THOMPSON RIVERS UNIVERSITY | Education & Social Work

Bachelor of Education (Elementary) &
Bachelor of Education (Secondary) STEM
Unit Plan Template

Unit Title:	Chapter4 Polynomials	**Number of Lessons**		**Time (in weeks):**	2
Name:	Kloe Ma	**Subject(s):**	Math	**Grade(s):**	9

Rationale

Teaching polynomials is an essential part of mathematics education because they form the foundation for understanding many advanced mathematical concepts and real-world applications.

Overview:

This unit introduces students to polynomials, covering their components, operations (addition, subtraction, multiplication, and division), and applications in real-world contexts. Students will engage in hands-on activities, visual representations, and collaborative problem-solving to deepen their understanding.

CORE COMPETENCIES

Communication	Thinking	Personal & Social
● Express mathematical reasoning clearly through oral and written explanations. ● Use mathematical vocabulary (e.g., coefficient, variable, degree) accurately. ● Work collaboratively in group activities (e.g., holiday ribbon challenge, polynomial sorting tasks,	● Develop critical thinking skills by recognizing patterns in polynomial operations. ● Apply logical reasoning when simplifying and solving polynomial problems. ● Explore problem-solving strategies in real-world applications (e.g., designing fences,	● Work respectfully in pairs or groups, discussing and comparing solutions. ● Reflect on learning, recognizing growth in algebraic thinking. ● Connect polynomial concepts to real-life situations and cultural perspectives (e.g., Indigenous land Measurement environmental

Poly–Uno Cards Game).	financial planning). ● Use visual and algebraic representations to deepen understanding.	sustainability).

BIG IDEAS

(multiple subject areas for integrated unit)

Math	**Subject Name**	**Subject Name**
The principles and processes underlying operations with numbers apply equally to algebraic situations and can be described and analyzed.		

LEARNING STANDARDS

Curricular Competencies	**Content**
CC1: Use mathematical vocabulary and language to contribute to mathematical Discussions.	C1: Introduction to Polynomials
CC2: Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving.	C2: Variables, number of terms, and coefficients, including the constant term, and degree
CC3: Visualize to explore mathematical concepts	C3: Combine like terms Adding/Subtracting Polynomials Multiplying/Dividing Polynomials

Prerequisite Concepts and Skills:

Basic algebraic concepts, operations

Teacher Preparation Required:

Lesson #	Teacher Preparation Required (See Unit Plan Sample)
Lesson 1	**Introduction to Polynomials – Term**
Lesson 2	**Introduction to Polynomials – Degree**
Lesson 3	**Like terms**
Lesson 4	**Adding and Subtracting Polynomials**
Lesson 5	**Quiz #1**
Lesson 6	**Multiplying Polynomials**
Lesson 7	**Dividing Polynomials**
Lesson 8	**Quiz #2**
Lesson 9	**Review–Practice Test**
Lesson 10	**Test**

Cross–Curricular Connections:

Aboriginal Connections/ First Peoples Principles of Learning:

- Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).
- Learning involves patience and time.

Universal Design for Learning (UDL)

- Engagement – work in groups, gamification
- Representation – use visual & hands–on representations
- Expression – layer basic concepts, support flexible ways to help students taking notes

Differentiated Instruction (DI):

Overview of Lessons:

Lesson 1

Name &Time (Minutes Allotted):	Introduction of Polynomials – Terms
Learning Standards: Curricular Competencies	CC1,CC2,CC3

Learning Standards: Content	C1,C2
Instructional Objectives	Student will be able to ● Define a polynomial and identify its key components (terms, coefficients,variables, constant). ● Classify polynomials by the number of terms (monomial, binomial, trinomial). ● Write polynomials in standard form.
Assessment:	Group Solving Problem(C,O,P) Exit Ticket(P)
Teaching Strategies:	● Scaffolded Practice ● Small Group Work ● Visual Supports
Materials:	Whiteboard and markers Google slides and projector Frayer Model worksheet
Lesson Activities:	
Introduction/Hook:	Start with a real–world example to make polynomials relatable. Clarify the basic composition of the algebraic expression: ● Variable ● Coefficient ● Terms ● Constant
Body:	Explain the other new concepts: variable, term, constant. Guide students finish the Frayer Model worksheet. Group Practice Problem Definition of **algebra**, **algebra expression**, and **polynomials**(includes **monomial, binomial, trinomial**). Group Practice Problem
Closure:	Wrap up Leave some time for students to finish their Frayer Model worksheet

Lesson 2

Name &Time (Minutes Allotted):	Introduction to Polynomials – Degree
Learning Standards: Curricular Competencies	CC2

Learning Standards: Content	C1,C2
Instructional Objectives	Student will be able to ● Know the definition of degree ● Classify polynomials by the number of terms and by degree.
Assessment:	Entry Ticket(P)
Teaching Strategies:	● Scaffolded Practice ● Small Group Work ● Visual Supports
Materials:	Poly–Uno Cards Whiteboard and markers Google slides and projector
Lesson Activities:	
Introduction/Hook:	Entry Ticket about last lesson
Body:	Definition of degree Distinguish the degree of polynomials Group problem solving
Closure:	Give instructions about Poly–Uno game Divide 4 or 5 students each group to play

Lesson 3

Name &Time (Minutes Allotted):	Like terms
Learning Standards: Curricular Competencies	CC3
Learning Standards: Content	C3
Instructional Objectives	Student will be able to identify like terms and combine them together
Assessment:	Entry&Exit Ticket (P) ● KWL(What do I know/ What do I want to know/ What have I learned) Group work(C,O,P)
Teaching Strategies:	● Scaffolded Practice ● Small Group Work ● Visual Supports
Materials:	Whiteboard and markers Google slides and projector KWL worksheet Colored cards

Lesson Activities:	
Introduction/Hook:	KWL worksheet write down K&W part(what do i know & what do i want to know after this lesson)
Body:	Definition of like terms Distinguish like terms ● Group work ● Gather like terms cards with same color together How to combine like terms ● Maintain variable part, adding coefficient parts together
Closure:	KWL worksheet L part (what have I learned)

Lesson 4

Name &Time (Minutes Allotted):	Adding and Subtracting Polynomials
Learning Standards: Curricular Competencies	CC3
Learning Standards: Content	C3
Instructional Objectives	Student will be able to improve to distinguish and combine like terms together, realize to do adding and subtracting based on previous lesson.
Assessment:	Exit Ticket(P) Group work(C,O,P)
Teaching Strategies:	● Scaffolded Practice ● Small Group Work ● Visual Supports
Materials:	Whiteboard and markers Google slides and projector Practice Problem Worksheet
Lesson Activities:	
Introduction/Hook:	Divide students into groups, work on whiteboard, design different holidays holiday ribbons for garden. ● Imagine you are designing holiday ribbons for a triangle garden. The length is represented by 3x meters, x−2 meters, and x+2 meters. How can we determine the total perimeter (the length of ribbon)? ● Discussion questions What happens when constants cancel out? How would the expression change if one side was increased by 2 meters?

Body:	**Adding** Google Slides & Whiteboard: ● Use color–coding to highlight like terms when adding polynomials. ● Model an example on the board step–by–step. ● Working on Practice Problem Worksheet (chunking step–by–step) **Subtracting** Google Slides & Whiteboard: ● Use color–coding to highlight like terms when adding polynomials. ● Model an example on the board step–by–step. ● Working on Practice Problem Worksheet (chunking step–by–step)
Closure:	Practice

Lesson 5

Name &Time (Minutes Allotted):	Quiz1
Learning Standards: Curricular Competencies	CC1
Learning Standards: Content	C1,C2,C3
Instructional Objectives	Student will be able to ● Review ● Finish the quiz
Assessment:	Quiz(P)
Teaching Strategies:	● Scaffolded Practice ● Visual Supports
Materials:	Quiz worksheet
Lesson Activities:	
Introduction/Hook:	Review practice
Body:	Quiz
Closure:	Collect the completed quizzes. Preview what's coming next.

Lesson 6

Name &Time (Minutes Allotted):	Multiplying Polynomials
Learning Standards: Curricular Competencies	CC1,CC2,CC3
Learning Standards: Content	C3
Instructional Objectives	Student will be able to:

	● Multiplying monomial with monomial ● Multiplying Polynomial with monomial
Assessment:	Practice Worksheet(C,P)
Teaching Strategies:	● Scaffolded Practice ● Small Group Work ● Visual Supports
Materials:	Whiteboard and markers Google slides and projector Worksheet
Lesson Activities:	
Introduction/Hook:	Compare adding and multiplying
Body:	Hands-on notes taking: ● Monomial x monomial ● Monomial x polynomial
Closure:	Practice Q&A

Lesson 7

Name &Time (Minutes Allotted):	Dividing Polynomials
Learning Standards: Curricular Competencies	CC2,CC3
Learning Standards: Content	C3
Instructional Objectives	Student will be able to: ● Dividing monomial by monomial ● Dividing polynomial by monomial
Assessment:	Practice Worksheet(C,P)
Teaching Strategies:	● Scaffolded Practice ● Small Group Work ● Visual Supports
Materials:	Whiteboard and markers Google slides and projector Worksheet Math Murder Mystery Activity
Lesson Activities:	
Introduction/Hook:	Compare with multiplying polynomials
Body:	Hands-on notes taking: ● Monomial / monomial

	● Polynomial / monomial Math Murder Mystery Activity
Closure:	Practice Q&A

Lesson 8

Name &Time (Minutes Allotted):	Quiz2
Learning Standards: Curricular Competencies	CC1
Learning Standards: Content	C3
Instructional Objectives	Student will be able to ● Review ● Finish the quiz
Assessment:	Quiz(P)
Teaching Strategies:	● Scaffolded Practice ● Visual Supports
Materials:	Quiz worksheet
Lesson Activities:	
Introduction/Hook:	Review practice
Body:	Quiz
Closure:	Collect the completed quizzes. Preview what's coming next.

Lesson 9

Name &Time (Minutes Allotted):	Review – Practice Test
Learning Standards: Curricular Competencies	CC1,CC2,CC3
Learning Standards: Content	C1,C2,C3
Instructional Objectives	Students will be able to: ● Review and practice key concepts and skills in preparation for an upcoming test. ● Collaborate with peers in small groups to solve problems and clarify understanding. ● Use visual supports to reinforce learning and problem–solving strategies.
Assessment:	Practice worksheet(C,P)
Teaching Strategies:	● Scaffolded Practice

	• Small Group Work • Visual Supports
Materials:	Practice worksheet Group Competition Game
Lesson Activities:	
Introduction/Hook:	Quiz review
Body:	Group Competition Game https://www.baamboozle.com/games/create
Closure:	Practice Q&A

Lesson 10

Name &Time (Minutes Allotted):	Test
Learning Standards: Curricular Competencies	CC1,CC2,CC3
Learning Standards: Content	C1,C2,C3
Instructional Objectives	Students will be able to: Finish the test
Assessment:	Test worksheet(P)
Teaching Strategies:	Visual Support
Materials:	Test
Lesson Activities:	
Introduction/Hook:	Deliver the test, clarify some requirements.
Body:	Test
Closure:	Collect the completed test. Preview what's coming next.

Resources:

Extensions to Unit:

Reflections and Revisions
