GRADE 12 APPLIED
UNIT B – PERSONAL FINANCE
LOANS; CARS; HOUSES

Name:_____
Date: _____

Some more practice questions!!
SHOW YOUR WORK; and hand drawn 'screen shots' of Apps you use.

Some of these concepts are not covered in the Unit Notes, so you will want to pay close attention! Or google the terms with which you are unfamiliar even!

1. Name a situation in which compound interest is earned or paid.

2. Mireille invests $1000 in a term deposit at 3%, compounded annually for 5 years. Nathanael invests $1000 in a term deposit at 3%, compounded weekly for 5 years.

   a) Who will earn more in interest? Explain
   b) How much are these investments worth after 5 years?

ANS: Mireille: $1159.27 Nathanael: $1161.78

3. Keith takes out a car loan from his bank for $33 999. He negotiates a 5-year term at 3.75%, compounded semi-annually and paid monthly.

    a) Calculate the amount of his monthly payment.
    b) Determine the amount of interest he will pay over the term of this loan.

ANS: $621.87; $3313.20

4. KaranVeer is negotiating the terms of a mortgage with his bank. The house he would like to purchase is $210,000. He has a down payment of $42,000 available. The bank offers him a 25-year term at 3%, compounded monthly.

   a) Determine his monthly payment amount and the total interest paid if he accepts these terms.

   b) If KaranVeer divided the monthly payment in half and paid that amount every two weeks instead, how many payments would be required to pay off the mortgage?

   c) If KaranVeer makes his payments every two weeks, how much interest will he have saved by the end of the mortgage?

   d) Suggest two other specific things KaranVeer could change in the terms of his mortgage to reduce the total amount of interest paid.

ANS: a) about $71,002.50 or $71,004.00; b) 578 full payments and a 579th partial payment; c) He would save about $8748.08; d) Answers may vary

5. Thomas considers purchasing new furniture worth $999 (including taxes) from a store that offers a "*Buy now, pay later*" promotion. He reads the fine print: A 15% deposit of total sale (including taxes) and a processing fee of $79.95 are due at the time of purchase. Balance is due 12 months from the date of purchase. Outstanding balances are subject to 29% annual interest, compounded monthly, from the date of purchase. Thomas pays the appropriate amount at the time of purchase but is one day late in paying his balance after the 12 months. What is the total amount he will pay for the furniture?

ANS: $1360.72. (one day late!)

6. You compare the offers from a dealership to either buy or lease a car. The price for the vehicle is $24,999 plus taxes. You have a $5,000 down payment for either option. The lease is over 4 years and payments are $300 plus 13% tax per month. The residual value is set at 45%. You would take the option to purchase it after the four years and pay for it outright (include 13% taxes). There is a lease acquisition fee of $649. To finance the car with monthly payments over 48 months, the bank offers you a loan with an interest rate of 6.5%, compounded monthly.

a) Find the monthly payment if you finance the car.

b) Find the total amount of interest you pay over the loan period

c) Find the total cost to lease the car and buy it out at the end of the term.

d) How much do you save by purchasing instead of leasing and then buying it out?

e) Describe two situations when leasing might be a better option than buying a depreciating asset such as a car.

ANS: a) $551.35 per month   b) $3215.73 or $3215.93 depending how you calculate
     c) $34 632.99 d) Total cost to purchase is $31 464.80, a savings of $3168.19
over leasing

7. Approximately how long will it take for an investment to double in value if it is invested at 8%, compounded interest?

8. Tanya likes to buy a coffee and muffin each morning. However, this year she is training for a marathon and decides to forgo this daily routine and puts the $4.95 she saves each day into a Growth Fund account. The account is compounded daily at 4.5%. How much will she have saved after one year?

ANS: $1847.90

9. Naomi purchases 75 shares in a certain stock. The purchase price is $44.13 per share. Her broker charges $25 plus $0.06 per share each time she buys or sells shares. If she sells her shares three years later for $52.60 per share, what is the rate of return on her investment?

ANS: 17.4%

10. Scott thinks he can afford to pay $1000 per month for a mortgage payment for a property that has annual property taxes of $2400 and heating costs estimated at $62 per month. His gross monthly income is $3450. Based on this information, should he expect the bank to lend him the money to buy the house? Justify your answer

ANS: Since the Gross Debt Service ratio is 37%, which is greater than 32%, the bank is not likely to loan him the money.

11. Mehrit and Yacob are saving for a down payment on a home. Mehrit suggests they invest $200 every two weeks for 3 years in a term deposit earning 5.4%, compounded bi-weekly. Yacob suggests they rather invest a lump sum of $4800 each year for three years in a term deposit at 5.4%, compounded annually. Determine whose investment strategy will result in larger savings for a down payment. Justify your answer

ANS: Following Mehrit's suggestion, they would save $1724.07 more for their down payment after 3 years

JAN 2020 PROVINCIAL EXAM

12. Kazoo is looking for a house. He has the following options: Option 1: He can buy a house with a monthly mortgage payment of $1150.00 amortized over 25 years. Option 2: He can rent a similar house for $1150.00 per month. State which option Kazoo should choose. Provide one reason for your choice.

13. Ham and Sylvie each had $10 000.00 to invest. 130 a) Ham invested $10 000.00 in a mutual fund at an interest rate of 6.00%, compounded monthly.

   a) Determine the value of the mutual fund at the end of the first year.

   b) Sylvie invested $10 000.00 in a guaranteed investment certificate (GIC) with interest compounded semi-annually. The value of the GIC was $11 261.62 at the end of the third year. Determine the interest rate for the GIC.

   c) Using the Rule of 72, determine approximately how much longer it will take for Sylvie's GIC to reach a value of $40 000.00 compared to Ham's mutual fund.

ANS: a) $10 616.78 at the end of the first year
b) The interest rate for the GIC is 4.00%
c) 12 years

14. Simba wants to purchase a bed for $2200.00 (taxes included). The store offers him a promotion of 0% interest with no payments for one year. If Simba does not pay the amount in full within one year, interest will be charged from the date of purchase at an interest rate of 19.99%, compounded monthly.

a) If Simba does not make any payments during the first year, calculate the amount the store will bill him one year after the date of purchase. Show your work.

b) If Simba makes monthly payments over the second year to pay off the amount calculated in (a), determine his monthly payment. Show your work.

c) Using your answer in (b), calculate the interest Simba would pay over the two-year period. Show your work.

d) Give one reason why Simba would buy his bed using the promotion.

ANS: a) $2682.40 b) $248.47   c) $781.64   d)

15. The Ramilo family moved to The Pas. They bought a house with a purchase price of $229 000.00 and made a down payment of $20 000.00. Their mortgage has an interest rate of 3.15%, compounded semi-annually, and is amortized over 25 years.

 a) Calculate their monthly mortgage payment. Show your work

b) Calculate the balance owing on the mortgage after 10 years if they have been making regular monthly payments.

ANS: a) $1005.24 b) $144 259 give or take $1 depending on method

16. In 2009, the value of a cottage was $325 000.00. In 2019, the same cottage had a value of $425 000.00. Determine the average annual appreciation rate. Show your work.

Ans: 2.72%

I = P*r*t
$$A = P\left(1 + \frac{r}{s}\right)^{(n*S)}$$
Net worth Total assets – Total liabilities
$$Rate\ of\ Return = \frac{\left(\begin{array}{cc}Current\ value & Previous\ value \\ of\ portfolio & of\ portfolio\end{array}\right)}{Previous\ value\ of\ portfolio}$$
$$GDSR = \frac{\left(\begin{array}{ccc}monthly & monthly & monthly \\ mortgage + property + heating \\ payment & taxes & costs\end{array}\right)}{Gross\ Monthly\ Income} < 32\%$$
** See https://www.edu.gov.mb.ca/k12/dl/iso/practice_exams/gr12_applied_math_fpe_key.pdf for full solutions ****