FRANKLIN-SIMPSON HIGH SCHOOL

Course Name: Algebra I **Unit Name: Beyond the first Degree: Exponents and Polynomials**

Objectives:

Unit 5 Beyond the First Degree: Exponents and Polynomials	
A.1. Skills Acquired by Students…	e. Use scientific notation when working with very large or very small quantities
B.1. Mathematical Processes	a. Apply problem-solving skills (e.g., identifying irrelevant or missing information, making conjectures, extracting mathematical meaning, recognizing and performing multiple steps when needed, verifying results in the context of the problem) to the solution of real-world problems
	b. Use a variety of strategies (e.g., guess and check, draw a picture) to set up and solve increasingly complex problems
	c. Represent data, real-world situations, and solutions in increasingly complex contexts (e.g., expressions, formulas, tables, charts, graphs, relations, functions) and understand the relationships
	d. Use the language of mathematics to communicate increasingly complex ideas orally and in writing, using symbols and notations correctly
	e. Make appropriate use of estimation and mental mathematics in computations and to determine the reasonableness of solutions to increasingly complex problems
	f. Make mathematical connections among concepts, across disciplines, and in everyday experiences
	g. Demonstrate the appropriate role of technology (e.g., calculators, software programs) in mathematics (e.g., organize data, develop concepts, explore relationships, decrease time spent on computations after a skill has been established)
	h. Apply previously learned mathematical concepts in algebraic contexts
C.1. Foundations	d. Add and subtract polynomials
	e. Factor a monomial from a polynomial
	f. Multiply monomials, binomials, trinomials, and polynomials
F.1. Rational and Radical Expressions, Equations, and Functions	a. Use properties of exponents (including zero and negative exponents) to evaluate and simplify expressions

G.1 Data Relations, Probability, and Statistics	d. Identify patterns of growth (e.g., patterns of exponential growth) in a set of data

Purpose of the Unit:

To represent numbers less than one using exponents, simplify expressions involving exponents, and describe and explain characteristics of exponential functions. To add, subtract, multiply and factor polynomial expressions.

Prerequisites:

B.1. Mathematical Processes	a. Apply problem-solving skills (e.g., identifying irrelevant or missing information, making conjectures, extracting mathematical meaning, recognizing and performing multiple steps when needed, verifying results in the context of the problem) to the solution of real-world problems
	b. Use a variety of strategies (e.g., guess and check, draw a picture) to set up and solve increasingly complex problems
	c. Represent data, real-world situations, and solutions in increasingly complex contexts (e.g., expressions, formulas, tables, charts, graphs, relations, functions) and understand the relationships
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	g. Demonstrate the appropriate role of technology (e.g., calculators, software programs) in mathematics (e.g., organize data, develop concepts, explore relationships, decrease time spent on computations after a skill has been established)
	h. Apply previously learned mathematical concepts in algebraic contexts
D.1. Expressions, Equations, and Inequalities	g. Solve systems of two equations using various methods, including elimination, substitution, and graphing with and without technology
D.2. Graphs, Relations, and Functions	e. Graph linear inequalities with two variables on the standard (x,y) coordinate plane
	g. Recognize the concept of slope as a rate of change and determine the slope when given the equation of a line in standard form or slope-intercept form, the graph of a line, two points, or a verbal description
	i. Translate between different representations of relations and functions: graphs, equations, sets of ordered pairs, verbal descriptions, and tables

Daily Lesson Guide

Day	Lesson Content and Daily Focus Questions	Tasks/Procedures		Engagement	Assessment and/or Accommodations
		Knowledge or Comprehension Activities	Critical Thinking (High Yield / Literacy /LTF/etc.)		
1	Zero and Negative exponents (F.1.a) Can I extend the idea of exponents to include zero and negative numbers?	Algebra I Person Workbook Pg. 195 1-33 odd			Zero and Negative Exponents Standardized Test Prep (workbook pg. 197) Bell Ringer Homework checks
2 and 3	Multiplying Powers with the Same Base (F.1.a) Can I simplify products of powers with the same base?	(Day 1) Algebra I Person Book Pg. 429-430 #8-20 Even (Day 2) Algebra I Person Workbook Pg. 199 #2-50 even			Multiplying Powers with the Same base Standardized Test Prep (workbook pg. 201) Bell Ringer Homework checks
4 and 5	More Multiplication Properties of Exponents (Power to a Power, Power of a Product, Multiplying Scientific Notation) (F.1.a, A.1.e)	(Day 1) Algebra I Person Book Pg. 436-437 #10-32 even, #54-60 even (Day 2)			Power to a Power and Power of a Product Standardized Test Prep (workbook pg. 205) Bell Ringer

	Can I simplify a Power to a Power and Power of a Product expressions?	**Algebra I Person Workbook** **Pg. 203 #2-58 even**			**Homework Checks**
6 and 7	**Division Properties of Exponents (Dividing Scientific Notation) (F.1.a, A.1.e)** **Can I simplify quotients of powers with the same base?**	**(Day 1)** **Algebra I Person Book** **Pg. 442-443 #8-28 even, 34-48 even** **(Day 2)** **Algebra I Person Workbook** **Pg. 207 #2-20 even, #22, 26**			**Division Properties of Exponents Standardized Test Prep (workbook pg. 209)** **Bell Ringer** **Homework checks**
8 and 9	**Review Exponent Rules**	**(Day 1)** **Fill in the blank Exponent Rules worksheet with examples**	**(Day2)** **Jeopardy Review Game** **White board review in groups**		**Formative assessment of student work on worksheets and white boards**
10	**Exponent Rules Test**				**Summative assessment (multiple choice test on Exponent Rules)**
11 and 12	**Exponential Functions (G.1.d)** **Can I identify, evaluate,**	**(Day 1)** **Algebra I Person Book** **Pg. 457 #8-38 even**			**Exponential Functions Standardized Test Prep (workbook pg. 217)**

	and graph an exponential function?	**(Day 2)** **Algebra I Person Workbook** **Pg. 215 #1-12 all, 14, #18-28 even**			**Bell Ringers** **Homework checks**
13 and 14	**Exponential Growth and Decay (G.1.d)** **Can I identify and model exponential growth and decay?**	**(Day 1)** **Algebra I Person Book** **Pg. 464 #9-18 all, and #29-31 all** **(Day 2)** **Algebra I Person Workbook** **Pg. 219 #1-16 all, and #20-23 all**			**Exponential Growth and Decay Standardized Test Prep (workbook pg. 221)** **Bell Ringers** **Homework checks**
15	**Exponential Function Review**	**Review notes and examples (student/partner work)**			**Formative assessment of student work**
16	**Exponential Function Test**				**Summative assessment**
17	**Adding and Subtracting Polynomials (C.1.d)** **Can I add and subtract like terms to simplify polynomials?**	**Algebra I Person Workbook** **Pg. 227 #2-38 even**			**Adding and Subtracting Polynomials Standardized Test Prep (workbook pg. 229)** **Bell Ringer** **Homework checks**

18 and 19	**Multiplying and Factoring (C.1.e,f)** **Can I multiply polynomials by monomials? Can I factor using the GCF?**	**(Day 1)** **Algebra I Person Book** **Pg. 495 #10-34 even** **(Day 2)** **Algebra I Person Workbook** **Pg. 231 #2-48 even**			**Multiplying and Factoring Standardized Test Prep (workbook pg. 233)** **Bell Ringers** **Homework Checks**
20	**Multiplying Binomials (C.1.f)** **Can I use FOIL to multiply binomials and multiply binomials by trinomials/polynomials?**	**Algebra I Person Workbook** **Pg. 235 #2-26 even, and #32-38 even**			**Multiplying Binomials Standardized Test Prep (workbook pg. 237)** **Bell Ringers** **Homework checks**
21	**Multiplying Special Cases (C.1.f)** **Can I identify special cases when multiplying to prepare for a concept called "completing the square?"**	**Algebra I Person Workbook** **Pg. 239 #2-16 even,** **#28-38 even,** **#46-54 even**			**Multiplying Special Cases Standardized Test Prep (workbook pg. 241)** **Bell Ringers** **Homework checks**
22 and 23	**Review Adding, Subtracting, Multiplying, and Factoring(GCF) Polynomials**	**(Day 1)** **Review notes with examples in class (Student/Partner work)**	**(Day 2)** **Review Game** **White board review in groups**		**Formative assessment of student work and white board review work**

24	**Adding, Subtracting, Multiplying, and Factoring (GCF) Polynomials Test**				**Summative assessment**
25	**Review of Unit**	**Discuss Notes and examples (student/partner work)**			**Formative assessment of student work in class**
26	**Unit Exam**				**Summative assessment of entire unit**