Grade 9 Math Coding Resources

Author:	Activity (click on the title to access the lesson plan):	Curricular Link(s):
Allan Faulds	**Pythagorean Theorem** **Description:** Using Scratch to Find Missing Sides in a Right Angle Triangle Lesson will include how to name variables and get input and then do calculations to find the length of the hypotenuse The main lesson will have the students led through finding the hypotenuse and then will have them modify it to find the length of one of the shorter sides	C2.1 use coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities C2.2 create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems E1.5 solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes
Allan Faulds	**Rate of Change** **Description:** Using Scratch, learners will enter 2 points on the grid, draw a line connecting them and calculate the rate of change	C3.1 compare the shapes of graphs of linear and non-linear relations to describe their rates of change, to make connections to growing and shrinking patterns, and to make predictions
Allan Faulds	**Coding Without Coding** **Description:** Coding without actually coding … plan a program related to exponents.	B2.2 analyse, through the use of patterning, the relationships between the exponents of powers and the operations with powers, and use these relationships to simplify numeric and algebraic expressions C2.1 use coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities C2.2 create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems

Dave Lanovaz	**My Math Story** **Description:** Storytelling in Scratch as a way to get comfortable with Scratch and to get to know students and their experience in and feeling about mathematics.	AA1 develop and explore a variety of social-emotional learning skills in a context that supports and reflects this learning in connection with the expectations across all other strands A2 make connections between mathematics and various knowledge systems, their lived experiences, and various real-life applications of mathematics, including careers C2.2 create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems
Dave Lanovaz	**Linear Growing Patterns** **Description:** Represent a linear growing pattern visually using Scratch or Micro:bits.	C2.1 use coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities C2.2 create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems C3.2 represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values
Dave Lanovaz	**Exploring Polygons** **Description:** Explore interior and exterior angles of polygons. Use the relationships between the number of sides of a polygon and the sum of the interior angles to explore linear relationships.	C2.2 create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems C3.2 represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values C4.1 compare characteristics of graphs, tables of values, and equations of linear and non-linear relations E1.2 create and analyse designs involving geometric relationships and circle and triangle properties, using various tools
Brian Poste	**Investigating Credit Cards** **Description:** Investigating the effects of Interest rate on Credit Cards using Spreadsheets	F1.1 identify a past or current financial situation and explain how it can inform financial decisions, by applying an understanding of the content of the situation and related mathematical knowledge. F1.3 compare the effects that different interest rates, lengths of borrowing time, ways in which interest is calculated, and amounts of down payment have on overall costs associated with purchasing goods

		or services, using appropriate tools. B3.5 pose and solve problems involving rate, percentages and proportions in various contexts, including contexts connected to real life applications of data measurement, geometry, linear relations, and financial literacy
Brian Poste	**Appreciation and Depreciation** **Description:** Investigating the effects of Appreciation and Depreciation using Spreadsheets	C1.3 compare algebraic expressions using concrete, numerical, graphical, and algebraic methods to identify those that are equivalent, and justify their choices F1.1 identify a past or current financial situation and explain how it can inform financial decisions, by applying an understanding of the context of the situation and related mathematical knowledge F1.2 identify financial situations that involve appreciation and depreciation, and use associated graphs to answer related questions F1.3 compare the effects that different interest rates, lengths of borrowing time, ways in which interest is calculated, and amounts of down payments have on the overall costs associated with purchasing goods or services, using appropriate tools
Rob Garden	**Reading Code and the Cartesian Plane** **Description**: Find problems in Scratch code and solve them. In this activity, learners practice interpreting code by drawing out printed algorithms in small groups on NPVS, then work to debug (or fix) the code together as a class.	C2.3 read code to predict its outcome, and alter code to adjust constraints, parameters, and outcomes to represent a similar or new mathematical situation C3.2 represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values
Rob Garden	**Side-Length Relationships** **Description:** Using Scratch and side-length relationship to verify if a triangle is actually a Right Angle Triangle	E1.5 solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes C2.1 use coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities C2.2 create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems