General Math 1 Pacing Guide

Approx. Dates	Unit Heading	# of Weeks	Topics	Common Core Standards		
9/10 - 10/8	Solving Equations ~~and Inequalities~~	4	Introduce basic geometry terms and angle relationships so they can be integrated throughout the year Solving equations and ~~inequalities~~ (justify steps) • multi-step • variables on both sides • proportions • ~~absolute value~~ • ~~literal~~ • ~~compound inequalities~~ • **word problems**	***A.SSE.1***: Interpret expressions that represent a quantity in terms of its context.★ a.Interpret parts of an expression, such as terms, factors, and coefficients. b.Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.*	**PBA**	**CALC NEUTRAL**
				***A.REI.3*:** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	**EOY**	**ITEM SPEC**
				***A.CED.1*:** Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear functions, and simple rational and exponential functions.*	**PBA**	**CALC**
				***A.CED.4*:** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.*	**PBA**	**CALC NEUTRAL**
				***G.CO.1*:** Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. See G.CO.9, G.CO.10, G.CO.11 for integration of geometry	**EOY**	**CALC NEUTRAL**
10/9 - 11/6	Modeling with Functions	4	Domain & Range/Input & Output	***F.IF.1*:** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is	**PBA**	**CALC NEUTRAL**

Dates to Note:

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			Function notation Writing & graphing function rules Represent a function 4 ways - words, table, graph, formula Types of functions (Lin, Quad, Abs Value, Exp, Square Root) by graph Comparing graphs of functions Intro to sequences Graphing calculator usage **Discrete vs continuous**	an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f*(*x*).		
				F.IF.2: Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	**EOY**	**ITEM SPECIFIC**
				F.IF.3: Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ³ 1.*		
				***F.IF.4*:** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*★	**EOY**	**ITEM SPECIFIC**
				F.IF.5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.★	**EOY**	**CALC NEUTRAL**
				***F.IF.7a*:** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★ a. Graph linear and quadratic functions and show intercepts, maxima, and minima		
				N.Q.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.		

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				N.Q.2: Define appropriate quantities for the purpose of descriptive modeling. ***N.Q.3:*** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. ***F.IF.9:*** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.* ***F.LE.3:*** Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function	**EOY**	**ITEM SPEC**
11/9 - 1/8	Linear and Exponential Functions	6	Rate of change and slope Forms of the equation of a line (slope, standard, point-slope) ~~Linear Inequalities~~ Parallel and perpendicular lines ~~Piecewise functions~~ Arithmetic ~~and Geometric~~ Sequences ~~Exponential Growth Decay~~ ~~Constructing Exponential Functions~~	***F.IF.6:*** Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.★ ***S.ID.7***: Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. ***A.REI.10:*** Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). ***A.CED.2:*** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. ***F.BF.1a:*** Write a function that describes a relationship between two quantities.★ a. Determine an explicit expression, a recursive process, or steps for calculation from a context.	**PBA** **EOY** **PBA** **PBA**	**NO CALC** **ITEM SPEC** **CALC**

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				***F.BF.2*:** Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★	**EOY**	**ITEM SPEC**
				F.BF.3: Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	**PBA**	**CALC**
				***F.LE.1*:** Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals; and that exponential functions grow by equal factors over equal intervals b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	**PBA**	**CALC**
				***F.LE.2*:** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table)	**EOY**	**ITEM SPEC**
				***F.LE.5*:** Interpret the parameters in a linear or exponential function in terms of a context.	**PBA**	**CALC**
				***F.IF.7a*:** Graph linear and quadratic functions and show intercepts, maxima, and minima	**EOY**	**ITEM SPEC**
				A.SSE.3c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*	**EOY**	**CALC NEUTRAL**

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1/11 - 1/29	Systems of Equations ~~and Inequalities~~	4	Solving Systems by Graphing (and tables) Solving Systems Using Substitution Solving Systems Using Elimination Applications of Linear Systems ~~Systems of Linear Inequalities~~	**A.CED.3:** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*	**EOY**	**NO CALC**
				A.REI.11 Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★	**PBA**	**CALC**
				A.REI.5: Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	**PBA**	**NO CALC**
				A.REI.6: Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	**PBA**	**NO CALC**
				A.REI.12: Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	**PBA**	**CALC/ NO CALC**
2/1 - 2/26	Geometry Relationships and Properties	4	Whatever wasn't covered in Intro Unit.	**G.CO.9:** Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel*	**PBA**	**CALC**

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			Lines and Angle Theorems Types of Triangles Triangle Theorems Polygons Types of Quadrilaterals	*lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.* ***G.CO.10*:** Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.* ***G.CO.11*:** Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*	**PBA**	**NO CALC**
2/29 - 4/1	Geometry - Rigid Motion	4	Definition of congruence Triangle congruence - ASA, SAS, SSS Rigid Transformations Non-rigid transformations Composition of isometries Transformation Rules	***G.CO.6*:** Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent. ***G.CO.7*:** Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. ***G.CO.8*:** Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. ***G.CO.1*:** Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	**EOY** **EOY** **EOY**	**CALC NEUTRAL** **CALC NEUTRAL**

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				***G.CO.2*:** Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch). ***G.CO.3*:** Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. ***G.CO.4*:** Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. ***G.CO.5*:** Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another	**EOY** **EOY**	**CALC NEUTRAL** **CALC NEUTRAL**
4/2 - 5/1	Data Analysis Statistics	4	Correlation Coefficient Frequency and Histograms Measures of Central Tendency and Dispersion Box-and-Whisker Plots Scatterplots and Trend Lines Two-Way Frequency Tables	***S.ID.8*:** Compute (using technology) and interpret the correlation coefficient of a linear fit. ***S.ID.9*:** Distinguish between correlation and causation. ***S.ID.1*:** Represent data with plots on the real number line (dot plots, histograms, and box plots). ***S.ID.2*:** Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. ***S.ID.3*:** Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme	**EOY** **EOY** **EOY** **EOY** **EOY**	**CALC** **CALC** **CALC** **CALC** **CALC**

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				data points (outliers). ***S.ID.5*: Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.** ***S.ID.6*: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.** a.Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear and exponential models.* c. Fit a linear function for a scatter plot that suggests a linear association.	**EOY** **EOY**	**CALC** **CALC**

MAJOR SUPPORTING ADDITIONAL

Domains	
SSE	Seeing Structure in Expressions
IF	Interpreting Functions
LE	Linear, Quadratic, and Exponential Models
Q	Quantities
BF	Building Functions

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REI	Reasoning with Equations and Inequalities
CED	Creating Equations that Describe
CO	Congruence
ID	Interpreting Categorical and Quantitative Data
APR	Arithmetic with Polynomials and Rational Expressions
TF	Trig Functions
SRT	Similarity, Trigonometry, and Right Triangles
GPE	Expressing Geometric Properties with Equations
GMD	Geometric Measurement and Dimension
MG	Modeling with Geometry
IC	Making Inferences and Justifying Conclusions
CP	Conditional Probability and the Rules of Probability
MD	Using Probability to Make Decisions

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