

Grade 11 Mathematics Mathematics for Work and Everyday Life (MEL3E)
Financial Literacy and Mathematics Mathematics for Work and Everyday Life

Connections to Financial Literacy

A small class of students work with a teacher and an educational assistant to develop concepts of gross and net earnings and profits. As they learn to take inventory and determine gross profit, they practise skills related to earning and spending. Students then apply this learning as they work in the school tuck shop.

Curriculum Expectations

[Click here](#) to access expectations in full, with examples.

A. Earning and Purchasing

1. Earning

- A1.** interpret information about different types of remuneration, and solve problems and make decisions involving different remuneration methods; gather, interpret, and compare information about the components of total earnings
- 1.1** gather, interpret, and compare information about the components of total earnings

2. Describing Purchasing Power

- A2.** demonstrate an understanding of payroll deductions and their impact on purchasing power;
- 2.3** describe the relationship between gross pay, net pay, and payroll deductions and estimate net pay in various situations

3. Purchasing

- A3.** demonstrate an understanding of the factors and methods involved in making and justifying informed purchasing decisions.
- 3.7** make the correct change from an amount offered to pay a charge, using currency manipulatives

Mathematical Process Expectations

- Selecting Tools and Computational Strategies
- Connecting
- Communicating

Learning Goals

During this lesson, students will:

- compare and make connections between personal earning and spending with business earning and spending
- choose tools and computational strategies to take inventory, calculate gross profit and make change
- explain the factors that impact purchasing decisions

Sample success criteria for explaining the factors that impact purchasing decisions:

- Identify factors that are considered in business purchasing decisions (e.g., popularity of items, cost of items, taxes, healthy school policy, profit margin, net income, storage space)

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Instructional Components and Context

Readiness

- Basic understanding of personal purchasing power, earning potential, deductions from gross pay, and purchasing factors such as sales tax

Terminology

- Purchasing power
- Gross profit
- Inventory
- Profit margin
- Tax
- Spreadsheet
- Discount
- Gross pay
- Net pay

Materials and Resources

- Overhead projector
- Sample inventory items (Items that fall within the School Food and Beverage Policy)
- Inventory recording sheets
- Scientific calculators
- Tuck shop or simulated point of sale
- **School Food and Beverage Policy Resource Guide**, page 27 – miscellaneous items; p. 30- beverages for secondary schools
- **School Food and Beverage Policy Quick Reference Guide**, page 27 – miscellaneous items; p. 30- beverages for secondary schools
- **Nutrition Standards Tool**

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Minds On	Connections
<p>Individual → Popcorn Answers to Review Questions</p> <p>Pose the overarching question, then use guiding questions as needed to evoke student thinking, as you review the comparisons and contrasts between personal finances and business finances. Probe more deeply where concepts appear to be unclear.</p> <p>Overarching question</p> <p>Explain the connections between and among Gross Pay (for workers, Gross Profit (for business), Net Pay (for workers) and Net Profit (for business)</p>	<p>Guiding Questions</p> <ul style="list-style-type: none">• What are the two main components you use to calculate how much money you earn?• Why is this number not the amount of money you take home?• What deductions are taken off your gross pay?• Explain the difference between gross pay and net pay.• Describe what is meant by “your purchasing power.”• How do businesses get paid?• Explain why net profit and net pay are always less than gross profit and gross pay.• What are some examples of possible business expenses?• What impacts how much money you will make?

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Action!	Connections
<p>Whole Class → Demonstration</p> <p>Demonstrate how to use the inventory spreadsheet to take inventory with sample material.</p> <p>Pairs → Inventory Simulation</p> <p>Students take inventory of all the sample materials, then calculate gross profit and profit margin.</p> <p>A^{for}L DI Differentiate materials in inventory and on the inventory spreadsheet based on student readiness and interest.</p> <p>Whole Class → Discussion</p> <p>Ask: What did you notice about the pre-entered item names on your inventory spreadsheet, and what you ended up using?</p> <p>Ask probing questions, as needed, to discuss the fact that some items named in the spreadsheet were not present in the inventory, and that some items not named were present in the inventory.</p> <p>Use Guiding Questions to lead a discussion about accuracy in taking inventory.</p>	<p>Guiding Questions</p> <p>Calculating Inventory</p> <ul style="list-style-type: none"> • Why is accuracy important as you are taking inventory? • What tools can help you keep track of information as you take inventory? • Why did we work in pairs while doing inventory? • How would gross profit be affected if we entered 100 binders on our inventory sheet when there were really only 10 binders in inventory? <p>Assessment</p> <p>A^{for}L Teacher observation of student responses with individual descriptive feedback</p> <p>A^{es}L As students reflect on their learning, scaffold with question prompts, as needed.</p> <p>DI Provide individual assistance as needed from teacher and/or educational assistant.</p> <p>Provide opportunities for students to do inventory counts that are simpler, more complex with varying types of products.</p>

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Consolidation	Connections
<p>Individual → Practice in the Tuck Shop</p> <p>Students take turns working in the school tuck shop – selling items, estimating costs, calculating costs, using a cash machine, making change, interacting with customers.</p> <p>A_{of}L D_I Circulate to observe each student and provide immediate and differentiated support as needed.</p> <p>At the end of each observation, privately provide descriptive feedback to each student on the role they just played.</p> <p>Determine what concepts and skills were needed during whole class debriefing after the tuck shop visit.</p> <p>Individual → Reflection</p> <p>D_I Differentiate product based on student’s preferred communication mode.</p> <p>Ask students to write or record a journal entry in response to the questions: “How did you use your mathematics knowledge and skills in your tuck shop job? What else do you need to learn to become more comfortable and/or efficient in your tuck shop job?”</p>	<p>Examples of questions for whole class debrief after the Tuck Shop practice:</p> <ul style="list-style-type: none"> • What helps you give the correct amount when you are making change? • What other skills are important to use when working with customers in a store? • When selling items, how do you estimate the sale price of an item that is on special? • What might impact your decision to purchase one item over another for the tuck shop? <p>A_{as}L Use an Exit Card asking students to respond to the Learning Goals as an interim means of checking their understanding. Use these responses to focus future Guiding Questions.</p> <p>A_{as}L After working at the Tuck Shop, have students complete a 3-2-1 assessment (oral or written) indicating 3 things they learned, 2 things they will use the next time they work at the Tuck Shop and 1 question they have.</p> <p>A_{of}L to occur in a future lesson – student presentation of a case study</p>

Financial Literacy in Grade 11 Mathematics

Mathematics for Work and Everyday Life (MEL3E) Curriculum Expectations

Overall Expectations	Specific Expectations
A. Earning and Purchasing	
<p>Earning A1. interpret information about different types of remuneration, and solve problems and make decisions involving different remuneration methods;</p>	<p>1.1 gather, interpret, and compare information about the components of total earnings (e.g., salary, benefits, vacation pay, profit-sharing) in different occupations</p>
<p>Describing Purchasing Power A2. demonstrate an understanding of payroll deductions and their impact on purchasing power;</p>	<p>2.3 describe the relationship between gross pay, net pay, and payroll deductions (i.e., net pay is gross pay less government payroll deductions and any other payroll deductions), and estimate net pay in various situations</p>
<p>Purchasing A3. demonstrate an understanding of the factors and methods involved in making and justifying informed purchasing decisions.</p>	<p>3.7 make the correct change from an amount offered to pay a charge, using currency manipulatives Sample problem: Use currency manipulatives to explain why someone might offer \$15.02, rather than \$15.00, to pay a charge of \$13.87.</p>
Mathematical Process Expectations	
<p>Selecting Tools and Computational Strategies</p>	<ul style="list-style-type: none"> – select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems;
<p>Connecting</p>	<ul style="list-style-type: none"> – make connections among mathematical concepts and procedures, and relate mathematical ideas to situations or phenomena drawn from other contexts (e.g., other curriculum areas, daily life, current events, art and culture, sports);
<p>Communicating</p>	<ul style="list-style-type: none"> – communicate mathematical thinking orally, visually, and in writing, using precise mathematical vocabulary and a variety of appropriate representations, and observing mathematical conventions.

SAMPLE INVENTORY COUNT

DATE:

Count Team:

	Product Description	Category	Colour / Flavour	Weight / Size / Amount	QUANTITY	Cost per Unit	Total Inventory Value	Selling Price per Unit
1	Fruit to Go	Food	Berry Mania	14 g strip		\$ 0.13		\$ 0.25
2	Fruit to Go	Food	Strawberry / Watermelon	14 g strip		\$ 0.13		\$ 0.25
3	Fruit to Go	Food	Strawberry	14 g strip		\$ 0.13		\$ 0.25
4	Fruit to Go	Food	Wildberry	14 g strip		\$ 0.13		\$ 0.25
5	Fruit Source Bar	Food	Various	37 g bar		\$ 0.36		\$ 0.50
6	Lays Potato Chips "BAKED"	Food	Regular	38 g bag		\$ 0.55		\$ 1.00
7	Binders - Round Ring	Stationery	White	1 inch		\$ 0.25		\$ 0.50
8	Binders - D Ring	Stationery	Black	1 inch		\$ 0.25		\$ 0.50
9		Stationery				\$ 0.25		\$ 0.50
10	Dove Shampoo "Burst"	Hygiene	Nectarine	355 ml		\$ 1.68		\$ 3.00
11	Dove Conditioner "Daily Moisture"	Hygiene	Fibre Actives	355 ml		\$ 1.75		\$ 3.00
12		Hygiene				\$ 1.50		\$ 3.00
GRAND TOTALS								

SAMPLE
INVENTORY COUNT

DATE:

Count Team:

	Product Description	Category	Colour / Flavour	Weight / Size / Amount	QUANTITY	Cost per Unit	Total Inventory Value	Selling Price per Unit	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
	GRAND TOTALS								