

Math 9 Lesson 8: Financial Literacy

- Simple budgets and transactions
 - Banking, simple interest, savings, planned purchases
 - Creating a budget/plan to host a First Peoples event
1. You borrow \$1000 for 3 years at 10% interest.
 - a. Use the simple interest formula $I = P \times r \times t$ to roughly estimate how much you owe in 3 years.

 - b. Now recalculate the new interest at the end of each year. How much do you need to pay at the end of 3 years?

 2. WealthSimple offers up to 3.25% cash back on your savings. If you have \$20,000 in this bank, how much do you earn on interest each month?

 3. Determine where you want to live as a young adult. Research project: Estimate the cost of living as a young adult if:
 - a. You live on your own in a single bedroom apartment or a basement suite. Estimate the monthly cost for:
 - i. Rent

 - ii. Utilities

 - iii. Entertainment / Internet / TV

 - iv. Phone

 - v. Transportation

 - vi. Food

 - vii. Clothes

 - viii. Insurance

 - b. How much would you earn in a month after taxes if you work a full-time job at \$17.40 per hour?

- c. How much would you be able to save each month
 - i. Living by yourself?

 - ii. Splitting rent with a roommate?

 - d. As a general guideline, up to what percent of your income should be spent on housing (rent, utilities, etc.)?
4. Suppose you are responsible for organizing a First Nations awards banquet for 300 guests. Research the cost of renting a banquet hall in your area and estimate the cost per guest.

 5. Where can you find more affordable housing?

 6. Suppose you work 8 hours a day and 5 days a week and make \$31 per hour. If there are 4 weeks in a month, how much housing can you “afford” each month? Assume you can spend 30% of your gross pay on housing.

 7. When paying off your mortgage, is it better to pay \$1000 to the bank 12 times a year, or pay \$12,000 at the end of each year?

 8. You manage to invest \$400,000 by the time you retire. If your investments make 10% annual interest, how much do you earn in interest each year?

 9. If you manage to save \$1 million by the time you retire. Why it is overly optimistic to be able to spend \$100,000 each year indefinitely?

 10. You become an oncologist and make a \$400,000 annual salary. If you are taxed at a rate of 40%, estimate your daily budget.

11. You negotiate with your bank to waive your \$30 per month banking fees because of your high account balance. How much do you save in monthly fees over the course of a decade?
12. Why should paying off debts be a priority over borrowing more money to invest more?
13. Under what circumstances is it ok to pay for rent instead of buying a home?
What are some pros and cons of doing this?
14. Suppose the cost of your new iPhone is \$2000. You have a coupon for 20% off. What is the cost of the iPhone now?
15. You pay off half your mortgage on a \$1,000,000 home and own a car worth \$30,000. But you owe \$20,000 on your credit line. What is your net worth?
16. Restaurant
- a. Your family restaurant bill comes out to be \$100. Taxes is 12%.
You decide to tip 15%. How much do you end up paying in total if tip is calculated after taxes?

 - b. You bring a dozen of your friends to a restaurant. The bill ends up being \$300. Taxes and 18% gratuity are included in the bill. How much extra should you tip?

17. Planning a “best buy”: At the supermarket milk is sold:

Deal A: 4L of milk for \$4.99

Deal B: 1L for \$1.25

Deal C: 250 mL for 20 cents

a. Calculate the unit cost of milk for each of these deals.

b. Which is the best deal?

c. Describe how price matching can save you money.

18. What is the best deal?

Deal A: Pay \$500 for a phone and pay \$20 per month for 24 months

Deal B: Pay \$0 but pay \$40 per month for 24 months

Deal C: Pay \$1000 for the phone with no monthly payments

19. What is the growth shape of unpaid debt over time?

20. What is the growth shape of money invested over time?

21. Suppose you have \$50,000 in student loans. The annual interest rate is 10%.

a. How much does your debt grow by in 1 year?

b. If you pay this “debt growth” amount each year, how many years will it take to pay off your \$50,000 student loan?

22. What are two keys to building financial wealth?

23. Enrichment: If you invest two Starbucks drinks a day (each drink \$7) how much does your investment grow to be in 50 years (8% interest rate) according to the “get smarter about money compound interest calculator”?
24. Being desperate for cash you borrow \$1000 from a Payday Loan company. Each year they charge 500% annual interest. How much does your debt grow to be in 3 years?
25. You owe \$5000 on your credit card. The interest rate is 29.99%.
- How much do you owe at the end of year 1?
 - How much do you owe at the end of year 2?
 - Use the simple interest formula $I = P \times r \times t$ to calculate how much you owe after 10 years without paying off the \$5000 initial balance.
 - Enrichment: In reality, how much will you owe after 10 years?
Hint: $A = P \left(1 + \frac{i}{n}\right)^{nt}$ $n = 365$ (interest is compounded daily)
26. Despite the “free” perks of using credit cards, how can some financial experts justify “cutting up” the credit cards?

27. Warren Buffet, a famous billionaire investor, believes that most people should invest in low MER index funds. What percentage of professional investors can “beat” the market?
28. Suppose you have \$100,000 in investments. Your investments grow at a rate of 8% but your bank charges you a Management Expense Ratio (MER) fee of 2.5%.
- How much do you make this year on interest?
 - Enrichment: Over 30 years how much of a difference does this MER fee make (annual interest rate of 8%)? Use the “Get Smarter About Money” calculator.
29. Which of the following is the best investment?
- 4.25% high interest cash account
 - S&P 500
 - Nasdaq 100 Index
 - Crypto (ex. Bitcoin, MSTR, or HODL)
 - Picking individual stocks that did well last year (ex. MAG7 stocks)
 - MAGS or MAGX (leveraged) ETF
 - TQQQ (triple leveraged) ETF
30. On Day 1 you have 1 cent. On Day 2 your money doubles to 2 cents. On day 3 your money doubles again to be 4 cents. Would you rather accept the amount of money you receive on day 30 or receive \$5 million dollars?

 **Congratulations on Completing BC Grade 9 Math!** 