BUSI 1003: MATH FOR BUSINESS
ASSIGNMENTS

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ASSIGNMENT 1 QUESTIONS

Units 1 & 2

1. Reduce the following fractions to the lowest terms.

    $$\frac{27}{135}$$

2. Convert the following mixed number into decimal form.

    $$4\frac{2}{5}$$

3. Simplify the following:

    1- [(1-0.42) (1-0.25) (1-0.22)]

4. Change the following percent into decimals.

    200%

5. What is a salesperson's commission on net sales of $16244 if the commission is paid on a sliding scale of 8 ¼% on the first $12,000, and 11.5% on any additional net sales?

6. Express the following as a percent:

    0.04

7. The basic pay categories, hourly rates of pay and the number of employees in each category of a company are shown below:

Category	Hourly pay	No. of employees
Supervisor	$40	2
Assistants	$16	10
Helpers	$14	10
TOTALS	$70	22

    What is the average rate of pay per employee?

8. John invested $12000 in a business on January 1 and an additional $2400 on April 1. He withdraws $1440 in June 1 and invested $2880 on October 1. What was John's average monthly investment balance for the year?

9. Last week Lisa had gross earning of $441.30. Cathy receives a base salary of $375 and a commission on sales exceeding her quota of $5000. What is her rate of commission if her sales were $6560?

10. A store located in Vancouver, B.C., sells a computer for $1800 plus GST and PST. If the same model is sold at the same price in a store in Toronto, Ontario, what is the difference in the prices paid by consumers in the two stores?

11. Walmart sold a stereo set during a sale for $500. Determine the regular selling price of the set if the price of the set had been reduced by one-third of the original regular selling price.

12. A wood piece 100-centimeter long is cut into two pieces so that the longer piece is 10 centimetres longer than twice the length of the shorter piece. What is the length of the longer piece?

13. Alex and Rachel agreed to form a partnership. The partnership agreement requires that Alex invest $3000 more than two- third of what Rachel is to invest. If the partnerships' capital is to be $55,000, how much should Alex invest?

14. Simplify:
    a. (-18x2y)/(3x)
    b. (x-4) (x-1) - 4(x-3) (x+2)

15. Simplify:
    (-5)0+(-5)5

16. Solve each of the following:
    a. 2x+0.03x=255
    b. 8x-6-2x= 14+4x-6

17. Set up a ratio for each of the following and reduce to lowest terms.
    a. 14 hours to 2 days
    b. 60 $ per day for 12 employees for 18 days

18. The cost of a unit is made up of $6.25 material cost, $4.75 labour cost, and $3.25 overhead. What is the ratio that exists between the three elements of cost?

19. Solve:
    a:6 =20:40

20. Material cost of a computer is five-eights of total cost, and labour cost is one-third of material cost. If labour cost is $20, what is the total cost of the computer?

21. Your utility bill for April is $170. If you pay after the due date, a late payment penalty of $7.72 is added. What is the percent penalty?

22. A brokerage firm charges a fee of 1 ¼%. If its fee on a stock purchase was $400, what was the amount of the purchase?

23. In Ontario, car was sold for $14950 including 15% HST. How much was the sales tax on the car?

24. How many Canadian dollars can you buy for US$518 if one Canadian dollar is worth US$0.74?

25. John annual incomes for 2015 and 2016 were 60,000 and 70,000 respectively. Given that consumer price index for the two years was 110.5 and 109.4 respectively. Compute John's real income for 2015 and 2016.

26. The apprised value of a property has increased $230\frac{1}{2}$ % since it was purchased by the present owner. The purchase prince of the property was $160,000, its apprised value at that time. How much is the current appraised value?

27. Media Marketing of Toronto, offers a two-day accommodation coupon for a Hilton resort in Alberta at a promotion price of C$216. If the exchange rate is C$1.18 per U.S dollar, what is the value of the coupon in U.S. dollar?

28. Solve each of the following systems of equations and check your answer.
    a. 2X+5y = 0
        2X+2y = 6

    b. 3x= -2- 3y
        5y= 3x-38

29. Using algebra, find the slope and y-intercept of the lines represented by the following Equations.
    a. 9x+ 3y = 33
    b. 1-1/2y =2x
    c. (x-2) (y+2) - xy = 8

30. A restaurant is offering two dinner specials. The difference between seven times the orders for the first special and four times the orders for the second special is 12. The sum of three-fourths of the orders for the first special and two-thirds of the orders for the second special is 21. Find the number of orders for each special.

ASSIGNMENT 2 QUESTIONS

Units 3 & 4

1. Julie makes and sells shirts for children and adults. She sells the shirts for $20 per unit. Material for the shirts cost $6 each. She has fixed costs per month of $420 and estimates that she can make and sell 80 shirts each month. How many shirts does Julie need to sell to break even?

2. John and his friends have set up a basketball tournament. He can rent a basketball field for a daily charge of $210 and equipment for $160 per day. If he hires independent umpires, he would need to pay $260 for the day. He would arrange caps for each player at the cost of $4 each. If John can get 90 people to participate, what would he have to charge each of them to recover the cost?

3. For the following, perform a break-even analysis showing computation of the
   a. contribution margin
   b. contribution rate
   c. break-even point in units
   d. break-even point in dollars

   Mike is considering working for Part-Time Painters. He would operate as an independent painter, but the jobs would be given to him by the company. In the company's advertisement, $120 would be charged for each room painted. The painter would then get 80% of the amount billed. For each job the painter would supply paint and brushes, at a cost of 40$. Each painter must have his or her own ladders, drop cloths, and other tools, at a cost of $820.

4. Jia's friends provide dog washing services. For each dog, supplies cost $4 and wages are $5. To provide this service, a special room and equipment are needed, at a cost of 400$ per month. Jia's friends maintain an average of 30 dogs washed each month. What must Jia's friends charge as a price for the dog washing service to break even?

5. New Time Square has set up a booth in a mall to sell calendars during the holiday season. The company can purchase the calendars for $2.50 each. It plans to set the unit price at $9.90 each. During the time it is in business, it must rent equipment for $200 per day, and pay wages of $300 per day. Answer each of the following question.
   a. How many calendars must the company sell each day to break even?
   b. If the business puts the calendars on sale at 20% off, what would be the profit if it sold 110 units in a day?

6. Golf World sells a set of golf clubs for $760 below the suggested retail price. Golf World claims that this represents a 60% discount. What is the suggested retail price?

7. A TV set listed at $1200 has a net price of $850. What is the rate of discount?

8. An invoice was received for $5100 dated June 21 with terms 2/10, n/30.
   a. What is the last day for taking the cash discount?
   b. What is the amount due if the invoice is paid on the last day for taking the discount?

9. A Company received an invoice for $2000 dated January 22 with terms 3/15,1/30,n/60.
   a. If the invoice is paid on January 31, how much is to be paid?
   b. If the invoice is paid on February 20, how much is to be paid?

10. Pest control services sells insect killing equipment for $40.The shop's cost is $20, and the operating expenses are 20% of the regular selling price. How much profit will the shop make on each sale?

11. At Home Depot, a light fixture is sold at a price of $280.20, including a markup of 40% of cost.
    a. What is the cost of the item?
    b. What is the rate of markup based on the selling price?

12. A furniture shop sells sofas for $680. If the shop wanted to offer the lower price of $540, what rate of markdown would it have to offer?

13. A sports shop buys tents for $260 less 25% for buying more than 30 tents. The store operates on a markup of 30% of the sale price and advertises that all items are sold at a discount of 20% of the regular price. What is the regular price of the tents?

14. Dan deposited $1600 into a savings account on July 17, 2018 that earned simple interest of 1.05%. How much interest was earned and paid into Dan's account on December 1, 2018?

15. Determine the deposit that must be made to earn $29.27 in 220 days at 2.75%.

16. A deposit of $2400 will earn $22.74 in 91 days at what rate of interest?

17. Interest of $20.95 is earned at 3.15% on a deposit of $2660 is how many months?

18. What amount of money will accumulate to $680.57 in 83 days at 4.6%?

19. Debt payments of $600 in two months and $800 in five months are schedule to be due. If interest at 6.2% is to be allowed, what single payment today is required to settle the two scheduled payments?

20. A loan payment of $4200 was due 80 days ago, and another payment of $1800 is due in 40 days from now. What single payment 70 days from now will pay off the two obligations if interest is to be 8% and the agreed focal date is 70 days from now?

21. When Rachel borrowed $2400, she agreed to repay the loan in two equal payments, to be made 90 days and 130 days from the day the money was borrowed. If interest is 8.25% on the loan, what is the size of the equal payments if a focal date of today is used?

22. A 6-month note for $18,200, with interest at 8% is issued on April 1, 2018. Find present value on June 20, 2018 if money is worth 7.2%.

23. What is the price of a 95 days, $150,000 Government of Canada treasury bill that yields 0.53% per annum?

24. Thomas borrowed $16,000 on August 12. She paid $5,000 on November 1, $5,000 on December 15, and the balance on February 20. The rate of interest was 8.5%. How much did she pay on February 20?

ASSIGNMENT 3 QUESTIONS

Units 6 & 7

1. For a sum of money interested at 4% compounded semi-annually for 5 years.
   a. the nominal annual rate of interest (j).
   b. The number of compounding periods per year (m).
   c. The periods rate of interest (i)
   d. The number of compounding periods in the term (n)
   e. The compounding factors $(1+i)^n$
   f. The numerical value of the compounding factors.

2. A loan for $4000 with interest at 6.75% compounded semi-annually is repaid after 5 years. What is the amount of interest paid?

3. John invested $3000 that earns interest at 4% p.a. compounded monthly. Two years later, the interest rate is changed to 4.50% compounded quarterly. Determine the accumulated value of the investment two years after the change.

4. Anju started an RRSP account on December 1, 2014, with $2000. She added $2000 on July 1, 2016, and $2000 on December 1, 2018. How much is in her account on January 1, 2020, if her deposit earns 3% p.a. compounded monthly.

5. Determine the sum of money that will grow to $2000 in six years at 6% compounded monthly?

6. Determine the proceeds of a 10-year promissory note discounted after 4 years at 6% compounded quarterly with a maturity value of $6000.

7. A $3000 promissory note issued without interest for four years on June 30, 2014, is discounted on June 30, 2017, at 6% compounded quarterly. Determine the compound discount.

8. A debt of $6000 due today is to be settled by two equal payments due three months from now, and 9 months from now respectively. What is the size of the equal payments at 6% compounded quarterly?

9. In how many days will $770.00 grow to $880.00 at 11.5% p.a. compounded monthly?

10. Joe borrowed $1250 and agreed to pay $1500 in settlement of the debt in 3 years and 3 months. What annual nominal rates compounded quarterly was charged on the debt?

11. A $900 credit card debt was to be repaid in 12 months. If $14500 was repaid, what was the nominal rate compounded daily that was charged?

12. An amount of $2000 earns $400 interest in 3 years and 2 months. What is the effective annual rate of interest compounds monthly?

13. What is the nominal rate of interest compounded quarterly if the effective rate of interest on an investment is 5.3%?

14. Jane invested $1500 into an RRSP that earned interest at 5% compounded semi-annually for eight years.
    a. Find the balance of the account at the end of the period.
    b. How much interest is earned?
    c. What is the effective rate of interest?

ASSIGNMENT 4 QUESTIONS

Unit 8

1. What will deposit of $80 made at the end of each month amount to after 4 years if interest is 4.8% compounded monthly?

2. Ali contributed $1,000 per year for the past 9 years into an RRSP account, earning 3.8% compounded annually. If he leaves the accumulated contributions for another 5 years in the RRSP at the same rate of interest,
   a. How much will Ali have in total in his RRSP account?
   b. How much did Ali contribute?
   c. How much will be the interest?

3. Sara borrowed funds to buy furniture for her business. Her business paying $200 at the end of each month for four years. The bank charges interest on the loan at 8% compounded monthly.
   a. What was the cash price of the furniture?
   b. How much is the cost of financing?

4. What payment is required at the end of each month for 10 years to repay a $200,000 mortgage if interest is 6.5% compounded monthly?

5. Raj placed $6000 in saving account. For how long can $600 be withdraw from the account at the end of every month starting one month from now if interest is 4.58% compounded monthly?

6. Cathy saves $25 at the end of each week and deposits the money in an account paying 5% compounded monthly. How much will she accumulate in 5 years?

7. What is the principal from which $ 225 can be withdrawn at the end of each month 10 years if interest is 5% compounded quarterly?

8. A business borrowed $50,000 at 8% compounded monthly. If the loan is to be paid in equal quarterly payments over seven years and the first payment is due three months after the date of the loan, calculate the size of the quarterly payments.

9. How long will it take to save $20,000 by making deposits of $100 at the end of every month into an account earning interest at 6% compounded quarterly?

10. What is the nominal annual rate of interest compounded quarterly if a loan of $21,500 is paid in seven years by payments of $2,000 made at the end of every six months?

ASSIGNMENT 5 QUESTIONS

Units 9 & 10

1. Find the accumulated value of an annuity due of $500 payable at the beginning of every month for nine years at 8% compounded monthly.

2. Lily purchased a boat valued at $19 000 on an installment plan requiring equal monthly payment for four years. If the first payment is due on the date of purchase and interest is 6.2% compounded monthly, what is the size of the monthly payment?

3. A car can be purchased by paying $27 000 now or can be leased by paying $725 per month for the next four years, with the first payment due on the day of signing lease. What nominal rate of interest is charged on the lease?

4. Raj contributes $150 at the beginning of each month into an RRSP paying interest at 5.5% compounded semi-annually. What will be the accumulated balance in the RRSP at the end of 20 years?

5. Dana and Tim bought a property by agreeing to make semi-annual payments of $2000 for six years. If the first payment is due on the date of purchase and interest if 7% compounded quarterly, what is the purchase price of the property?

6. How much would you have to pay into an account at the beginning of every 5 months to accumulate $9000 in 6 years if interest is 8% compounded quarterly?

7. Rose has saved $90 000. If she decides to withdraw $4000 at the beginning of each month and interest is 6.25% compounded annually, for how long can she make withdrawals?

8. Mrs. Tea expects to retire in 7 years and would like to receive $750 at the end of each month for 10 years following the date of her retirement. How much must Mrs. Tea deposit today in an account paying 5.5% compounded semi-annually to receive the monthly payments?

9. Josh is planning to withdraw $9000 from a savings account at the end of each quarter for 3 years. If the payments are deferred for 6 years and interest is 5.75% compounded semi-annually, what amount must be invested now into the savings account?

10. Matt borrowed $13 000 at 5.5% compounded semi-annually. If the loan is to be repaid in equal semi-annual payments over 2 years and the first payment is due in 3 years after the date of the loan. What is the size of each monthly payment?

11. How much can be paid in scholarships at the end of each year if $200 000 is deposited in a trust fund and interest is 5.5% compounded annually?

12. Municipal Hydro offers to acquire a right-of-way from a property owner who receives annual lease payments of $3250 due in advance. What is a fair offer if money is worth 6.2% compounded quarterly?

13. The owner of a hotel borrowed $13 000 at 7.8% compounded semi-annually and agreed to repay the loan by making payments of $750 at the end of every 4 months.
    a. How much payments will be needed to repay the loan?
    b. How much will be owed at the end of 5 years?
    c. By the end of 5 years of payments, what is the total interest payed?

14. A contract valued at $28 000 requires payments of $6500 every 6 months. The first payment is due in 5 years and interest is 12% compounded semi-annually.
    a. How many payments are required?
    b. What is the size of the last payment?