Unit 7: Polynomial Operations

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **Full Year**
Status: **Published**

UNIT RATIONALE

The unit explores operations that can be done with polynomials. Students will first learn how to describe monomials and polynomials, then they will learn to add, subtract and multiply them. The unit also explores factor expressions.

ESSENTIAL QUESTIONS

How can polynomials be simplified and applied to solve problems?

Can two algebraic expressions that appear different actually be equivalent?

How is factoring the inverse of multiplication?

STANDARDS

NEW JERSEY STUDENT LEARNING STANDARDS: CONTENT AREA

New Jersey (NJSLS) - High School - Mathematics (2020)

MA.A-SSE.A.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
MA.A-SSE.B.3a	Factor a quadratic expression to reveal the zeros of the function it defines.
MA.A-APR	Arithmetic with Polynomials and Rational Expressions
MA.A-APR.A	Perform arithmetic operations on polynomials
MA.A-APR.A.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.
MA.A-APR.B	Understand the relationship between zeros and factors of polynomials
MA.A-APR.B.2	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
MA.A-APR.C.4	Prove polynomial identities and use them to describe numerical relationships.

NEW JERSEY STUDENT LEARNING STANDARDS: CAREER READINESS, LIFE LITERACIES AND KEY SKILLS

PFL.9.1.12.FP.5	Evaluate how behavioral bias (e.g., overconfidence, confirmation, recency, loss aversion, etc.) affects decision-making.
PFL.9.1.12.FP.6	Evaluate the relationship of familial patterns, cultural traditions, and historical influences on financial practice.
PFL.9.1.12.PB.1	Explain the difference between saving and investing.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
WRK.9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
CS.9-12.8.1.12.IC.1	Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.
CS.9-12.8.1.12.IC.2	Test and refine computational artifacts to reduce bias and equity deficits.
CS.9-12.8.2.12.ED.5	Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).

PRE-ASSESSMENTS

Non-curricular tasks to identify students' readiness levels with problem solving.

Rubric Based Reassessments and Algebra 1 assignments.

INSTRUCTIONAL PLAN

MODULE 1

Student Learning Intentions (SLI) WALT: (We	Students will build a strawbridge to hold the most weight.

are learning to…)	
Student Learning Strategies	Videos posted to activity drawings of different bridges.
Success Criteria	I can research and develop a strong bridge to ho the most weight out of the materials given.
Formative Assessment (drives instructional decisions)	Results of activity
Activities and Resources	Packet and videos posted.
Suggested Modifications	Have students work in pairs or groups of three. L students have the week to complete. Make sure there are check ins.

Straw bridge

MODULE 2

Student Learning Intentions (SLI) WALT: (We are learning to…)	Students will fill out interactive notebook pages to help them in their algebra 1 class.
Student Learning Strategies	Interactive notebook pages common mistakes resource and flip books
Success Criteria	students can fill out the pages of their interactive notebook so they have a resource for their classroom.
Formative Assessment (drives instructional decisions)	Students are given quizizz links this unit to help focus on their understanding. This unit is extreme important to their math career so there needed to formative assessments with the interactive noteb pages.
Activities and Resources	Interactive Notebook pages listed

Suggested Modifications	Fill out pages for absent students.

Add_SubPolyINT.docx

Add_SubPolyINT.pdf
FactoringGCF_INTdocx.docx
Factor_by_GroupingINT.docx
factoringTriA_1INT.docx
diffofSquaresINT.docx
MultPolyINT.docx
Naming_Polynomials_PracticeINT.docx
FINDING_GCF_OF_TERMSINT.pdf
Factor_by_GroupingINT.pdf
Naming-Polynomial-Practice.pdf
FINDING_GCF_OF_TERMSINT.docx
FactoringGCF_INTdocx.pdf
Adding-and-Subtracting-Polynomials-Notes.pdf
perfectsquaresINT.docx
factoringTriA_1INT.pdf
Naming_Polynomials_PracticeINT.pdf
factoringTriA_1INT.pdf
MultPolyINT.pdf
factoringTriA_1INT.docx
diffofSquaresINT.pdf
perfectsquaresINT.pdf
Reference-Chart.pdf
Naming-Polynomials-Graphic-Organizer-Updated.pdf
Naming-Polynomials-Graphic-Organizer.pdf

MODULE 3

Student Learning Intentions (SLI) WALT: (We are learning to…)	Students will see how PI day is used in the real world
Student Learning Strategies	Activities to choose from
Success Criteria	I can participate in pi day activities
Formative Assessment (drives instructional decisions)	None
Activities and Resources	Listed below
Suggested Modifications	Give the students choices.

Pi Day Activities!

REFLECTIONS

Use pennies instead of weights. Give students more straws. Give them dimensions. Students tried to make tops to the bridge which affected how the weight was held.

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS

LA.K-12.NJSLSA.R1	Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
LA.K-12.NJSLSA.R3	Analyze how and why individuals, events, and ideas develop and interact over the course of a text.
LA.RI.9-10.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
LA.K-12.NJSLSA.W4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LA.K-12.NJSLSA.W5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
LA.K-12.NJSLSA.W6	Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
LA.W.9-10.1.D	Establish and maintain a style and tone appropriate to the audience and purpose (e.g., formal and objective for academic writing) while attending to the norms and conventions of the discipline in which they are writing.
LA.W.9-10.2.B	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.