana i nā mahele like.	collecting like terms?? Not sure
		8.EE.8	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables	Kālailai a hoʻomākalakala i nā paʻa haʻihelu kūlana kahi i ka wā hoʻokahi. a. Maopopo ka pilina o nā haʻina o ka ʻenehana o ʻelua haʻihelu	Paʻa helu- pairs

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			correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6. c. Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.	kūlana kahi ma ʻelua hualau i nā kiko o ka huina o ko lāua pakuhi, no ka mea, kō nā kiko o ka huina i nā haʻihelu ʻelua i ka wā like. e. Hoʻomākalakala i nā ʻenehana o ʻelua haʻihelu kūlana kahi i ʻelua hualau ma ka hōʻailona helu, a e koho i ka haʻina ma o ke kākuhi ʻana i nā haʻihelu. Hoʻomākalakala i nā mea nōhie/maʻalahi ma ka nānā ʻana. i. Hoʻomākalakala i ka polopolema/nane haʻi o ka nohona a me ka makemakika/pili helu e kuhikuhi aku i ʻelua haʻihelu kūlana kahi ma ʻelua hualau.	
Functions	Define, evaluate, and compare functions.	8.F.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.)	Maopopo ka hahaina he lula e hoʻāmana i nā huakomo pākahi a pau i hoʻokahi huapuka wale nō. ʻO ka pakuhi o ka hahaina ka ʻōpaʻa/hui paʻa helu e loaʻa ka huakomo a me ka huapuka e pili i ia huakomo. (ʻAʻole pono loa ke kauhelu hahaina ma ka pae papa 8.)	
		8.F.2	Compare properties of two	Hoʻohālikelike i nā ʻanopili o ʻelua	

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			functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	hahaina i hōʻike ʻia ma ke ʻano ʻokoʻa (ma ka hōʻailona helu, ke kiʻi, ka pakuhi i nā helu, a i ʻole ma ka haʻi waha).	
		8.F.3	Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function A = s^2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	Unuhi i ka haʻihelu y = mx + b ma ka wehewehe ʻana i kona hahaina kūlana kahi nona ke kaha laina pololei ma ka pakuhi; hōʻike i nā laʻana o ka hahaina kūlana kahi ʻole.	
	Use functions to model relationships between quantities.	8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the	Kūkulu i ka hahaina e hōʻike i ka pilina kūlana kahi o ʻelua nui. Hoʻoholo i ka lakio o ka loli ʻana a me ka waiwai mua o ka hahaina mai ka wehewehe ʻana i kekahi pilina a i ʻole i ʻelua (x,y) mau waiwai, me ka heluhelu ʻana i kēia ʻike mai ka pakuhi papa a i ʻole mai ka pakuhi. Unuhi i ka lakio o ka loli ʻana a me ka waiwai mua o ka hahaina kūlana kahi i pili i ka	

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			situation it models, and in terms of its graph or a table of values.	pōʻaiapili e kūkohu ʻia ana, a i ka pili i kona pakuhi a i ʻole i ka pakuhi papa o nā waiwai.	
		8.F.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	Wehewehe i ke ʻano o ka pilina o ka hahaina o ʻelua nui ma ke kālailai ʻana i ka pakuhi (he laʻana: i kahi o ka hahaina e nui ana a i ʻole e emi ana, no ke kūlana kahi a i ʻole no kekahi kūlana ʻokoʻa). E kaha i ka pakuhi e hōʻike ana i ke ʻano o ka hahaina i wehewehe ʻia ma ka haʻi waha.	linear and nonlinear?
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	8.G.1	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.	Hōʻoia ma o ka hoʻokolohua ʻana i nā ʻanopili o ka hoʻowili ʻana, ka huaka/aka aniani, a me ka hoʻoneʻe moe like/pilipā: a. Hoʻoneʻe ʻia ka laina a i ka laina, a me ka ʻāpana kaha a i ka ʻāpana kaha o ka lōʻihi like. e. Hoʻoneʻe ʻia ka huina a i ka huina o ke ana like. i. Hoʻoneʻe ʻia ke kaha pilipā/moe like a i ke kaha pilipā/moe like.	
		8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	Maopopo ke komolike ʻana o ke kinona papa me kekahi kinona hou aku inā hiki ke loaʻa ka mea ʻalua mai ka mea ʻakahi ma o ka hoʻowili ʻana, ka hoʻohuaka/aka aniani ʻana, a me ka hoʻoneʻe pilipā/moe like ʻana; i ka nānā ʻana i ʻelua kinona komolike, wehewehe i ka laukaʻina e hōʻike i ke komolike o lāua.	

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		8.G.3	Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.	Wehewehe i ka hopena o ka hoʻonaele ʻana, ka hoʻoneʻe moe like/pilipā ʻana, ka hoʻowili ʻana, a me ka hoʻohuaka/aka aniani ʻana ma ke kinona papa me ka hoʻohana ʻana i nā paʻa helu kuhikuhina.	
		8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	Maopopo ka like ʻana o ke kinona papa me kekahi kinona hou aku inā hiki ke loaʻa ka mea ʻalua mai ka mea ʻakahi ma o ka laukaʻina hoʻowili, ka hoʻohuaka/aka aniani ʻana, a me ka hoʻoneʻe pilipā/moe like ʻana a me ka hoʻonaele ʻana; i ka nānā ʻana i ʻelua kinona komolike, wehewehe i ka laukaʻina e hōʻike i ka like o lāua.	
		8.G.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so.	Hoʻohana i nā kahua manaʻo/kumu manaʻo mōhalu no ka hoʻokahua ʻana i nā mea ʻoiaʻiʻo no nā huinanui o nā huina a me ka huina waho o nā huinakolu, a no nā huina e loaʻa i ka ʻoki ʻia ʻana o nā kaha pilipā/moe like e ke kaha ʻokiʻoki, a no ke ʻano o nā huina-huina pilina no nā mea like o nā huinakolu.	
	Understand and apply the	8.G.6	Explain a proof of the Pythagorean Theorem and its converse.	Wehewehe i ke kūkulu hōʻoia o ka Manaʻohaʻi o Paekakoleo/Pythagoras a me kona	

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	Pythagorean Theorem.			ʻēkoʻa.	
		8.G.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	Hoʻohana i ka Manaʻohaʻi o Paekakoleo/Pythagoras e hoʻoholo i ka lōʻihi o ka ʻaoʻao i maopopo ʻole o nā huinakolu kūpono i nā polopolema/nane haʻi o ka nohona a me ka makemakika/pili helu e pili i nā kinona papa a me nā kinona paʻa.	
		8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Hoʻohana i ka Manaʻohaʻi o Paekakoleo/Pythagoras e huli a loaʻa i ke kaʻawale o ʻelua kiko ma ke ʻenehana kuhikuhina.	
	Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.	8.G.9	Know the formulas for the volume of cones, cylinders and spheres and use them to solve real-world and mathematical problems.	ʻIke i nā haʻilula no ka pihanahaka o ka ʻōpuʻu, ka paukū ʻolokaʻa, a me ka paʻapoepoe a hoʻohana iā lākou no ka hoʻomākalakala ʻana i nā polopolema/nane haʻi o ka nohona a me ka makemakika/pili helu.	
Statistics and Probability	Investigate patterns of association in bivariate data.	8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Kūkulu a wehewehe i ka pakuhi kikokiko no ka ʻikepili/ʻike e ana ana i ka hualau pālua no ka noiʻi ʻana i nā lauana o ka pilina o ʻelua nui. Wehewehe i nā lauana e laʻa me ka huihui ʻana, nā kiko kūwaho, ka pilina ʻiʻo/ʻiʻo ʻole, ka pilina kaha laina, a me ka pilina laina ʻole.	Discuss- outlier
		8.SP.2	Know that straight lines are widely used to model	ʻIke i ka hoʻohana nui ʻia ʻana o ke kaha laina no ka hōʻike ʻana i ka	

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			relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	pilina o ʻelua nui hualau. No ka pakuhi kikokiko e hōʻike ana i ka pilina laina, hoʻokomo mōhalu i ke kaha laina pololei, a ana mōhalu i ke kūkohu ma ka loiloi ʻana i ka pili o nā kiko ʻikepili/ʻike i ke kaha laina.	
		8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	Hoʻohana i ka haʻihelu o ke kūkohu pili laina no ka hoʻomākalakala ʻana i ka polopolema/nane haʻi i ka pōʻaiapili o ka ʻikepili/ʻike ana hualau pālua, me ka wehewehe ʻana i ka ihona a me ka huina pā.	
		8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example,	Maopopo ka ʻike ʻia o nā lauana o ka hoʻopili ma ka ʻikepili/ʻike hualau pālua ma o ka hōʻike ʻana i ke alapine a me ke alapine ʻano pili ma ka pakuhi papa o ʻelua hualau. Kūkulu a wehewehe i ka pakuhi papa o ʻelua hualau nāna e hōʻuluʻulu i ka ʻikepili/ʻike no ʻelua hualau mahele i hōʻiliʻili ʻia mai ke kumuhana like. Hoʻohana i ke alapine ʻano pili i helu ʻia no ka lālani a me nā kolamu e wehewehe i ka pili paha o ʻelua hualau.	two way table?

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			collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?		