The Facing History School
Algebra ¾ Syllabus

Teachers: Keysi, Danielle, Colleen, Carelythia

Description:

This course provides students with an opportunity to engage in meaningful mathematical investigations, critical thinking and problem solving. Topics in this course include recognizing and developing patterns using tables, graphs and equations. Students will also explore operations on algebraic expressions, investigate linear relationships, apply rules of exponents and find solutions of linear and quadratic equations. Technology will be used to introduce and expand upon the areas of study listed above.

Units of Study:

Unit 1: Introduction to Algebra at FHS
Unit 2: Solving Linear Equations & Inequalities in One Variable
Unit 3: Linear Functions and Linear Inequalities
Unit 4: Systems of Equations and Linear Inequalities
Unit 5: Polynomials
Unit 6: Quadratic Equations

Classroom Policies:

❖ Be on time.
❖ Do not talk when someone else is talking.
❖ Come prepared with required classroom materials.
❖ Stay on task
❖ NO CELL PHONES
❖ Be in uniform
❖ Always be courteous, considerate, and respectful toward others and their property.

Classroom Procedures and Expectations:

1. **Tardies**

A student is tardy to class if they are not physically in the classroom and ready to begin when the bell rings (Except for first period, tardie after 9:00 am). After 3 tardies, there will be a conference with dean and guidance counselor and parent/guardian will be called.

When late, student must have a pass. If you do not have a pass, you will be marked as an unexcused tardy.

2. **Absent to Class**

Planned Absence = you know you are going to be absent (e.g. doctor's appointment)
Make sure you let us know so we can give you the missing work. Documentation must be provided at your return.

Unplanned Absence = you are absent but did not anticipate or expect it (e.g. illness)
You must email your teachers and at your return, you must make up the missing work.

3. **Headphones**

Headphones should not be visible on your body. Headphones are not allowed in your ears, draped around your ears, and all the other possible ways to wear headphones.

4. **Uniform**

You must be in uniform before entering the room. You are expected to follow the school uniform policy in this class. If your shirt or pants are out of uniform (including hoodies), you will be sent to the admin offices to receive an appropriate uniform.

5. **Bathroom/Water Fountain Policy**

Students must ask permission to leave the classroom during the class period. Only one student will be allowed out of the classroom at a time. No students can use the bathroom during the first 10 minutes of class or last 10 minutes of class. You ALWAYS need a pass whenever you leave the classroom.

6. **Homework, Quizzes and Exams**

Homework will be assigned everyday. Quizzes are given every Friday, unless there is not class on a Friday, then the quiz will be given on a Thursday. There are final unit exams and end of semesters exams.

Students can take missed quizzes with documentation for full credit and without documentation for up to 80% of the grade.

Consequences for not following these rules will be as follows:
   1.) Verbal Warning
   2.) One-on-one conversation
   3.) Call home and/or sent to Courtney or admin office.

Grading Policy

Category	Examples	Grade Percentage
Learning Activities	Classwork, Homework, Reflections	**40%**
Formative Assessments	Quizzes, Inquiry/Problem Solving	**30%**
Summative Assessments	Exams, Projects	**30%**

Final Grades

A+	97-100	B+	87-89	C+	77-79	Fail	0-64
A	93-96	B	83-86	C	73-76		
A-	90-92	B-	80-82	C-	65-72		

Extra Help: We are here to help.
Tutoring will be available during lunch the following days:

Monday:	Colleen - Room 245
Tuesday:	Keysi - Room 237
Wednesday:	Danielle - Room 237
Thursday:	Carelythia - Room

Year at a Glance

Unit 1: Introduction to Algebra at FHS
Essential Question: What is Math?
Time Frame: 10 days
Unit Final Exam: September 28, 2018

Standards	Learning Targets
PBAT Rubric **Reasoning and Proof:** I can justify my mathematical arguments logically. **Problem Solving:** I can select and analyze appropriate strategies to solve non-routine problems. **CCSS:** N-RN.B.3 Use properties and operations to understand the different forms of rational and irrational numbers. A-SSE.A.1 Interpret expressions that represent a quantity in terms of its context A-SSE.A.2 Interpret expressions by viewing one or more of their parts as a single entity	**LT 1:** I can investigate mathematical prompts through inquiry to prove conjectures. **LT 2:** I can select and analyze appropriate strategies to solve non-routine problems. **C 1.1:** I can use properties and operations to understand rational numbers. **C 1.2:** I can interpret expressions that represent quantity in terms of its context. **C 1.3:** Interpret expressions by viewing one or more of their parts as a single entity.

Unit 2: Solving Linear Equations & Inequalities in One Variable
Essential Question: How do we distinguish the difference between equality and inequality?
Time Frame:
Unit Final Exam:

Standards	Learning Targets
PBAT Rubric: **Connection**: Demonstrates an in-depth understanding of the relationships between mathematical concepts, procedures, and/or strategies. **Representation:** Creates an accurate mathematical representation(s), inherent to The task, to solve problems or portray solutions. **CCSS:** A-CED.A.1 Create equations and inequalities in one variable to represent a real-world context. A-REI.A.1a Explain each step when solving a linear or quadratic equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. A-CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. A-REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	**T 1:** I can demonstrate understanding relationships between mathematical concepts and procedures. **T 2:** I can demonstrate understanding relationships between mathematical concepts and strategies. **T 3:** I can create accurate mathematical representations, fundamental to the task, to solve problems or portray solutions. **T 4:** I can demonstrates an in-depth understanding of the relationships between mathematical concepts, procedures, and/or strategies. **C 1.1:** I can explain the difference between an equation and inequality. **C 1.2:** I can create equations or inequalities in one variable to represent a real-world context. **C 1.3:** I can represent constraints by equations or inequalities and interpret solutions as viable or non-viable options in a world problem. **C 1.4:** I can solve equations in one variable. **C 1.5:** I can solve inequalities in one variable. **C 1.6:** I can explain each step when solving a linear equation or inequality as following from the the previous step.

Unit 3: Linear Functions and Linear Inequalities
Essential Question: How can a relationship be defined as linear?
Time Frame:
Unit Final Exam:

Standards	Learning Targets
PBAT Rubric: **Connections:** Demonstrates an understanding of the relationships between mathematical concepts, procedures, and/or strategies. **Communication:** Always uses mathematical language and notations accurately. Always clearly explains mathematical thinking in an organized and detailed way. **CCSS:** F-BF.A.1 Write a function that describes a relationship between two quantities. A-REI.D.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. F-IF.B.6 Calculate and interpret the average rate of change of a function presented over a specified interval. F-IF.C.7 Graph functions and show key features of the graph by hand A-SSE.A.2 Recognize and use the structure of an expression to identify ways to rewrite it. A-CED.A.2 Create equations and linear inequalities in two variables to represent a real-world context. A-CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	**T 1:** I can demonstrate understanding relationships between mathematical concepts and procedures. **T 2:** I can demonstrate understanding relationships between mathematical concepts and strategies. **T 3:** I can use mathematical language and notations accurately. **T 4:** I can clearly explain mathematical thinking in an organized and detailed way. **C 3.1:** I can write a function that describes a relationship between two quantities. **C 3.2:** I can solve equations graphically. **C 3.3:** I can calculate the average rate of change of a function given different representations. **C 3.4:** I can interpret the average rate of change of a function given different representations. **C 3.5:** I can graph functions and show key features of the graph by hand. **C 3.6:** I can recognize and use the structure of an expression to identify ways to write the equation of a line. **C 3.7:** I can interpret solutions as possible or impossible options in a model. **C 3.8:** I can create linear inequalities in two variables to represent a real-world context. **C 3.9:** I can represent restrictions by a linear inequality. **C 3.10:** I can graph the solutions to a linear inequality in two variables graphically.

Standards	
A-REI.D.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	

Unit 4: Systems of Equations and Linear Inequalities
Essential Question: How might one determine the most efficient method for solving a system?
Time Frame:
Unit Final Exam:

Standards	Learning Targets
PBAT Rubric **Reasoning and Proof:** I can justify my mathematical arguments logically. **Problem Solving:** I can select and analyze appropriate strategies to solve non-routine problems. AI.A.REI 6a. Solve systems of linear equations in two variables both algebraically and graphically. A-CED.A.2 Create equations and linear inequalities in two variables to represent a real-world context. A-CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. A-REI.D.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.	**LT 1:** I can justify my mathematical arguments logically. **LT 2:** I can select and analyze appropriate strategies to solve non-routine problems. **C 4.1:** I can interpret solutions as possible or impossible options given aral world context. **C 4.2:** I can create equations in two variables to represent a real world context. **C 4.3:** I can represent restrictions by a system of equations. **C 4.4:** I can solve systems of linear equations in two variables graphically. **C 4.5:** I can solve systems of linear equations in two variables by using elimination. **C 4.6:** I can solve systems of linear equations in two variables by using substitution. **C 4.7:** I can create equations in two variables to solve real world problems. **C 4.8:** I can graph the solution set to a system of linear inequalities in two variables graphically.

Unit 5: Polynomials
Essential Question: How do the groups we create impact an outcome?
Time Frame:
Unit Final Exam:

Standards	Learning Targets
PBAT Rubric **Problem Solving** Select and analyze appropriate strategies to solve non-routine problems. **Connections** Demonstrates understanding of the relationship between mathematical concepts, procedures, and/or strategies. **CCSS:** A-SSE.B.3c Use the properties of exponents to rewrite exponential expressions. A-SSE.A.1 Interpret expressions that represent a quantity in terms of its context. A-SSE.A.1a Write the standard form of a given polynomial and identify the terms, coefficients, degree, leading coefficient, and constant term. A-APR.A.1 Add, subtract, and multiply polynomials and recognize that the result of the operation is also a polynomial. This forms a system analogous to the integers. A-SSE.A.2 Recognize and use the structure of an expression to identify ways to rewrite it. A-SSE.A.1b. Interpret expressions by viewing one or more of their parts as a single entity. A-APR.B.3. Identify zeros of polynomials when suitable factorizations are available.	**T 1:** I can select and analyze appropriate strategies to solve non-routine problems. **T 2:** I can demonstrate understanding of the relationship between mathematical concepts and procedures. **T 3:** I can demonstrate understanding of the relationship between mathematical concepts and strategies in a detailed way. **C 5.1:** I can evaluate algebraic expressions by expanding multiplication. **C 5.2:** I can use the laws of exponents to simplify expressions 1. I can use the product of powers property to simplify exponential expressions 2. I can use the power of a power property and the power of a product property to simplify exponential expressions 3. I can use the quotient of powers property and the power of a quotient property to simplify exponential expressions. **C 5.3:** I can identify the terms of a polynomial. **C 5.4:** I can identify the coefficients of a polynomial. **C 5.5:** I can write a polynomial in standard form. **C 5.6:** I can identify the degree of a polynomial. **C 5.7:** I can add polynomials and recognize a solution as a polynomial. **C 5.8:** I can subtract polynomials and recognize a solution as a polynomial.

	C **5.9:** I can multiply polynomials and recognize a solution as a polynomial.
	C **5.10:** I can factor the GCF out of a polynomial.
	C **5.11:** I can factor a polynomial by grouping.
	C **5.12:** I can factor a polynomial using the ac-method.
	C **5.13:** I can identify the zeros of a polynomial.

Unit 6: Quadratic Equations
Essential Question: How might one determine the most efficient method for solving a quadratic equation?
Time Frame:
Unit Final Exam:

Standards	**Learning Targets**
PBAT Rubric: **Problem Solving** Selects appropriate and efficient strategies to solve non-routine problems. Provides some analysis of strategies Executes conceptually sound mathematical procedures with minor computational errors. **Reasoning and Proof** Makes valid conceptual/theoretical argument(s) and mathematically justifies it logically. CCSS: A-REI.B.4b Solve quadratic equations by: i) inspection; ii) taking square roots; iii) factoring; iv) completing the square; v) the quadratic formula; vi) graphing and vii) recognizing when the process yields no real solutions.	**T 1:** I can selects appropriate and efficient strategies to solve non-routine problems. **T 2:** I can provide analysis of strategies. **T 3:** I can executes conceptually sound mathematical procedures with minor computational errors. **T 4:** I can make valid conceptual/theoretical argument(s) and mathematically justifies it logically. **C 6.1:** I can solve quadratic equations by GCF **C 6.2:** I can solve quadratic equations by factoring. **C 6.3:** I can use the Discriminant to determine the number of solutions to a quadratic equations. **C 6.4:** I can solve quadratic equations using the quadratic formula. **C 6.5:** I can solve quadratic equations by graphing. **C 6.6:** I can explain each step when solving a quadratic equation. **C 6.7:** I can identify key features of a quadratic function. **C 6.8:** I can interpret zeros, maxima, minima, axis of symmetry, y-intercepts in a real world problem.

A-REI.A.1a Explain each step when solving a linear or quadratic equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. F-IF.C.7 Graph functions and show key features of the graph by hand and by using technology where appropriate. F-IF.C.8a For a quadratic function, use an algebraic process to find zeros, maxima, minima, and symmetry of the graph, and interpret these in terms of context. A-SSE.A.2 Recognize and use the structure of an expression to identify ways to rewrite it. A.REI. C.7a Solve a system, with rational solutions, consisting of a linear equation and a quadratic equation (parabolas only) in two variables both algebraically and graphically.	**C 6.9:** I can write the equation of a quadratic function in different forms. **C 6.10:** I can solve a system of linear equation and a quadratic equation in two variables graphically.

Algebra ¾
Student-Parent-Teacher Agreement Form

I. Student

I have read the syllabus and understand what is expected of me to be successful this semester in Algebra ¾ class.

Student Name (print):_____

Student Signature:_____

II. Parent

My child and I have reviewed and understand the class policies and expectations on the syllabus for Algebra ¾ class.

Parent/Guardian Name (print): _____

Parent/Guardian Signature: _____

Best Contact Numbers:

Home: _____ (Best time to contact from _____ to _____)

Cell: _____ (Best time to contact: from _____ to _____)

Work: _____ (Best time to contact: from _____ to _____)

Email Address: _____

Please write one goal for your child in Algebra ¾ class:

_____

_____

_____

_____

How you will support your child to reach this goal?

_____

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