Creative Thinking – Quadratics   Length: 2 Weeks
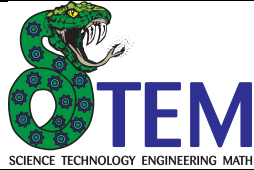
STEM SCIENCE TECHNOLOGY ENGINEERING MATH	**Mathematics Unit Plan**	
Teacher: Christopher	Grade: 11	Course: Algebra II

Unit Title: Creative Thinking – Quadratics

LEARNING TARGETS

LT 2: Create equations that describe numbers or relationships- CCSS (A-CED 1)
LT 3: Represent and solve equations and inequalities graphically- CCSS (A-REI 11)
LT 6: Understand the relationship between zeros and factors of polynomials- CCSS (A-APR 2,3)

UNIT OVERVIEW — Overall summary of the unit, activities, tasks, and/or content.

In this unit the students will develop their creative thinking skills while learning quadratics. The students will be introduced to the topic of quadratics and asked to create their own equations and graphs. They will then try to make connections between the different views of quadratic functions. After that they will be asked to solve various quadratics, some may be above what they currently know how to solve. They will try their own methods and eventually come up with the best ways to solve the problems. At the end they will be asked to synthesize everything that they've learned and have them create their own quadratic word problems.

MOTIVATORS — Hooks for the unit and supplemental activities. (PBL scenarios, video clips, websites, literature)

Fun Math Videos
- https://www.youtube.com/watch?v=jGJrH49Z2ZA - Quad Solve: Rap video about how to solve Quadratics
- https://www.youtube.com/watch?v=OFSrINhfNsQ - Teach Me How to Factor: Rap video about how to Factor equations

Week	Learning Targets	Materials & Resources	Instructional Procedures	Differentiated Instruction	Assessment
1	LT 2: I can create equations that describe numbers or relationships- CCSS (A-CED 1) LT 3: I can represent and solve equations and inequalities	Technology -Ti-Nspire -IPad -Apple TV Online Map.mathshell.org -Lesson: Forming Quadratics -Youtube videos	Essential Questions: What are the differences between quadratic and linear functions? What are the different representations of quadratics functions? How do we get complex solutions to quadratics? What does a complex solution mean? Set: Briefly describe what a quadratic function is, tell the students to create 5 different quadratic functions and have them graph them. Then ask them to find the x-intercepts and plug them back into the equations. Give the students access to their iPads to help	Remediation Students will be put into remediation groups and given more direct teacher instruction. If I find any prerequisite	Give Khan Academy assignments by making "recommendations "to students. Require them to be finished before they take their summative. Exit ticket for the unit's summary.

				knowledge that is missing I will assign out of class tutoring with me. <u>Enrichment</u> Any students that are getting ahead on their khan work will have a choice of extra khan assignments that will get them ahead for Pre-Calculus. <u>Learning Styles</u> Visual Auditory Kinesthetic Collaborative	
	graphically- CCSS (A-REI 11)	-Khan Academy <u>Classroom</u> -Teacher created content -White Board -Scissors, glue, poster paper	them solve the problems if they forgot. <u>Teaching Strategies</u> • Students and teacher will follow the program for this lesson http://map.mathshell.org/materials/lessons.php?taskid=224&subpage=concept • Students will be paired and required to explain to their partner how they arrived at their answers, each student will be given structured time to talk to their partner. They will then come to a consensus among themselves and we will then come together as a class and come to consensus. • Unless another activity is planned the students will work on their Khan recommendations. The process should be; assign the work, students initially work individually, if they get stuck they can watch the khan videos, if they are still stuck they work collaboratively, if they are still stuck they seek out the teacher for direct instruction. The goal being that they learn to access and apply the information on their own leaving the teacher as an absolute last resort. <u>Summarizing Strategy</u> Have the students create their own real world situations that must involve quadratics functions to represent it. Have the students work individually, and have the students, in writing, explain their reasoning. Collect it as an exit ticket and give remediation, if necessary, based on the results. <u>Homework</u> Finish any KhanAcademy recommendations that they do not complete in class.		
2	LT 6: I can understand the relationship between zeros and factors of polynomials- CCSS (A-APR 2,3)	<u>Technology</u> -Ti-Nspire -IPad -Apple TV <u>Online</u> Map.mathshell.org- - Lesson: Solving Quadratic Equations: Cutting Corners -Youtube videos -Khan Academy <u>Classroom</u> -Teacher created content -White Board -Scissors, glue, poster paper	<u>Essential Questions:</u> How do we solve quadratic equations algebraically? How do we solve quadratic equations graphically? What are zeros, factors, x-intercepts, roots, and how are they all related? What do complex solutions look like graphically? <u>Set:</u> Give the students 4 quadratic equations that can be solved with guess and check or basic reasoning. Also give them one quadratic equation that cannot be solved using basic methods and have them try to solve it using guess and check. Discuss the importance of coming up with a surefire method for solving the more difficult problem. <u>Teaching Strategies</u> • Students and teacher will follow the program for this lesson http://map.mathshell.org/materials/lessons.php?taskid=432&subpage=problem • Unless another activity is planned the students will work on their Khan recommendations. The process should be; assign the work, students initially work individually, if they get stuck they can watch the khan videos, if they are still stuck they work collaboratively, if they are still stuck they seek out the teacher for direct instruction. The goal being that they learn to access	<u>Remediation</u> Students will be put into remediation groups and given more direct teacher instruction. If I find any prerequisite knowledge that is missing I will assign out of class tutoring with me. <u>Enrichment</u> Any students that are getting ahead on their khan work will have a choice of extra khan assignments	Give Khan Academy assignments by making "recommendations" to students. Require them to be finished before they take their summative. Summative assessment Testing for Quadratics knowledge

			and apply the information on their own leaving the teacher as an absolute last resort. Summarizing Strategy Have the students create their own real world situation that must use quadratic functions. Have them come up with solutions to their situation and have them give context to their solutions as well. Have students compare their problems to their peers. Homework Finish any KhanAcademy recommendations that they do not complete in class.	that will get them ahead for Pre-Calculus. Learning Styles Visual Auditory Kinesthetic Collaborative	