Finance – Unit 4

Tentative TEST date_____

Reflect – previous TEST mark _____, Overall mark now_____.
Looking back, what can you improve upon?

Learning Goals/Success Criteria

Use the following checklist to help you determine what you know well and where you need additional review.

DAYS & Pages	Can you…	No, I cannot. I need to learn this.	I kind of get it. I don't get the right answers very often.	I get it. I could work on being more consistent.	Yes, I can. I have perfected this!
Day 1 Pg 2	Solve problems involving simple interest?	☐	☐	☐	☐
Day 2 Pg 3-4	Solve problems involving compound interest?	☐	☐	☐	☐
Day 3 Pg 5	Effectively use the TVM solver to solve compound interest questions?	☐	☐	☐	☐
	Identify the best conditions to invest money (especially with respect to interest rate, length of investment and compounding periods)?	☐	☐	☐	☐
	Identify the best conditions to pay back a loan (especially with respect to interest rate, length of investment and compounding periods)?	☐	☐	☐	☐
Day 4&5 Pg 6-9	Identify different savings alternatives?	☐	☐	☐	☐
	Identify different investment alternatives?	☐	☐	☐	☐
Day 6 Pg 10-11	Identify the different types of credit cards that are available?	☐	☐	☐	☐
	Understand how interest is calculated on overdue credit cards?	☐	☐	☐	☐
Day 7&8 Pg 12-15	Understand the different methods available to obtain a vehicle (buy (cash/finance) vs lease)?	☐	☐	☐	☐
	Understand vehicle insurance?	☐	☐	☐	☐
	Solve problems involving fixed and variable costs of owning and operating a vehicle?	☐	☐	☐	☐
Day 9 Pg 16-19	REVIEW				

DAY 1 – Simple Interest

1. A $1000 term deposit earns interest at 5% per year. How much interest is earned in 2 years?

2. Determine the total amount with interest earned on a $250 regular interest Canada Savings Bond at 5.6% annually with a term of 10 years.

3. Joan cased a regular interest Canada Savings Bond after 3 years and received $93 interest. The annual rate on the bond was 6.2%. What was the original value of the bond?

4. Akeem invested $10 000 in treasure bills for 90 days. He received $139.32 in interest. What rate of interest did the bills earn?

5. How long would it take $1500 to grow to $2000 at a simple interest rate of 3%?

DAY 2 – Compound Interest

1. Bill bought a $1500 GIC. It earns interest at 3.5% compounded annually. How much will Bill have if the certificate matures in 5 years?

2. Claire invested $2000 at 5% compounded semi-annually for 10 years. What is the amount of the investment at maturity?

3. Phil invested $600 at 4% compounded monthly for 6.5 years. How much interest did the investment earn?

4. Kari bought a $500 GIC that earns 4.5% compounded semi-annually. How much interest will Kari earn when she cashes her certificate at the end of 3 years?

5. Bill borrowed some money from a trust company and will repay the loan in 2 years. The interest rate is 10.5% compounded monthly. Bill must repay $1170.92 in 2 years. How much did Bill borrow?

6. A loan at 14% compounded semi-annually must be repaid with one single payment of $1800.00 in 3 years. What was the principal borrowed?

DAY 3 – Using TVM Solver and The Effects of Changing Conditions

1. A $675 investment earns interest at 3.4% per year, compounded semi-annually, for five years.
    a. Find final amount and interest

    b. What will be better if you
    i. Double the interest rate? ii. Double the total length of time?

2. Barb plans to invest $10 000 in a term deposit for two years. She has three choices
    A 6.8% per year, simple interest
    B 6.2% per year, compounded semi-annually
    C 6.0% per year, compounded quarterly
    Which plan should she choose? Why?

3. Your goal is to have $10 000 in five years.
    a. How much needs to be invested today
        i. at 6% per year, compounded monthly?

        ii. at 6% per year, compounded semi-annually?

    b. Which principal is greater? Why?

DAY 4 & 5 – Saving and Investing Alternatives

1.

First Bank offers three account options. **Option 1:** $11.25 per month for the first 10 transactions, plus $1.25 for each additional transaction **Option 2:** $16.75 per month for the first 15 transactions, plus 85¢ for each additional transaction **Option 3:** $21.50 per month for an unlimited number of transactions

a. In a typical month, Barika uses an automated bank machine four times a week to withdraw cash. Her rent, hydro, phone bill, and car payment are automatically deducted from her account each month. Which banking option should Barika choose? Explain.

b. Abbas usually makes one weekly cash withdrawal and eight automatic bill payments each month. Which banking option should Abbas choose? Explain.

c. Heather does not carry cash. She uses her debit card to pay for everything. Which banking option should Heather choose? Explain.

2. Alexa is paid bi-weekly by cheque. She usually uses her debit card two or three times per week.
   a. Which banking option might be best for Alexa? Explain.

   b. On October 1, when she went online to do her banking, Alexa noticed bank charge debits from her account by her bank for $11.25 and $7.50. Which banking option does Alexa currently use? Explain.

c. How many transactions were made in Alexa's account last month? Explain.

d. Calculate the total cost and the cost per transaction for Alexa last month.

3. Leanne rarely carries cash. She prefers to use her debit card. She is paid weekly, Her pay is automatically deposited into her chequing account. Leanne uses her debit card for everything from buying groceries to eating in restaurants. Leanne estimates that she uses her debit card 15 times per week. She writes cheques occasionally.
   a. In a typical month, estimate the number of transactions Leanne makes.

   b. Which banking option do you think that she uses? Why?

   c. Calculate the cost per transaction using your answer to part (a).

   d. A friend suggests that Leanne use a credit card for all her purchases instead of her debit card. Explain why you think her friend made this suggestion.

4. Ryan has decided to start his own SnoCone business. In order to start the business he requires some cash. He has made two proposals. What are the advantages and disadvantages of both?

PROPOSALS	ADVANTAGES	DISADVANTAGES
a. You lend Ryan $500 and he agrees to pay you back in one year with interest calculated at 5%.		
b. You and Ryan will each invest into the company. The name of this new company will be Snowy Inc. The company will issue 100 shares of which you and Ryan will each by 50 shares for a total of $500.		

5. Jessica and Jennifer want to invest money in RRSPs.

Jessica	Jennifer
• 20 years old • makes a deposit of $1000 • invests money for 45 years • interest rate is 5%, compounded monthly	• 50 years old • makes a deposit of $3000 • invests money for 15 years • interest rate is 5%, compounded monthly

a. Calculate the amount each investment is worth at the end of the investment assuming each woman invests until she is 65. (HINT: use the compound interest formula)

b. How much money did each woman make on her investment?

6. The chart shows Matt's Investment Portfolio

a. Determine the value of Matt's Investment Portfolio.

STOCK	SYMBOL	NUMBER OF SHARES	COST/SHARE ($)	VALUE OF SHARES ($)
Pat's Transmission	PT	300	92.00	
Download	DL	75	76.45	
Wong Bank	TD	125	35.20	
Adrian Technology	AT	250	2.20	
			TOTAL	

b. Matt would like to invest another $2000 in the stock that would give him the greatest number of shares. Which stock would you recommend and how many shares of that stock can Matt purchase?

7. A simple method for calculating the percent that should be invested in moderate- to high-risk investments is the Age Balance Indicator (ABI).

ABI = 90 – investor's age

For example, a 20-year old investor should invest no more than 70% (90 – 20 = 70) of the investment amount in riskier investments. A 50-year old should invest no more than 40%.

a. Using this method, the younger you are, the more risk you should take. Is this always true?

b. The ABI does not consider your current financial situation. What other factors are not considered?

c. *"Generally, the higher the potential rate of return, the more risk an investor takes."* This statement, taken with the ABI, says that the younger you are, the higher your potential rate of return. Do you agree or disagree? Give a reason for your answer.

DAY 6 – Credit Cards

1. A statement for Kendra's credit card was issued on April 15. Her account offers a grace period of 14 days. It usually takes 3 days for transactions to be processed. Kendra paid her bill on May 19. For how many days will she be charged interest?

To answer the following questions, refer to Mia's credit card statement.

Crownbank

Credit Card
STATEMENT

Mia Bailey
17 Seaside Road
Hometown, ON
M3R 4C2

Credit Limit:	$8000
Annual Interest Rate:	12.9%
Daily ABM Cash Advance Limit:	$500
Annual Interest Rate on Cash Advances:	18.9%
Annual Fee:	$12
Grace Period:	21 days
Minimum Payment:	greater of $10 or 3% of balance

Interest is compounded daily

2. A statement is issued to Mia on the 18th of each month.
   a. What is the due date for the January 18 statement? _____
   b. What is the due date for the February 18 statement? _____

3. Determine the minimum monthly payment for each.
   a. Mia's December statement has a balance of $289.40.

   b. After using her credit card for all her holiday shopping, Mia's January statement has a balance of $1220.74. What will her minimum payment be?

4. Explain one advantage and one disadvantage of Mia using her credit card to make all her holiday purchases.

5. Determine each daily interest rate charged on Mia's credit card. Express each answer as a percent and as a decimal rounded to six decimal places.
   a. on cash advances

   b. on credit card purchases

DAY 7 & 8 – Obtaining a Vehicle

1. Calculate the after-tax cost of a five-year-old sports utility vehicle (SUV) selling for $17 999.

2. Geri borrowed $15 000 for five years at 9.25% interest, compounded monthly.
    a. Calculate the total amount paid to the financial institution for the loan.

    b. Calculate the interest that was paid over the life of the loan.

3. A new car is leased for $1000 down plus 36 payments of $299.
    a. Calculate the total cost of the car.

    b. Calculate the average cost per month over the life of the lease.

4. Vehicles purchased from a private seller are not subject to GST (5%). Only PST (8%) is charged when you change the vehicle's ownership papers. Calculate the amount due on a 9-year-old compact car bought from a friend for $2500.

5. These words or abbreviations are commonly seen in advertisements for vehicles. State the meaning of each term.

5-spd	
AWD	
A/C	
auto	
e-test	
FWD	
obo	
PB	
loaded	
PS	
cert	
PL or PDL	
170K	
PW	
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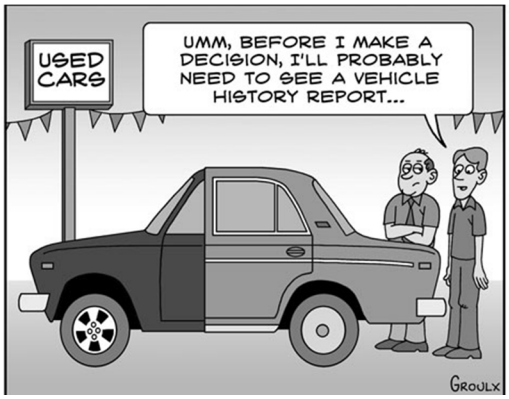

6. Vic's insurance company quotes him an annual insurance cost of $1948 or a payment plan of $169 per month.
    a. Calculate the difference between the annual fee and the total cost of the instalments.

    b. Which payment option is better? Why?

    c. What are some factors that could reduce insurance costs?

7. A mid-sized sedan has a tank size of 55 L and an fuel efficiency of 7.8 L/100 km.
    a. Calculate the cost to fill the tank if the current price of regular gas is $1.17/L.

    b. How far can the sedan travel on one tank of gas?

8. Categorize each of the following expense as either fixed or variable. Give a reason for your choice.

EXPENSE	FIXED	VARIABLE	REASON
lease payment			
parking fines			
insurance			
gasoline			
depreciation			
loan repayment			
licence plate sticker			
oil changes			
bridge tolls			
monthly parking permits			

9. Maddie spent about $1200 on vehicle maintenance last year. This year she expects to pay 10% more on maintenance. How much should Maddie budget for maintenance this year?

10. A vehicle requires 4 litres of oil at $2.20/L, an oil filter at $19.95, and air filter at $8 and 2 wiper blades at $12.50 each. The time required for servicing the vehicle is 0.8 hours. The rate the service station charges is $60 per hour. find the total cost of servicing the vehicle before HST.

11. The sale price of a new car is $25 000. Determine how much it is worth in on year if it depreciates at a rate of 15% per year.

12. Mike drove 20 000 km in one year and spent $900 in operating costs. How much did it cost him to operate his vehicle per kilometre?

REVIEW

FORMULAS:

$I = \text{Pr}\,t$ $A = \text{P}(1+i)^n$ $i = \frac{r}{C}$ $n = Ct$

1. Explain the difference between simple and compound interest.

2. When paying back a loan, what types of things should be considered in order to reduce the amount of interest you have to pay back? Is the same true for investments?

3. Describe the characteristics of (a) a savings account, and (b) a chequing account.

4. Define each type of investment. State the amount of risk that is associated with each.

bonds	GICs	mutual funds	stocks

5. Define fixed and variable expenses as they relate to owning a car. Provide examples of each.

6. Explain the difference between leasing and financing a vehicle.

7. Brianna bought an $8000 simple interest CSB that earns interest at 5% per year. The bond matures in 7 years. Determine the interest and the final amount of the bond.

8. Jay wants to buy a car. Which is the better deal, with interest rates at 5% per year, compounded semi-annually?

Plan A: $16 250 cash now	**Plan B:** $1000 down plus $15 500 in one year	**Plan C:** $500 down plus $16 000 in one year

9. Suppose you wish to borrow $2100 for 3 year. You have two options:
   - 12.55% compounded annually
   - 12% compounded quarterly

   a. Show that you repay the same amount for each interest rate.

   b. How can two different interest rates produce the same amount?

10. Sarai estimates that the start-up fees to open a spa 5 years form now will be $20 000. How much money does Sarai need to invest now at 7.6% compounded monthly to have the required amount?

11. A credit card company charges interest at 18.5% per year, compounded monthly. Andrea has an unpaid balance of $768.42. If she does not pay off her balance and makes no further purchases, how much will she owe after three months?

12. Leasing a car requires a $1500 down payment and monthly payments of $354 for four years.
    a. Determine the total amount spent to lease the car by the end of the lease.

    b. Calculate the average cost per month over the term of the lease.

13. A jeep has an 55 L fuel tank and a fuel efficiency rating of 10.8 L/100 km.
    a. How far can the van travel on one tank of fuel?

    b. How much fuel would the van use on a 350 km trip?