

Project-Based Learning for De-streamed Emerging Grade 9 Learners in Mathematics



an EOCCC Resource

in partnership with

ONTARIO ENGLISH
Catholic
Teachers
ASSOCIATION

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Project-Based Learning for De-streamed Emerging Grade 9 Learners in Mathematics

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Cornwall, Ontario
CDSBEO

Acknowledgements

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Introduction

This resource supports educators/teachers teaching the grade 9 de-streamed mathematics course and those who are interested in incorporating Project-Based Learning (PBL) tasks in their classrooms. It should be noted that all projects can be modified to meet the needs of students in different grades, as well as MAT1L.

In this resource, educators/teachers will find five projects and three choice boards that incorporate hands-on, engaging, real-world tasks that foster active learning and meaningful connections. These projects promote student leadership, collaboration, innovation, creativity, problem solving and critical thinking, which the Ontario Ministry of Education identifies as important “transferable skills” that will prepare students for the future.

Each project highlights the big ideas of different mathematical concepts in the Ontario Mathematics Curriculum. The Catholic faith can be overtly integrated into this resource by emphasizing Catholic Graduate Expectations. Many projects will naturally embrace Pope Francis’ call to action regarding climate change and environmental degradation. Many of the suggested projects can easily be modified in theme while maintaining the overall mathematical learnings.

The experiential learning opportunities vary within this resource, but have been developed using materials readily available in a typical classroom. These tasks draw on several simultaneous (cross-strand) topics based on the elementary curriculum strands including number, algebra, data, measurement/geometry, and financial literacy – with emphasis on financial literacy and coding/technology.

Planning with Universal Design for Learning (UDL) in Mind

The lessons, activities and assessment tools within this resource have been developed in accordance with the principles of Universal Design for Learning (UDL). Our tasks accommodate diverse learning styles, abilities, and backgrounds, ensuring that every student can access the mathematics curriculum. Our projects facilitate various means of representation, engagement, and expression, which enables students to interact with the content in a manner that often aligns to their unique strengths and interests. The choice boards at the end of the resource provide students with the opportunity to take ownership over their learning and interact with math concepts in a self-directed manner, fostering deeper understanding of important concepts. By planning and preparing this resource with the UDL principles we hope that these projects and choice boards promote the growth and achievement of all students.

Ontario Catholic School Graduate Expectations

Catholic educators/teachers strive to be steadfast faith leaders in the classroom by modelling and embedding Catholic values, traditions and the Ontario Catholic School Graduate Expectations in their instructional and assessment practices. This resource provides many opportunities for educators/teachers to further integrate these principles into their teaching strategies. Through real-world projects and choice boards, educators/teachers can guide students in exploring connections between their faith, academic learning, and personal growth, nurturing a holistic educational experience.

It is our hope that this resource helps educators/teachers meet the diverse needs of their students while upholding the dignity of each individual. By meeting students where they are in their math learning journey and providing them with support, multiple entry points, choice and the appropriate assessment tools, we are creating a learning environment that fosters inclusivity, empowerment and connection.

In this resource, each project includes a "Pre-Minds On" section that often has a prayer, Bible passage, video and/or quote for students to reflect on. These faith-filled messages connect to the curriculum concepts being unpacked and explored. Throughout the lesson plans you will see three icons that signify where a Bible passage, prayer or Catholic Graduate Expectation has been embedded in a lesson.

We wanted to highlight these important moments where students and educators/teachers can reflect on their faith journey and explore the connections between their beliefs, math concepts and the world around them.



Bible Passage



Prayer



Ontario Catholic
Graduate Expectations

Below are the Ontario Catholic School Graduate Expectations that are embedded throughout the resource.

[A Discerning Believer](#)

CGE1c, CGE1d, CGE1h, CGE1i

[A Self-directed, Responsible, Lifelong Learner](#)

CGE4a, CGE4b, CGE4c, CGE4e, CGE4f

[An Effective Communicator](#)

CGE2a, CGE2b, CGE2c, CGE2d

[A Collaborative Contributor](#)

CGE5a, CGE5b, CGE5c, CGE5d, CGE5e, CGE5f,
CGE5g

[A Reflective and Creative Thinker](#)

CGE3b, CGE3c, CGE3d

[A Responsible Citizen](#)

CGE7b, CGE7j

**Other
Important
Considerations**

Social-Emotional Learning Skills

The development of social-emotional learning (SEL) skills helps students foster overall health and well-being, positive mental health, and the ability to learn, build resilience, and thrive.

(pg. 36, Ontario Mathematics Curriculum, 2021)

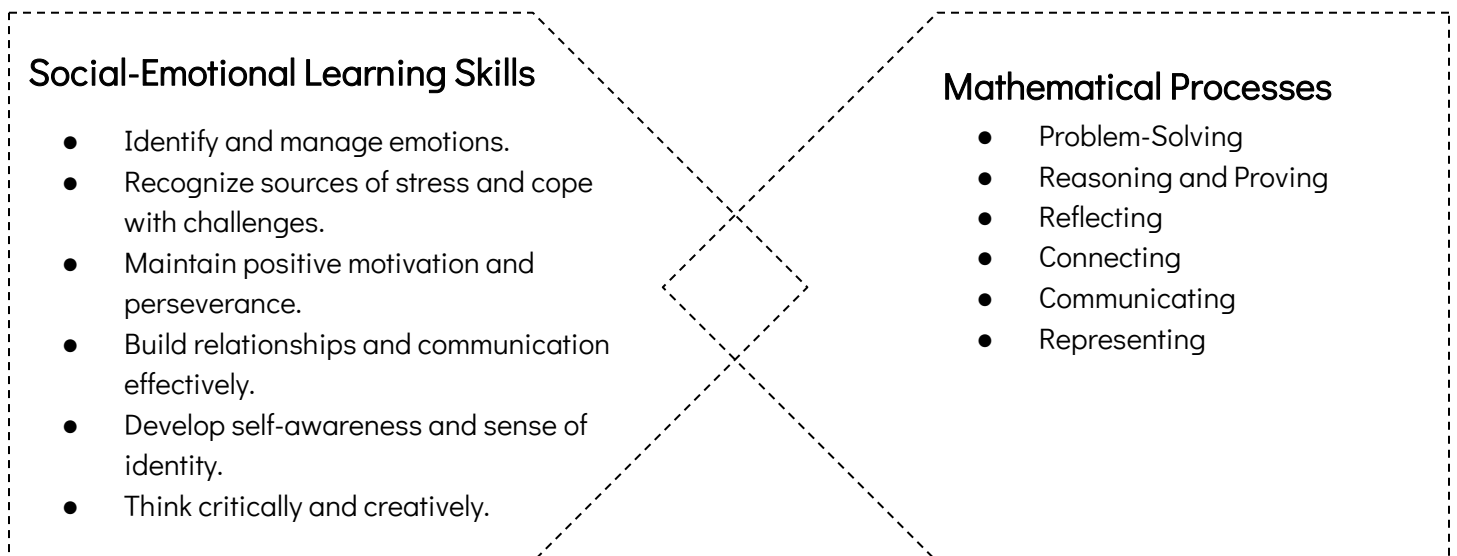
Social-emotional learning skills help students develop confidence, cope with challenges and think critically. The goal is to help students increase, expand and/or enlarge their toolkit of skills and abilities, so that they can see themselves as capable and confident math learners.

The projects in this resource will provide students with many opportunities to develop their social-emotional learning skills and use the math processes in different ways across different areas in the mathematics curriculum.

Students will learn to:

- make connections between different mathematical concepts and in their everyday life.
- recognize mistakes as part of the learning journey.
- use their toolkit of skills and strategies when working through challenging problems.

Social-Emotional Learning Skills & The Mathematical Processes



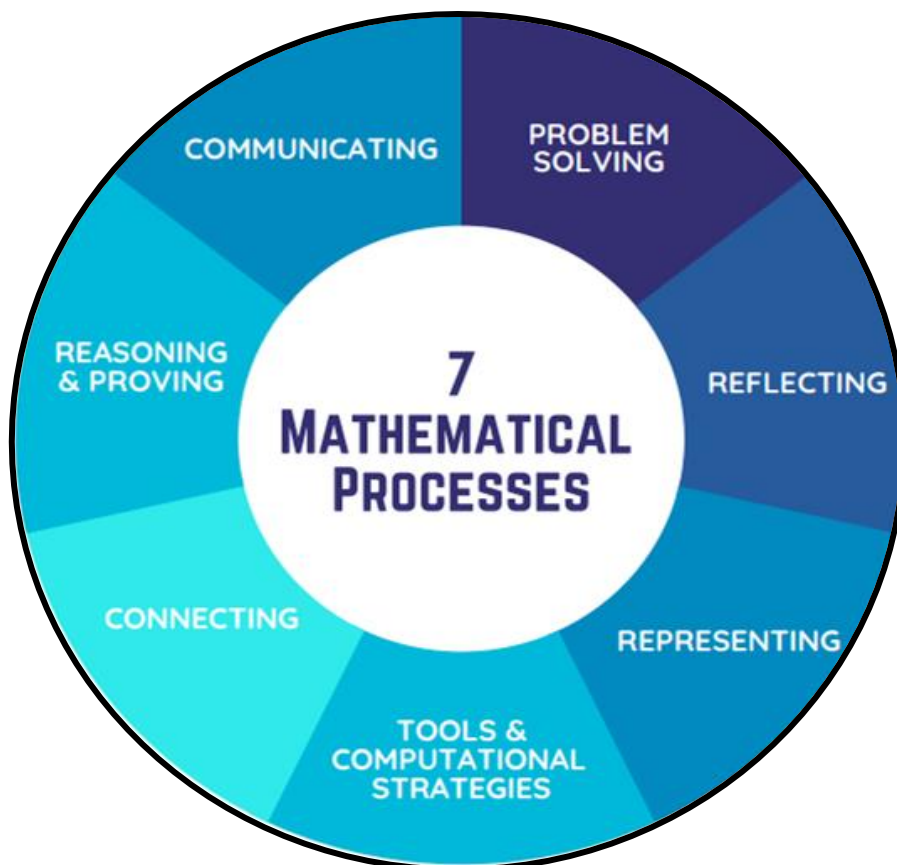
The goal is that students build a solid mathematical foundation and a positive mathematical identity and mindset simultaneously.

Mathematical Processes

In the revised mathematics curriculum (2020), the Ontario government has identified 7 key **mathematical processes** that support effective learning in mathematics:

- problem-solving
- reasoning and proving
- reflecting
- connecting
- communicating
- representing
- selecting tools and strategies

The mathematical processes *cannot* be separated from the knowledge, concepts, and skills that students acquire throughout each academic year. All students problem-solve, communicate, reason, reflect, and so on, as they develop the knowledge and the understanding of mathematical concepts and make connections between different areas of the curriculum. As educators/teachers, our goal is to provide students with multiple opportunities to develop the skills and abilities necessary to effectively apply these processes. The projects within this resource enable-



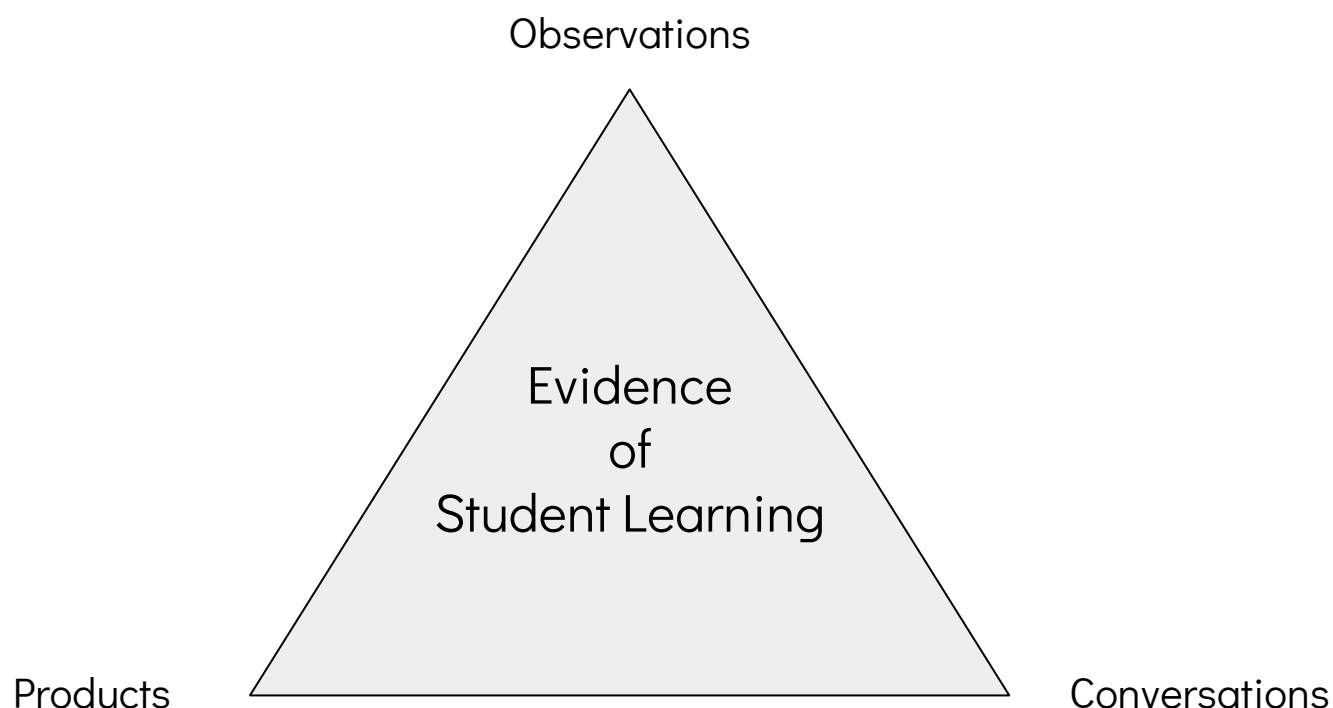
Documenting The Mathematical Processes

This documentation tool could be used to record anecdotal notes while students are working on the projects within this resource.

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Assessment

During these projects, we encourage all educators/teachers to use conversations, observations and products when collecting evidence of student learning. Ongoing assessment enables opportunities for immediate, real-time feedback and prompt intervention when necessary. Anecdotal notes taken during observations, conferences, check-ins and group discussions are an essential part of the assessment process and should not be minimized or discounted when evaluating student achievement.



Triangulation of Data Collection ensures that students are met and supported where they are in their learning journey. It enables educators/teachers to respect the dignity and uniqueness of every learner and provides multiple opportunities for students to showcase their learning in an individualized manner. As educators/teachers we know that one size does not fit all and therefore our assessment practices should reflect that.

In each project, there are variety of assessment strategies suggested and tools provided. It is our hope that you and your students will also find opportunities to work together and develop co-created success criteria that will fit your student's individual needs. We have also included a rubric that can be used at the end of each. These rubrics focus on the specific expectations covered throughout the project. Feel free to make a copy and modify all assessment tools to meet the needs of your classroom.

The Projects

Project 1: Design a Food Truck for Service in the Community

Ontario Catholic School Graduate Expectations: [1i](#), [2c](#), [3b](#), [3c](#), [4a](#), [4f](#), [5e](#), [5f](#), [6a](#)

Gospel Values/Virtues: Service, Courage, Faith filled, Community, Stewardship

Learning Goal: I can use number sense to make financial decisions using budgets, creating menus and writing receipts and use geometric and measurement relationships to design a logo and food truck for service in the community.

Overall Expectations

AA1 develop and explore a variety of social-emotional learning skills in a context that supports and reflects this learning in connection with the expectations across all other strands

B3 Number Sense and Operations: apply an understanding of rational numbers, ratios, rates, percentages, and proportions, in various mathematical contexts, and to solve problems

C1 Algebraic Expressions and Equations: demonstrate an understanding of the development and use of algebraic concepts and of their connection to numbers, using various tools and representations

E1 Geometric and Measurement Relationships: demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations

F1 Financial Decisions: demonstrate the knowledge and skills needed to make informed financial decisions

Specific Expectations

A1 apply the mathematical processes to develop a conceptual understanding of, and procedural fluency with, the mathematics they are learning

A2 make connections between mathematics and various knowledge systems, their lived experiences, and various real-life applications of mathematics, including careers

B3.3 apply an understanding of integers to explain the effects that positive and negative signs have on the values of ratios, rates, fractions, and decimals, in various contexts

C1.2 create algebraic expressions to generalize relationships expressed in words, numbers, and visual

C1.4 simplify algebraic expressions by applying properties of operations of numbers, using various representations and tools, in different contexts

E1.2 create and analyse designs involving geometric relationships and circle and triangle properties, using various tools

E1.4 show how changing one or more dimensions of a two-dimensional shape and a three-dimensional object affects perimeter/circumference, area, surface area, and volume, using technology when appropriate

F1.1 identify a past or current financial situation and explain how it can inform financial decisions, by applying an understanding of the context of the situation and related mathematical knowledge

F1.4 modify budgets displayed in various ways to reflect specific changes in circumstances, and provide a rationale for the modifications

Project Outline

Day 1: Intro to Project

Day 2: Menu Planning and Budget

Day 2b: Students may need an extra day to complete menu

Day 3: Receipts

Day 4: 2D Design of Food Truck

Day 5: 2D Design of Food Truck

Day 6: Build 3D prototype

Day 7: Build 3D prototype and Gallery Walk

Project Resources

Click on the links below to access all documents, tools and resources.

[Lesson Plan](#)

[Student Handouts](#)

[Assessment Tools](#)

Project 2: Create a Design for the Number Crunching Candy Co.

Ontario Catholic School Graduate Expectations: [1e, 2a, 2b, 2c, 2d, 3b, 4b, 4f, 5a, 5b, 5e, 7b, 7i](#)

Gospel Values/Virtues: Justice, Courage, Hope, Community, Humility, Stewardship.

Learning Goal: Through exploration, I can determine various properties (colour, volume, and design) of one type of candy, and use that to design my own brand of candy.

Overall Expectations

- B3.** Number Sense and Operations: apply an understanding of rational numbers, ratios, rates, percentages, and proportions, in various mathematical contexts, and to solve problems.
- C2.** Coding: apply coding skills to represent mathematical concepts and relationships dynamically, and to solve problems, in algebra and across the other strands.
- D2.** Mathematical Modeling: apply the process of mathematical modeling, using data and mathematical concepts from other strands, to represent, analyze, make predictions, and provide insight into real-life situations.
- E1.** Geometric and Measurement Relationships: demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations.

Specific Expectations

- B3.5:** pose and solve problems involving rates, percentages, and proportions in various contexts, including contexts connected to real-life applications of data, measurement, geometry, linear relations, and financial literacy.
- C2.1:** use coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities.
- C2.2:** create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems.
- C2.3:** read code to predict its outcome, and alter code to adjust constraints, parameters, and outcomes to represent a similar or new mathematical situation.
- D2.4:** determine ways to display and analyze the data in order to create a mathematical model to answer the original question of interest, taking into account the nature of the data, the context, and the assumptions made.
- D2.5:** report how the model can be used to answer the question of interest, how well the model fits the context, potential limitations of the model, and what predictions can be made based on the model.
- E1.6:** solve problems using the relationships between the volume of prisms and pyramids and between the volume of cylinders and cones, involving various units of measure.

Project Outline

- Day 1: Investigating predictability using M & Ms and ratios.
- Day 2: Displaying Data in a bar or circle graph using Excel and Exploring Excel.
- Day 3: Exploring different formulas to determine the volume of an individual M & M. Part 2 of Project – Shape of Candy.
- Day 4: Introduction to Coding. Part 3a of Project: Candy Package Shape
- Day 5: Using Python, calculate the shape with the smallest surface area
- Day 6: Creating a final label design.
- Day 7: Carousel – Sharing of Candy Ideas.

Project Resources

Click on the links below to access all documents, tools and resources.

[Lesson Plan](#)

[Student Handouts](#)

[Assessment Tools](#)

Project 3: AweSUM Foods (Logo Design)

Ontario Catholic School Graduate Expectations: [2b, 2c, 2d, 3b, 3c, 3d, 3e, 4b, 4f, 5a, 7e, 7j](#)

Gospel Values/Virtues: Service, Courage, Hope, Community

Learning Goal: I can create a design using lines by changing slope, y intercepts, and using inequalities. This can be achieved using the graphing calculator DESMOS.

Overall Expectations

C2. Coding: apply coding skills to represent mathematical concepts and relationships dynamically, and to solve problems, in algebra and across the other strands.

C4. Characteristics of Relations: demonstrate an understanding of the characteristics of various representations of linear and non-linear relations, using tools, including coding when appropriate.

Specific Expectations

C2.1 uses coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities.

C4.2 graph relations represented as algebraic equations of the forms $x = k$, $y = k$, $x + y = k$, $x - y = k$, $ax + by = k$, and $xy = k$, and their associated inequalities, where a , b , and k are constants, to identify various characteristics and the points and/or regions defined by these equations and inequalities.

C4.3 translate, reflect, and rotate lines defined by $y = ax$, where a is a constant, and describe how each transformation affects the graphs and equations of the defined lines

Project Outline

Day 1: Intro to project and explore transformations of lines by changing the slope and y intercept.

Day 2: Exploring DESMOS and placing restrictions on the Linear Functions.

Day 3: Exploring shading using Inequalities.

Day 4: Planning a design on paper and/or computer.

Day 5: Finish Design on DESMOS.

Day 6: Final day Carousel.

Project Resources

Click on the links below to access all documents, tools and resources.

[Lesson Plan](#)

[Student Handouts](#)

[Assessment Tools](#)

Project 4: Healthy Spoonful – Creating a Garden Plot/Greenhouse

Ontario Catholic School Graduate Expectations: [1d](#), [2e](#), [3c](#), [4c](#), [4g](#), [5b](#), [5f](#), [6e](#), [7d](#), [7e](#)

Gospel Values/Virtues: Service, Community, Charity, Stewardship

Learning Goal: I can apply measurement and financial literacy to create a garden/greenhouse design and share my methods

Overall Expectations

AA1 develop and explore a variety of social-emotional learning skills in a context that supports and reflects this learning in connection with the expectations across all other strands

B3 apply an understanding of rational numbers, ratios, rates, percentages, and proportions, in various mathematical contexts, and to solve problems

E1 demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations

Specific Expectations

A1 apply the mathematical processes to develop a conceptual understanding of, and procedural fluency with, the mathematics they are learning

A2 make connections between mathematics and various knowledge systems, their lived experiences, and various real-life applications of mathematics, including careers

B3.5 pose and solve problems involving rates, percentages, and proportions in various contexts, including contexts connected to real-life applications of data, measurement, geometry, linear relations, and financial literacy

E1.3 solve problems involving different units within a measurement system and between measurement systems, including those from various cultures or communities, using various representations and technology, when appropriate

E1.4 show how changing one or more dimensions of a two-dimensional shape and a three-dimensional object affects perimeter/circumference, area, surface area, and volume, using technology when appropriate

Project Outline

Day 1: Intro and key elements of the project

Day 2: Consider the Footprint

Day 3: Intro to Spreadsheets

Day 3b: More Spreadsheets

Day 4: Calculations, Sourcing Materials and Cost (using spreadsheets)

Day 5: Final Copy/Building Prototype

Day 6: Final Copy/Building Prototype

Day 7: Final Day-Carousel

** this is just an outline, timeline is student dependent.
Suggestions of where to give extra period are given.*

Project Resources

Click on the links below to access all documents, tools and resources.

[Lesson Plan](#)

[Student Handouts](#)

[Assessment Tools](#)

Project 5: Food for a Feast

Ontario Catholic School Graduate Expectations: [1d, 2e, 3c, 4c, 4g, 5b, 5f, 6e, 7d, 7e](#)

Gospel Values/Virtues: Service, Courage, Hope, Community, Justice, Compassion

Learning Goal: Through inquiry and investigation, students will learn how to apply financial literacy skills in practical ways, while examining social justice issues like poverty, food insecurity and inflation, both locally and in northern Canadian communities.

Overall Expectations

A2. Making Connections: make connections between mathematics and various knowledge systems, their lived experiences, and various real-life applications of mathematics, including careers

B1. Development of Numbers and Number Sets and describe its relevance in a current context

B3. Number Sense and Operations

E1. Geometric and Measurement Relationships: demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations

F1. Financial Decisions: demonstrate the knowledge and skills needed to make informed financial decisions

Specific Expectations

B1.1 research a number concept to tell a story about its development and use in a specific culture (multiplicative thinking & proportional reasoning)

B3.2 apply an understanding of unit fractions and their relationship to other fractional amounts, in various contexts, including the use of measuring tools

E1.3 solve problems involving different units within a measurement system and between measurement systems, including those from various cultures or communities, using various representations and technology, when appropriate

F1.4 modify budgets displayed in various ways to reflect specific changes in circumstances, and provide a rationale for the modifications

Project Outline

Day 1: Discussion about the cost of food in Canada, comparing the cost of food in Ontario to that in Nunavut, poverty, food insecurity, community, family, being stewards of creation, social justice

Day 1: Find a Recipe (may be able to complete in day 1 or may need to add an additional day)

Day 2: The Great Gathering

Day 3: Searching for the Best Deal

Day 4: Searching for the Best Deal Cont.

Day 5: Calculating the Total *Cost*, Reflect, Discuss, Pray Together

** this is just an outline, timeline is student dependent. Suggestions of where to give extra period are given.*

Project Resources

Click on the links below to access all documents, tools and resources.

[Lesson Plan](#)

[Student Handouts](#)

[Assessment Tools](#)

PBL Choice Boards & Assessment Tools

**All projects can be done independently or collaboratively.*

It's All about the Scale Choice Board

Project Focus: Geometry and Measurement Relationships- Scale

OCSGE: [2b](#), [2c](#), [2e](#), [3c](#), [3e](#), [4e](#), [4f](#), [5a](#), [5b](#), [5f](#), [7b](#)

Overall Expectations:

AA. Social Emotional Learning Skills in Mathematics
A1. Mathematical Thinking and Making Connections
B3. Number Sense and Operations
E1. Geometric and Measurement Relationships

Specific Expectations:

AA1.Social Emotional Learning Skills (building confidence, resiliency and a positive math mindset)
A2. Making Connections
E1.2 Create and analyse designs involving geometric relationships and circle and triangle properties, using various tools
E1.4 Show how changing one or more dimensions of a two-dimensional shape and a three-dimensional object affects perimeter/circumference, area, surface area, and volume, using technology when appropriate

<p>Draw a scale diagram of the playing surface of a sport of your choice. Be sure to include the scale factor and dimensions on your diagram.</p>	<p>Create a scale drawing of a candy wrapper of your choice. Your scale drawing will be enlarged (dilated) by a scale factor greater than 4.</p>
<p>Design and build a scaled model of a famous building or landmark. Calculate the scale factor and dimensions accurately, and present your model along with the calculations involved.</p>	<p>Choose a province or territory on the map of Canada and create a scale version of it. Calculate the scale factor, distances, areas, and angles on the scaled map and compare them to the actual measurements.</p>
<p>Create a scaled model of the solar system using various objects (e.g., fruits, marbles) to represent the planets. Calculate the sizes and distances according to the chosen scale.</p>	<p>Design a floor plan for your dream house or apartment. Use a consistent scale to represent rooms, furniture, and other features. Calculate areas and dimensions accurately.</p>

Learning Task: It's All About the Scale

Big Idea: Using a scale factor to enlarge or reduce size for variety of purposes.

Not yet, but almost there!	You got this!	Nailed it!
	Selected an appropriate scale factor and effectively calculated most dimensions showing a solid grasp of scale concepts and principles.	
	Created an accurate and precise scaled model, layout, design or drawing.	
	Analysed geometric relationships and made real-life connections to the concept of scale and scale factors	
	Showed how changing (increasing or decreasing) one or more dimensions of a two-dimensional shape and a three-dimensional object affects perimeter, circumference, area, and/or surface area.	
	Project was completed with a positive attitude and demonstrated effort and engagement. (SEL- no grade/comment only)	

Feedback

Coding a Micro:bit Math Tool Choice Board

Project Focus: Coding/Programming (micro:bit)

OCSGE: [2b](#), [2c](#), [2e](#), [3c](#), [3e](#), [4e](#), [4f](#), [5a](#), [5b](#), [5f](#), [7b](#)

Overall Expectations:

C2. Coding

D1. Collection, Representation, and Analysis of Data

Specific Expectations:

C2.1 use coding to demonstrate an understanding of algebraic concepts including variables, parameters, equations, and inequalities

C2.2 create code by decomposing situations into computational steps in order to represent mathematical concepts and relationships, and to solve problems

C2.3 read code to predict its outcome, and alter code to adjust constraints, parameters, and outcomes to represent a similar or new mathematical situation

D1.2 represent and statistically analyse data from a real-life situation involving a single variable in various ways

<p>Create a micro:bit program that simulates rolling a virtual dice and displays the outcome on the LED grid. Use the virtual dice to gather data, analyze rolls, and calculate averages.</p>	<p>Build a micro:bit program that functions as a timer or stopwatch, allowing users to time events or activities. Compare the micro:bit timer to other timers to check accuracy. Use the micro:bit timer to time different events and collect data. Analyse data and calculate averages.</p>
<p>Design a micro:bit quiz that displays math questions on the LED screen and asks the user to select the correct answer using buttons. Track the outcomes to gather data and calculate averages.</p>	<p>Code a fitness tracker that counts steps using the micro:bit's accelerometer. Use the counter to gather data, analyze step counts, and calculate averages.</p>
<p>Code the micro:bit to simulate a coin flip. Collect and analyze data, and compare the theoretical and experimental probability of different experiments.</p>	<p>Design a data logger that records light intensity using the micro:bit's light sensor. Collect data, calculate averages, and analyze trends.</p>

Learning Task: Coding a Micro:bit Math Tool

Big Idea: use coding programs and tools (micro:bit) to show an understanding of algebraic concepts including variables and parameters. Use programmed tools in real life situations in order to collect and analyse data.

Not yet, but almost there!	You got this!	Nailed it!
	Precisely programmed the micro:bit, exhibiting only minor discrepancies that did not impact the intended purpose of the project or the functionality of the micro:bit.	
	Demonstrated good problem-solving skills while programming the micro:bit. Persevered through coding challenges using logic and reasoning.	
	Was able to explain the links between coding concepts and real-world applications.	
	Displayed proficient use of coding tools and techniques, resulting in a well-executed project.	
	Effectively collected data using programmed micro:bit.	
	Effectively analysed data collected from games and experiments.	

Feedback

Financial Risks & Rewards Choice Board

Project Focus: Financial Literacy

OCSGE: [2b](#), [2c](#), [2e](#), [3c](#), [3e](#), [4e](#), [4f](#), [5a](#), [5b](#), [5f](#), [7b](#)

Overall Expectations:

F1. Financial Decisions

Specific Expectations:

F1.1 identify a past or current financial situation and explain how it can inform financial decisions, by applying an understanding of the context of the situation and related mathematical knowledge

F1.2 identify financial situations that involve appreciation and depreciation, and use associated graphs to answer related questions

Depreciation of a Vehicle

Research and analyze the concept of depreciation in the context of vehicles. Choose 3 different types of vehicles (e.g., car, motorcycle, truck, boat, snowmobile, four wheeler..etc.) and gather data on their initial purchase price, age and estimated current resale values. Create a presentation or report that includes:

- A clear explanation of what depreciation is and how it affects the value of vehicles over time.
- Graphs or charts depicting the depreciation rates of the selected vehicles over their ownership periods.
- Analysis of factors that influence vehicle depreciation, such as brand, model, mileage, and maintenance.
- Comparison of different vehicles' depreciation trends and their implications for potential buyers.

The Real Estate Market

Explore the concepts of appreciation and depreciation by analyzing the real estate market in your local area. Gather data on property values (such as houses, apartments or land) over a specific time period (e.g., the past 5 years).

The project could involve the following components:

- Collect data on property prices for a variety of types and sizes of properties in different neighborhoods.
- Create graphs or charts that depict the trends in property values over the specified time period.
- Calculate the average annual appreciation or depreciation rate for each type of property.
- Identify any factors that may have influenced the trends, such as changes in local economy, infrastructure, or demographics.
- Present findings in a report or presentation, discussing the implications for potential buyers or investors.

Hockey Card *Appreciation*

Explore the concept of appreciation by analyzing the values of hockey cards over a specific period of time. Choose a selection of hockey cards (players or sets) and track their values from the past to the present.

- Research the initial values of the selected cards using historical pricing data and gather data on the current market values of the chosen cards.
- Calculate the percentage appreciation for each card by comparing the current value to the original value.
- Create a table or spreadsheet to organize the data and calculations.
- Create a line graph that shows the appreciation trends of the selected cards over time.
- Analyse trends and prepare a presentation or report that includes the collected data, graphs, analysis, and future predictions.

Shoe *Appreciation or Depreciation*

Analyze and compare the value changes of two types of shoes over a specific time period. Select one type of shoe that will likely appreciate in value, and one type that likely depreciate.

- Gather data on the initial purchase prices of both types of shoes. This information will serve as the starting point for your analysis.
- Over a specific time period (e.g., 1 year), track the changes in the market values of both types of shoes. Use online marketplaces, auction sites, or other sources to gather accurate pricing data.
- Calculate the percentage change in value for each type of shoe.
- Create a line graph that displays the percentage change in value for each type of shoe over the specified time period.
- Analyze data and providing insights into the factors that influence appreciation and depreciation.

Learning Task: Financial Risks & Rewards Choice Board

Big Idea: develop a sound understanding about appreciation and depreciation, in order to apply make informed financial decisions in real-life situations.

Not yet, but almost there!	You got this!	Nailed it!
	Demonstrated a strong work ethic, positive attitude and confidence while working through this multi-layered project. (SEL- no grade/comment only)	
	Understands appreciation and depreciation concepts and their basic factors.	
	Accurately gathered initial and current values.	
	Calculated percentage changes in value	
	Produced graphs that displayed price and/or percentage change,	
	Presented a logical analysis of trends with some correlation to factors that impact changes in value over time.	
	Provided reasonable predictions and conclusions based on observed trends.	
	Displayed proficient mathematical skills in the required calculations, graphing, and data analysis.	
	Demonstrated good critical thinking and provided thoughtful observations about the value changes.	

Feedback