

Unit 8: Financial Literacy ~ Learning Guide

Name: _____

Instructions:

Using a pencil, complete the following questions as you work through the related lessons. **Show ALL work** as is explained in the lessons. You may use any technology or the course link to the TVM solver to answer the following questions. Do your best and ask questions if you don't understand any question!

Lesson One Simple Interest

1. List 4 reasons why individuals would take out a loan.

- | | |
|----------|----------|
| 1. _____ | 3. _____ |
| 2. _____ | 4. _____ |

2. a) What is the formula used to calculate **simple** interest. _____

b) Explain what each variable (letter) represents.

3. Jon deposits \$5000 in his local Credit Union and earns **simple interest** at a rate of 1.9% per year. Use the **simple interest** formula to calculate how much **interest** Jon earned:

a) in one year. I = \$_____

b) in three years. I = \$_____

4. Calculate the amount of **simple interest** you would pay on a loan of \$20000 at a rate of 5.6% per annum for three years. I = \$_____

5.a) Jane deposits \$8000 in her local credit union and earns **simple interest** at a rate of 2.5% per year. Use the **simple interest** formula to calculate how many months of an investment term would result in \$600 interest earned. months _____

b) Calculate the **time** it would take for a \$7000 dollar investment to earn \$1400 of **simple interest** at a rate of 4% per annum.

t = _____

c) Judy deposited \$12000 in her local Credit Union and earned \$720 in **simple interest** over 2 years. What **rate** of interest did she earn on the investment?

r = _____

6. a) Calculate the **time** in months it would take for a \$1500 dollar investment in a TFSA to grow to \$1545 if the **simple interest** rate paid was 2% per annum.

t = _____

b) How much would Jack have to deposit in his local bank to earn \$450 in **simple interest** if the rate of interest earned was 4.5%, and the term of the investment was 60 months?

P = \$ _____

c) If \$337.50 **simple interest** was earned on an 18 month investment that paid 1.5% per year, what was the amount of the investment?

P = \$ _____

d) Calculate how much you would have to invest to earn \$1000 in **simple interest** over 30 months if the interest rate offered was 3.2%

P = \$ _____

e) What rate of interest would earn \$800 interest on an investment of \$4000 over 48 months?

r = \$ _____

f) How many months would you have to hold a \$7500 investment at a rate of 2.8% in order to earn \$367.50 in interest?

t = _____

Lesson Two Compound Interest

1. What is the difference between compound interest and simple interest?

2. What is the formula for calculating compound interest: A =

3. Complete the following table with the correct **compounding periods** in one year.

<i>Description</i>	<i>Compounding Periods in One Year</i>
Annually	
Semi-annually	
Quarterly	
Monthly	
Weekly	
Daily	

4. a) Use the **compound** interest formula to calculate the total value of an investment of \$10 000 if interest is paid at 3.2% per year compounded semi-annually for two years.

Show your work.

A = \$_____

b) Calculate how much Jon's \$5000 deposit in his credit union from lesson 4 would be worth at the end of one year if it had been **compounded** semi-annually, quarterly, and daily. Recall the interest rate was 1.9% and he earned \$95 in simple interest for the year, which meant he had \$5095 in his account at the end of the year. **Show your work.**

Semi-annually A = \$_____

Quarterly A = \$_____

Daily A = \$_____

c) Calculate how much a \$5000 deposit would be worth at the end of 5 years if the rate of interest on the deposit was 4.3% **compounded** weekly. **Show your work.**

Weekly A = \$_____

d) Calculate the total amount your investment would be worth if you invested \$3000 at a rate of 2.6% **compounded** quarterly for 4 years. **Show your work.**

Quarterly A = \$_____

5. a) Calculate how much interest you would earn if you invested \$15000 in a GIC that paid 3.1% **compounded** monthly for 5 years. **Show your work.**

Monthly A = \$_____

b) Calculate what a deposit of \$10000 would be worth after the following terms if interest was paid at 4.5% per year **compounded** monthly. **Show your work.**

4 years A = \$_____

12 years A = \$_____

24 years A = \$_____

Rule of 72

1. a) How long would it take an investment to double in value at the following annual rates of interest. **Show your work.**

4% years = _____

6% years = _____

8% years = _____

12% years = _____

24% years = _____

b) How long (in years) would it take an initial investment of \$15000 to grow to \$30000 if the rate of interest earned was 10% **per year**. **Show your work.**

Years = _____

c) Using the rule of 72, calculate how many **months** it would take an investment to double if the interest rate paid was 8%. **Show your work.**

Months = _____

Investment Options

1. a) What does GIC stand for:

b) What do we mean when we say that the investments are guaranteed?

c) Who guarantees them, the financial institution or the government?

2. a) List **two** similarities between Canadian RRSP contributions and TFSA (Tax Free Savings Account). 1. _____ 2. _____

b) List **one** difference between Canadian RRSP contributions and TFSA (Tax Free Savings Account). _____

3. A customer wants to **invest** \$20000 in a 4 year GIC at his local bank. Calculate the value of the \$20 000 GIC for each of the following options if the customers invests for 4 years. **Show your work:**

a) Option one: Pays 1.15% **compounded** semi-annually.

A = \$_____

b) Option two: Pays 1.35% compounded annually.

A = \$_____

c) Option three: Pays 1.25% compounded monthly.

A = \$_____

Lesson Three

Types of Credit Cards

1. a) Why do people, business and governments take out loans?

b) What is the difference between a **secured** loan and an **unsecured** loan?

c) Define collateral: _____

Credit Cards

1. Do some research online and list 3 of the more popular credit cards:

a) _____ b) _____ c) _____

2. Why do you think credit card companies only encourage cardholders to pay off a minimum amount of the total outstanding balance each month?

3. A cardholder has zero balance on his card and takes out a cash advance of \$1000 on September 15th. His statement comes out on October 2nd and he pays off the entire balance on October 9th. How much interest did he pay off if his credit card company charges 11.5% per annum? **Show your work.**

4. A cardholder took out a \$1500 cash advance on a new card on October 1st and paid off the balance owing on November 12th. If the interest rate on the card was 18.9% per annum, how much was the cardholder's **balance** that was paid off on November 12th?

Show your work.

5. A card holder has an unpaid balance of \$2500 on his credit card from a previous statement of April 20th. On May 2nd he charges \$3400 in purchases on the card. Finance charges on unpaid balances are 19.25% per year. His next statement has a due date of May 17th. If he pays off all the outstanding balance on May 16th, what would the finance charges be for this period? **Show your work.**

6.

Account number	5491 2324 1140 4951	Previous balance	2100.47		
Period covered	Jan 20 - Feb 17 2011	Payments/credits	2164.28		
New balance	2069.12	Purchase/Adjustments	2132.93		
Minimum payment	62.07	Credit limit	35000.00		
Due date	February 28 2011	Credit available	32930.88		
		Statement closing date	Feb 17 2011		
		Days in billing cycle	29		
Transaction date	Posting date	Description	Reference #	Account #	Amount
01/21	01/22	Safeway	4378	4951	212.51
01/23	01/24	Nash Gym	8140	4951	54.88
01/25	01/26	SPCA	2151	4951	10000.00
01/28	01/29	Bike Shop	2609	4951	170.23
02/07	02/08	Thrifty's	5363	4951	126.13
02/11	02/12	London Drugs	2597	4951	89.95
02/14	02/15	Dental Care	1209	4951	479.23
				Charges this period	2132.93
Payments and other credits					
12/14	01/15	Home Sense	4212	4212	-63.81
01/19	01/19	Payment	4378	4378	-2100.47
Interest charges this period at 19.99% annually					0
Interest charges on cash at 19.99% annually					0
Balance due					2069.12

a) What was the previous balance and how much of it was paid off? _____

b) What is the credit limit? credit limit = \$ _____

c) How much is remaining as of Feb 15th? Show your work: \$ _____

d) Were there any finance charges or cash advances taken this period? _____

e) What does the credit card company charge on outstanding balances? \$ _____

f) What is the due date? due date _____

Finance charges – Store Promotions

1. Trail Appliances has a washer and dryer on sale for \$1200. They offer two payment options:

Option 1: A \$300 dollar down payment, no interest, no payments for 12 months on the balance owing. This option also includes \$50 dollar delivery fee and a \$70 administration fee.

Option 2: 12 payments of \$120 dollars and free delivery.

- a) Which option is less expensive, and by how much? option 1 or option 2
how much: _____
- b) What rate of interest is Trail Appliances charging on the loan in option two?

2. Ford offers **three** payment options to customers wishing to purchase a new 2016 F150 pickup that has a list price of \$23750.

- **Option one** is cash with no dealer prep or administration fees.
- **Option two** requires a 20% down payment with no payments for 1 year. There is a \$500 dealer prep fee and a \$750 administration fee. If payment is not made in full after 1 year a 15% finance charge will be levied from the date of purchase.
- **Option three** requires a 10% down payment with 48 monthly payments of \$500 each. There is a no dealer prep or administration fee.

- a) Calculate the cost of each option (assume option two would be paid off after one year)

option one \$ _____
option two \$ _____
option three \$ _____

b) List how much a customer would have to pay at the date of purchase for each option.

option one \$ _____

option two \$ _____

option three \$ _____

Lesson Four

Loans, Lines of Credit and Overdraft Protection

1. List two benefits to the use of credit:

a) _____ b) _____

2. Give two examples of using credit that are **not** beneficial.

a) _____ b) _____

3. Define the following:

a) Amortization Period: _____

b) Mortgage: _____

c) Line of credit: _____

4. What is the difference between fixed rate loans and variable rate loans?

Payday Loans

1. A borrower took out an \$800 dollar Payday loan and was charged \$90 in interest when they repaid the loan 8 days later. **Show your work.**

a) What was the daily interest **rate**?

b) and the annual interest **rate**?

2. A customer who took out a payday loan was charged \$35 interest on a \$400 loan. If he paid the entire \$400 back 12 days later

a) what was the daily **rate** of interest? _____

b) and annual **rate** of interest? _____

3. Calculate the daily **and** annual **rate** on interest charged on a payday loan of \$400 if the interest charged was \$35 when it was paid back 6 days later. **Show your work.**

daily _____
annual _____

Loan Payment Calculator

Use the following personal loan payment calculator for questions 1 – 3.

PERSONAL LOAN PAYMENT CALCULATOR					
Monthly payment per \$1000 borrowed					
Interest Rate	Term in Years				
	1	2	3	4	5
3.00	84.69	42.98	29.08	22.13	17.97
3.50	84.92	43.20	29.30	22.36	18.19
4.00	85.15	43.42	29.52	22.58	18.42
4.50	85.38	43.65	29.75	22.80	18.64
5.00	85.61	43.87	29.97	23.03	18.87
5.50	85.84	44.10	30.20	23.26	19.10
6.00	86.07	44.32	30.42	23.49	19.33

1. a) Use the personal loan payment calculator to determine how much the **monthly** payments would be if a customer financed the purchase of a new road bike by borrowing \$2200 at a rate of 5% for two years. **Show your work.**

monthly payments \$ _____

b) Determine the **total** cost of the loan total cost \$ _____

c) Determine how much the customer paid in **finance charges** over the two years.
finance charges \$ _____

2. Use the following personal loan payment calculator to determine the **monthly** payments and the **total** cost of borrowing \$18000 at rate of 3% for 4 years.

monthly payments \$ _____

total cost \$ _____

3. Calculate a) the difference in monthly payments and b) total finance charges if a customer borrowed \$8000 at a rate of 4.5% for three years as compared to five years.

a) difference in monthly payments \$ _____

b) difference in total financial charges \$ _____

Mortgage Payment Calculator

Use following monthly mortgage payment calculator for questions 1-3. It includes payments of interest rates between 4.25% and 7.5% for 15, 20, or 30 years.

INTEREST RATE	MONTHLY PAYMENT PER THOUSAND DOLLARS		
	15 years	20 years	30 years
4.25%	\$7.53	\$6.21	\$4.93
4.5%	7.65	6.34	5.08
4.75%	7.78	6.48	5.22
5.0%	7.91	6.60	5.37
5.25%	8.04	6.74	5.53
5.5%	8.18	6.89	5.69
5.75%	8.31	7.03	5.84
6.0%	8.44	7.17	6.00
6.25%	8.58	7.32	6.16
6.5%	8.72	7.46	6.33
6.75%	8.85	7.61	6.49
7.0%	8.99	7.75	6.65
7.25%	9.13	7.90	6.82
7.5%	9.27	8.06	6.99

1. a) Find the monthly payments for every \$1000 borrowed at a rate of 5.75% for 15 years.

monthly payments \$ _____

b) Find the monthly payments for every \$1000 borrowed at a rate of 4.25% for 30 years.

monthly payments \$ _____

c) If a customer had a \$300 000 mortgage, what would their monthly payments be if they

had a rate of 6% for 20 years? **Show your work.**

monthly payments \$ _____

d) Calculate the monthly payments on a \$550 000 mortgage at a rate of 7.25% for 15 years. **Show your work.**

monthly payments \$ _____

e) Compare the monthly payments and the total cost of financing if a home buyer took out a \$350 000 mortgage at 4.25% for 15, 20, or 30 years. **Show your work.**

15 year \$ _____ 20 year \$ _____ 30 year \$ _____

2. Use the Monthly Mortgage Payment Calculator to determine the difference between the monthly payments and the total cost of payments made on a \$325000 mortgage at a rate of 5.5% for twenty years to the same mortgage taken out over 30 years. **Show your work.**

20 Year monthly: _____

20 Year total cost: _____

30 Year monthly: _____

30 Year total cost: _____

3. Use the Monthly Mortgage Payment Calculator to compare the monthly payments and cost of financing for an \$800 000 mortgage at a rate of 4.25% for 20 years to the same mortgage over 30 years.

20 years Monthly payments \$ _____

Financing charges would be \$ _____

30 years Monthly payments \$ _____

Financing charges would be \$ _____

The 20 year term would cost \$ _____ less in financing charges

Lesson Five

Lease, Loans, or Cash

For the following questions you will need to figure out whether you can calculate the solutions using a regular calculator, a spreadsheet or TVM Calculator.

1. Murray and Sue are planning to spend four months [December through March] for the next five years in Southern California to get away from the cold winter in Canada. They are trying to decide if it would be best to:
 - rent a car for \$40 per day plus \$6.75 per day for insurance
 - sign a short term lease and get a similar car for \$1100 per month plus \$80 per month for insurance
 - purchase the same car new for \$21000 with insurance costing \$400 per year. If they purchased the car it would have to be stored for \$60 per month when they returned to Canada each year.

Determine the cost and list some advantages of each option.

2. Hannah's parents recently purchased a vacation home in Arizona for \$270000, which was 35% below what the value of the home was 5 years ago. Her parents feel that the real estate prices have bottomed in Arizona and look for an average appreciation of 2.5% a year.
 - a. What was the value of the home 5 years ago?
 - b. How much will the home need to appreciate to get back to its original value?

c. Using a spreadsheet, find out how many years it would take to get back to its original value if it appreciated at 2.5% a year.

d. By what amount would the home have increased after 25 years assuming an annual rate of 2.5%?

3. You purchase an apartment for \$200 000, pay 30% deposit, and mortgage the balance. You amortize your debt with monthly repayments for 30 years.

What is your monthly payment if your interest rate for the loan is 7.5% compounded monthly?

Start by calculating the following

N (periods) =

PV (present value) =

Compound interest on an investment

4. Compare the two following investments of \$5000.00 for 5 years:

Investment 1) The Credit Union has a savings account that earns 1.3% and is compound quarterly.

Investment 2) BMO has a savings account that earns 1.1% compounded monthly.

Assuming you neither add nor withdraw from the accounts.

a) Which investment earns more?

Start by calculating the following for each

N =

N=

I =

I =

PV =

PV =

Payments/year =

Payments/year =

Compounds/year =

Compounds/year =

b) By how much?

5. A company has spent \$35000 a year for the past three years on car rentals for its employees. The company would like to determine if it would be better to sign a three year lease or purchase three new cars at a cost of \$28000 each and then sell them at the end of three years.

To purchase the cars would require no money down, would require monthly payments, and could be financed over 36 months at an annual rate of 3.25% compounded monthly.

Assume they would depreciate at 25% a year. A three year lease would require \$1500 per car at signing, then monthly payments of \$385 per car per month.

a. What would the monthly payments be if the company **purchased** the cars?

b. What would the total value of the three cars be after **three** years if they had been purchased?

c. What would the total cost be to **lease** the cars for three years?

d. How much would the company **save** by leasing rather than purchasing the three cars?

Answers**Lesson One Simple Interest**

1. to buy a house, a car, home repairs or to take a vacation. 2. a) $I = P \times r \times t$
 b) I: interest, P: principal, r: rate, t: time in months or years 3. a) \$95, b) \$ 285. 4. \$3360
 5. a) 36 months b) 5 c) 3% 6. a) 18 b) \$2000 c) \$15000 d) \$12500 e) 5%, f) 21.

Lesson Two Compound Interest

1. With compound interest you also make interest on the interest, not just the principal.
 2. $A = P\left(1 + \frac{r}{n}\right)^{n \cdot t}$
 3.

<i>Description</i>	<i>Compounding Periods in One Year</i>
Annually	1 time a year
Semi-annually	2 times a year
Quarterly	4 times a year
Monthly	12 times a year
Weekly	52 times a year
Daily	365 days a year

4. a) \$10655.52 b) Semi A = \$5095.45 Quarterly A = \$5095.68 Daily A = \$5095.91
 c) \$6198.76 d) \$3327.68 5. a) \$2511.37 b) \$11968.14 c) \$17142.75 d) \$29387.37

Rule of 72

1. a) 18,12,9,6,3 b) 7.2 years c) 108 months

Investment Options

1. a) Guaranteed Investment Certificates b) The institution guarantees that you will get your money back c) The financial institution 2. a) Both have a max contribution amount, interest earned is not taxed. b) You get a tax deduction for contributions to RRSPs, but pay tax on money withdrawn where as with a TFSA you do not get a tax reduction but you do not get charged tax on a withdrawal. 3. a) \$20938.73 b) \$21102.07 c) \$21024.87

Lesson Three Type of Credit Card

1. a) To make purchases, expand their business or start a new one b) A secured loan requires collateral c) Something of value that the lender will take if the debt is not paid back.

Credit Cards

1. a) American express, Visa, Mastercard. 2. can charge high rates 3. \$7.88 4. \$1533.40 5. \$34.28 6. a) \$2100.47/ all b) \$35000 c) \$32930.88 d) no e) 19.99% f) Feb 28, 2011

Finance charges – store promotions

1 a) option 1 \$120 less b) 20% 2. option one \$23750 at purchase \$23750 option two \$25000 at purchase \$6000 option 3 \$26375 at purchase \$2375.

Lesson Four Loans, Lines of Credit and Overdraft Protection

Loans and Debit

1. a) get an education b) to start a business 2. a) Electronics b) luxury items 3. a) length of a loan b) secured loan to purchase house c) secured loan to us as needed 4. fixed: set for the term variable: determined by prime rate

Payday Loans

1. a) 1.41% b) 514.7% 2 a) 0.73% b) 266.5% 3 daily 1.46% annual 532.9%

Loan Payment Calculator

1 a) \$96.51 b) \$2316.34 c) \$116.34 2. monthly \$398.34 total \$ 1120.32 3 a) \$88.88 b) \$379.20

The Mortgage Payment Calculator

1. a) \$8.31 b) \$4.93 c) \$2151.00 d) \$5021.50 e) \$124 390, \$171 640, \$271 180 2. \$2239.25 \$537420, \$1849.25 \$665730 3. \$4968 \$392320 \$3944 \$619840 \$227520.

Lesson Five

1. Rent: \$28283.75

Return car after 4 months and get a new car every year

Lease: \$23600

Less expensive then renting and get a new car every year

Buy: \$25,400

Would have an asset after 5 years

2 a. Original price:\$415384.62 b. Home would need to increase 53.8% to get back to original value.

c. It would take between 17 and 18 years to get back to original value.

d. Home would increase in value by \$230564.91 after 25 years

3. Periods (N) = 360 I% = 7.5 PV = -14000 FV = 0 **Payments = 978.90**

Payments/yr = 12 Compounds/yr = 12

4. a) Credit Union: N = 20, I = 1.3 Payments/yr = 4, compounds/yr = 4 so **FV = 5335.23**

BMO: N = 60, I = 1.1 Payments/yr = 12, compounds/yr = 12 so **FV = 5282.57**

b) \$5335.23 - \$5282.57 = \$52.66

5a. $N = 36$

$I\% = 3.25$

$PV = 84000$

$Pmt = -2452.09$

$Fv = 0$

$Payments / yr = 12$

$Compunds / yr = 12$

Monthly payments for purchase of three cars: \$2452.09

b. Total value of the three cars after three years: \$35437.50

c. Total cost to lease three cars for three years: \$46080 d. The company would save \$6757.74 by leasing.