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JC Schools Tech Math I Yearly Standards

Units	Standards for Mathematical Practice
Getting Started **Days 19** **Unit End Date:** Sept.12	1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with mathematics 5. Use appropriate tools strategically 6. Attend to precision 7. Look for and make use of structure 8. Look for and express regularity in repeated reasoning

UNIT 1 **EQUATIONS AND INEQUALITIES** **Days 42**	**CED.A.1** Create equations and inequalities in one variable and use them to model and/or solve problems. **REI.A.1** Explain how each step taken when solving an equation or inequality in one variable creates an equivalent equation or inequality that has the same solution(s) as the original.	
	Foundational Standards Grades 2-3	**Foundational Standards Grades 4 and up**
	3.RA.A.1 Interpret products of whole numbers. **3.RA.A.4** Use multiplication and division within 100 to solve problems **3.RA.B.6** Apply properties of operations as strategies to multiply and divide**.** **3.RA.C.7**	**6.EEI.A.2.d&e** Create and evaluate expressions involving variables and whole number exponents. d. Write and evaluate algebraic expressions. e. Understand the meaning of the variable in the context of the situation. **6.EEI.A.3** Identify and generate equivalent algebraic expressions using mathematical properties **6.EEI.B.4**

	Multiply and divide with numbers and results within 100 using strategies such as the relationship between multiplication and division or properties of operations. Know all products of two one-digit numbers. **3.RA.C.8** Demonstrate fluency with products within 100. **3.RA.E.11** Identify arithmetic patterns and explain the patterns using properties of operations.	Use substitution to determine whether a given number in a specified set makes a one-variable equation or inequality true. **6.EEI.B.5** Understand that if any solutions exist, the solution set for an equation or inequality consists of values that make the equation or inequality true. **6.EEI.B.6** Write and solve equations using variables to represent quantities, and understand the meaning of the variable in the context of the situation. **6.EEI.B.7** Solve one-step linear equations in one variable involving non-negative rational numbers. **6.EEI.B.8.a&b** Recognize that inequalities may have infinitely many solutions. a. Write an inequality of the form x>c,x<c, or x is greater than or equal to c, x is less than or equal to c to represent a constraint or condition. b. Graph the solution set of an inequality. **6.NS.B.4.b** Find common factors and multiples: b. Use the distributive property to express a sum of two whole numbers with a common factor as a multiple of a sum of two whole numbers. **5.RA.A.1** Investigate the relationship between two numeric patterns. a. Generate two numeric patterns given two rules. b.Translate two numeric patterns into two sets of ordered pairs.

		c, Graph numeric patterns on the Cartesian coordinate plane. d. Identify the relationship between two numeric patterns **5.RA.A.2** Write a rule to describe or explain a given numeric pattern. **5.RA.B.3** Write, evaluate and interpret numeric expressions using the order of operations. **5.RA.B.4** Translate written expressions into algebraic expressions.
UNIT 2 **POLYNOMIAL OPERATIONS** **Days 40**	**SSE.A.1** Interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions. **SSE.A.2** Analyze the structure of polynomials to create equivalent expressions or equations,	
	Foundational Standards Grades 2-3	**Foundational Standards Grades 4 and up**
	3.RA.A.2 Interpret quotients of whole numbers **3.RA.A.3** Describe in words or drawings a problem that illustrates a multiplication or division situation. **3.RA.E.11** Identify arithmetic patterns and explain the patterns using properties of operations. **3.RA.B.6** Apply properties of operations as strategies to multiply and divide**.** **2.GM.C.9**	**7.EEI.A.1** Apply properties of operations to simplify and to factor linear algebraic expressions with rational coefficients. **7.EEI.A.2** Write a rule to describe or explain a given numeric pattern. **6.EEI.A.2** Create and evaluate expressions involving variables and whole number exponents. a. Identify parts of an expression using mathematical terminology. b. Evaluate expressions at specific values of the variables. c. Evaluate non-negative rational number expressions. d. Write and evaluate algebraic expressions. **6.EEI.A.3**

<table>
<tr><td></td><td>Represent whole numbers as lengths on a number line, and represent whole-number sums and differences within 100 on a number line

2.RA.B.3
Find the total number of objects arranged in a rectangular array with up to 5 rows and 5 columns, and write an equation to represent the total as a sum of equal addends.</td><td>Identify and generate equivalent algebraic expressions using mathematical properties.

6.NS.B.4
Find common factors and multiples
a. Find the greatest common factor (GCF) and the least common multiple (LCM).
b. Use the distributive property to express a sum of two whole numbers with a common factor as a multiple of sum of two whole numbers.

5.RA.A.1.a-d
Investigate the relationship between two numeric patterns.
a. Generate two numeric patterns given two rules.
b. Translate two numeric patterns into two sets of ordered pairs.
c. Graph numeric patterns on the Cartesian coordinate plane.
d. Identify the relationship between two numeric patterns.

5.RA.B.3
Write, evaluate and interpret numeric expressions using the order of operations.

5.RA.B.4
Translate written expressions into algebraic expressions.</td></tr>
<tr><td rowspan="3">UNIT 3

INTRODUCTION TO FUNCTIONS

Days 28</td><td colspan="2">A1.IF.A.2
Use function notation to evaluate functions for inputs in their domains, and interpret statements that use function
A1.LQE.B.4
Write arithmetic and geometric sequences in recursive and explicit forms and use them to model situations and translate between the two</td></tr>
<tr><td>Foundational Standards Grades 2-3</td><td>Foundational Standards Grades 4 and up</td></tr>
<tr><td><u>3.RA.E.11</u>
Identify arithmetic patterns and explain the patterns using properties of operations.</td><td>5.GM.C.6
Define a first quadrant Cartesian coordinate system.
a. Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin.</td></tr>
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	3.RA.B.6 Apply properties of operations as strategies to multiply and divide **2.GM.C.9** Represent whole numbers as lengths on a number line, and represent whole-number sums and differences within 100 on a number line	b. Identify any point on the Cartesian coordinate plane by its ordered pair coordinates. c. Define the first number in an ordered pair as the horizontal distance from the origin d. Define the second number in an ordered pair as the vertical distance from the origin. **5.GM.C.7** Plot and interpret points in the first quadrant of the Cartesian coordinate plane **8.F.A.1.a-c** Explore the concept of functions. (The use of function notation is not required.) a. Understand that a function assigns to each input exactly one output. b. Determine if a relation is a function. c. Graph a function. **8.F.B.4.a-c** Use functions to model linear relationships between quantities. a.Explain the parameters of a linear function based on the context of a problem. b.Determine the parameters of a linear function. c.Determine the x-intercept of a linear function **7.RP.A.2.a-d** Recognize and represent proportional relationships between quantities. a. Determine when two quantities are in a proportional relationship. b. Identify and/or compute the constant of proportionality (unit rate). c. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation. d. Recognize that the graph of any proportional relationship will pass through the origin

UNIT 4

WRITING AND GRAPHING LINEAR FUNCTIONS

Days 20

A1.REI.C.6
Explain that the graph of an equation in two variables is the set of all its solutions plotted in the Cartesian coordinate plane.

A1.IF.B.3
Using tables, graphs and verbal descriptions, interpret key characteristics of a function that models the relationship between two quantities

A1.IF.C.7
Graph functions expressed symbolically and identify and interpret key features of the graph

A1.BF.A.1
Analyze the effect of translations and scale changes on functions.

Foundational Standards Grades 2-3	Foundational Standards Grades 4 and up
None	**8.F.A.2** Compare characteristics of two functions each represented in a different way. **6.RP.A.3.a-d** Solve problems involving ratios and rates. a. Create tables of equivalent ratios, find missing values in the tables and plot the pairs of values on the Cartesian coordinate plane. b. Solve unit rate problems. c. Solve percent problems. d. Convert measurement units within and between two systems of Measurement. **5.GM.C.6** Define a first quadrant Cartesian coordinate system. a. Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin. b. Identify any point on the Cartesian coordinate plane by its ordered pair coordinates. c. Define the first number in an ordered pair as the horizontal distance from the origin d. Define the second number in an ordered pair as the vertical distance from the origin.

UNIT 5

WRITING AND GRAPHING QUADRATIC FUNCTIONS

Days 18

A1.IF.B.3
Using tables, graphs and verbal descriptions, interpret key characteristics of a function that models the relationship between two quantities

A1.IF.C.7
Graph functions expressed symbolically and identify and interpret key features of the graph

Foundational Standards Grades 2-3	Foundational Standards Grades 4 and up
2.DS.A.1 Create a line plot to represent a set of numeric data, given a horizontal scale marked in whole numbers. **2.GM.C.9** Represent whole numbers as lengths on a number line, and represent whole-number sums and differences within 100 on a number line.	**6.EEI.A.2** Create and evaluate expressions involving variables and whole number exponents. a. Identify parts of an expression using mathematical terminology. b. Evaluate expressions at specific values of the variables. c. Evaluate non-negative rational number expressions. d. Write and evaluate algebraic expressions. e. Understand the meaning of the variable in the context of the situation. **6.EEI.B.5** Understand that if any solutions exist, the solution set for an equation or inequality consists of values that make the equation or inequality true. **6.EEI.B.6** Write and solve equations using variables to represent quantities, and understand the meaning of the variable in the context of the situation **6.EEI.B.7** Solve one-step linear equations in one variable involving non-negative rational numbers. **6.NS.A.1** Compute and interpret quotients of positive fractions. a. Solve problems involving division of fractions by fractions **6.NS.C.5**

		Use positive and negative numbers to represent quantities. **6.NS.C.7** Understand that the absolute value of a rational number is its distance from 0 on the number line. **6.RPA.2** Understand the concept of a unit rate associated with a ratio, and describe the meaning of unit rate **5.NBT.A.4** Evaluate the value of powers of 10 and understand the relationship to the place value system.. **5.NF.B.6** Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution. **5.RA.A.1** Investigate the relationship between two numeric patterns. a. Generate two numeric patterns given two rules. b. Translate two numeric patterns into two sets of ordered pairs. c. Graph numeric patterns on the Cartesian coordinate plane. d. Identify the relationship between two numeric patterns. **5.NF.A.2** Convert decimals to fractions and fractions to decimals. **4.NBT.A.4** Understand that in a multi-digit whole number, a digit represents 10 times what it would represents in the place to its right **4.NF.A.1** Explain and/or illustrate why two fractions are equivalent

		4.NF.A.2 Recognize and generate equivalent fractions. **4.NF.A.3** Compare two fractions using the symbols <,=, or > and justify the solution **4.NF.B.4** Understand addition and subtraction of fractions as joining/composing and Separating/decomposing parts referring to the same whole