Jamie Goodmon

Portfolio Project

MATH201 College Mathematics: Quantitative Reasoning

Instructor-A. McGhee

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Introduction

The purpose of this portfolio project is to provide a comprehensive demonstration of your understanding and application of the concepts learned throughout the course. This project is important as it allows you to synthesize and apply the knowledge you've gained in a practical, real-world context, showcasing your problem-solving and analytical skills. It will teach you how to integrate various concepts, develop a systematic approach to problem-solving, and present your findings in a clear and concise manner. Depending on the nature of the course and project, the reader might expect to see calculations related to statistical analysis, financial modeling, engineering computations, or scientific data analysis, among others.

Part 1 - Budget Basics

Budget Basics

   a) Monthly Net Pay

I.   In the table below, state your profession and provide your annual income (remember for this scenario, you have recently graduated and have been working in your industry for 5 years). You can research the median annual income for your profession based on the state in which you are working or just the median annual income for your state.

        • The links below will assist you with your research on your profession.

          1. Occupation Handbook and Salary Information

          2. Median Income Information

Use your annual salary to determine your **Gross Monthly Pay and Monthly Net take-home) Pay.** Your net pay is your gross pay minus income taxes, FICA taxes, and benefits, including health insurance if provided. Realistic net monthly wages are about 20% less than gross monthly wages. Enter your income information in the table below:

Table 1: Income	
Profession:	Case Manager IV
Annual Salary:	$200,000
Gross Monthly Pay (**rounded to the cent**): Annual salary divided by 12. **Show your work!**	$ 16,666.66 Work 200,000/12=16,666.66
Monthly Net (take-home) Pay (**rounded to the cent**): Gross monthly pay minus 20% for income taxes, FICA taxes, and health insurance deductions **Show your work!**	$13,333.33 Work: 16,666.66x0.2=3,333.33 3,333.33-16,666.66=13,333.33

b) **Monthly Expenses**

I. Calculate your monthly expenses for each category below and fill in Table 2: Monthly Expenses. You can share real numbers, or you can create a hypothetical experience with realistic estimates:

Table 2: Monthly Expenses

Fill in each category with the monthly amount you would like to budget. If you do not need a sub-category, you can delete it. Feel free to add sub-categories if you need to. If

the category is on an "as need" basis, budget a certain monthly amount to go towards that

category. (For example, I don't get an oil change each month, but I might want to budget

$30 each month so I have money for when I do need an oil change.)

Table 2: Monthly Expenses			
Budgeted Category	**Category Details**	**Total Budgeted Amount**	**Percent of Total Take Home Pay (Rounded to Nearest Whole Percent) – Show work**
Housing (Need)	Rent or mortgage payment = 2,000 property taxes = 0 repairs = 0 etc.	$2,000	_15_% Work: 2,000/13,333.33
Food (Need)	Groceries = 500 going out to eat = 200 small snacks (lattes, vending machine, etc.) = Formula for Child(ren) = 30	$552	_4.1552/13,333.33_% Work:
Insurance (Need)	Life = 50 Medical = 200 Doctor Visits for Child(ren) = 0 Home = 100 Auto = 100	$450	_3.3_% Work:450/13,333.33
Transportation (Need)	Car payment = 0 Fuel = 100 Parking = 0 Oil change = Bus Fares = 0	$100	0.75__% Work:100/13,333.33
Utilities (Need)	Water = 0 Electricity = 0 Internet = 90 Gas = 0 Phone = 100	$1,300	0.37__% Work:50/13,333.33
Personal care (Want)	Haircuts = 0 Clothing =150 Make-up = Nails = Diapers / Clothing for Child(ren) =	$150	_1.1_% Work:150/13,333.33
Entertainment (Want)	Anything fun (leisure activities) = Netflix = 15 Hulu = 10 HBO Max = 16 Disney Plus = 10 Gym Membership = 170 Subscription Boxes =0 Vacation = 0 Birthday/Holiday gifts = 0	$221	_1.6_% Work:221/13,333.33
Miscellaneo	Donations =200	$200	_1.5_%

us (Want)	Day Care / School Expenses = 0 Pet Expenses = 0 Credit Card Payment =0 Student Loan Payment = 0		Work:200/13,333.33
Savings (Savings)	Retirement / Savings = Emergency Fund (leftover income) =	$9610	__72% Work:9,610/13,333.33
TOTAL		**$13,333.33**	_99.72_%

==**Note: Total budgeted amount column should add to your entire Monthly Net Take-Home Pay. Remainder of Monthly Net Take-Home Pay should be calculated into the Emergency Fund category.**==

==Here are some realistic estimates for each category to use to compare to your budget percentages:==

- ==Housing: ~20%==

- ==Food: ~10%==

- ==Insurance, such as life, medical, home, or auto: ~10%==

- ==Transportation or auto services: ~5%==

- ==Utilities: ~5%==

- ==Personal care: ~15%==

- ==Entertainment: ~10%==

- ==Misc.: ~5%==

- ==Savings: ~20%==

c) **Create a Monthly Expenses Pie Chart**

I. ==Use the information from Table 2: Monthly Expenses to determine the proportion of your net pay currently allotted to **needs**, **wants**, and **savings**. Use **Microsoft Excel** to create a pie chart to represent the 3 categories. Add a chart title, a legend and include the percentage on each of the **three pie slices** (data labels). Paste your==

==Microsoft Excel== pie chart below. Use the following link to review how to create a pie chart in Excel. Use the below table to create your pie chart in Excel.

- Creating a pie chart in Excel.

Needs (Housing + Food + Insurance + Transportation + Utilities)	_23.52_%
Wants (Personal Care + Entertainment + Miscellaneous)	__4.2%
Savings	_72_%

Wants,needs,savings

23.52%
4.20%
120.00%
72.00%
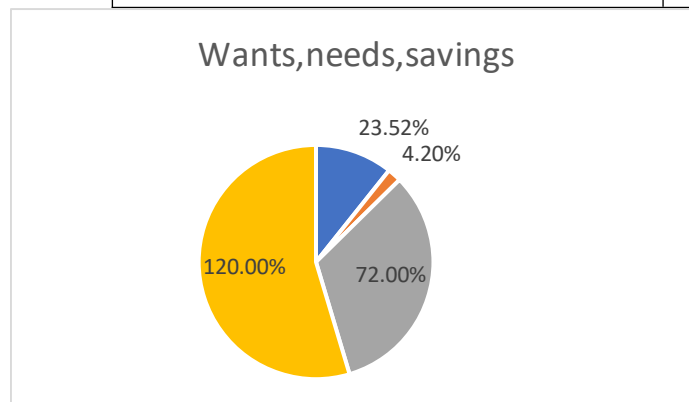
d) **Compare your Monthly Expense Ratios to the 50-30-20 Rule**

Using the 50-30-20 rule each month, a person spends 50% of their money on needs, 30% on wants, and 20% on savings. Use the following link to assist you with your expense ratio comparison to the 50-30-20 rule: 50-30-20 Rule

I.   Describe how your pie chart (Part 1 c) compares to the 50-30-20 rule in 2-3 sentences. I feel like my pie chart is good because I save a lot of money and I don't waste money on things I don't need.

II.   Indicate whether you plan to make any changes in your needs, wants, or savings based on the comparison to 50-30-20 rule. Be specific with your plan!!I don't

nee to make any changes to my rule because most of my money is in my savings

and I'm budgeting well.

Part 2 - Debt and Expenses

Debt and Expenses

a) **Calculate your Debt-to-Income Ratio**

Your debt-to-income ratio is all your **monthly debt** payments (car payments, housing payments, credit card payments, student loan payments, etc. – food, utilities, etc. are not considered debt) divided by your **gross monthly income**. This number allows lenders to measure your ability to manage the monthly payments to repay the money you plan to borrow. Experts recommend your debt-to-income ratio should not exceed 43%. Use the following link to assist you with your calculation for the debt-to-Income Ratio.

Debt-to-Income Ratio

 I.   Use the information from Table 2: Monthly Expenses (Part 1) to determine your Debt-to-Income Ratio. Show the complete breakdown of your work.

 II.   Describe how your debt-to-income ratio compares to the recommended ratio in 2-3 sentences. Is this good or bad? Depending on which, do you need to do anything to change your debt-to-income ratio? If so, how?

b) **Calculate your Life Insurance Policy**

Life insurance is used to replace income when you die. A younger person with dependents likely needs more life insurance than an older person with few to zero dependents. Experts recommend, **on average**, your life insurance should be 10 TIMES your gross annual income. For more information about life insurance and how much your policy should be worth, use the following link to assist you: 10X Your Annual Salary – Life Insurance Ratio

I. Use the information from Table 1: Income from Part 1 and the suggested average of 10 times your gross annual income to calculate your recommended life insurance policy. Show the complete breakdown of work.

II. What are dependents? Why would someone who is younger with dependents need more life insurance than someone who is older with few or no dependents? Explain your answer in 3-4 sentences.

c) **Calculate your Retirement Savings**

Saving for retirement is something everyone should consider as soon as they can start saving. The "All About the Benjamin's Report" should be evidence that the earlier you can start saving, the more you should be able to save.

I. Based on your current Savings from Table 2, calculate your retirement savings by the time you are 65. Calculate your retirement savings by the time you are 70. Show the complete breakdown of work.

II. Based on your previous answer, discuss whether or not you believe you are saving enough each month to have enough money saved by age 65 to retire. What about age 70? If not, what specific actions can you take now to ensure you are saving enough for retirement? Write your answer in 3-4 sentences.

d) **Calculate your Emergency Fund**

Do you currently have an emergency fund? Financial experts recommend having at least 6 months of expenses saved up for emergencies.

I. Calculate 6 TIMES your monthly expenses. Show the complete breakdown of work.

II.   Determine **<u>how long</u>** will it take you to save 6 months of expenses based on your monthly savings from Table 2: Monthly Expenses (in Part 1). Show the complete breakdown of your work. Round your answer to the nearest month.

Part 3 – Mortgage, Monthly Payments, and Analysis

Mortgage, Monthly Payments, and Analysis

When you apply for a mortgage, the lender will assess your ability to pay back the loan. The lender will look for collateral (assets), which could cover the loan in case of default. As a future homeowner, you also want to make sure you can save for the future. There will be documents you need to submit to the mortgage company for approval.

a) **Determine Documents for Mortgage Pre-Approval**

In 2-3 sentences, describe the documents you will need to submit to the mortgage company for a mortgage approval. The necessary document needed when applying for a mortgage are tax returns, pay stubs and or W-2's, bank statements, and credit reports. You will need to also provide documentation of any assets such as retirement, stocks and bonds etc. The financial institution will also want the history of renting the financial institution will want the history of rental property payment history, a photo ID of the applicants. In the event that there is a gift involved that will be used for a down payment there will need to be documentation outlining this gift.

b) **Research Houses of Interest**

Use Zillow.com or Realtor.com to research 5 houses currently for sale that you would be interested in buying. Be sure to look in the city and state you are interested in and fill out the table below.

Address, City, State	List Price	Number of Bedrooms	Number of Bathrooms	Square Footage
1540 McCanless Road	299,900	3	2	2668

Salisbury, NC 28146				
313 Cedar Drive Salisbury, NC 28147	250,000	3	2	1154
125 Autumn Glen Drive Rockwell, NC 28138	215,000	3	2	1674
230 Craver Ave. Salisbury, NC 28146	330,000	3	2	1813
922 Scales St. Salisbury, NC	309,900	3	2	1966

c) **Calculate Monthly Payment**

==Calculate the monthly payment for each house based on a 30-year loan with a 5% interest rate and a down payment of $5,000. Use the following website to help you calculate the monthly payments. https://www.calculatorsoup.com/calculators/financial/loan-calculator.php==

House Address	Monthly Payment
1540 McCanless Road Salisbury, NC 28146	PV:299,900-5,000.00 Dp Interest rate @5% interest over 30 years360 months 30x

	12= 360 $1583.09
313 Cedar Drive Salisbury, NC 28147	250,000-5,000 $1315.2
125 Autumn Glen Drive Rockwell, NC 28138	215,000-5,000 $1127.33
230 Craver Ave. Salisbury, NC 28146	330,000-5,000 $1744.67
922 Scales St. Salisbury, NC	309,900-5,000 $1636.77

d) **Calculate Housing Ratio**

<mark>Financial experts recommend your monthly housing costs should not exceed 20% of your take-home (net) pay.</mark>

   I.   <mark>Calculate the housing ratio for each house. Show the complete breakdown of your work.</mark>

House Address	Housing Ratio (Show all work)
1540 McCanless Road Salisbury, NC 28146	294,900/60,000=0.049%
313 Cedar Drive Salisbury, NC 28147	245,000/60,000.00=0.040%
125 Autumn Glen Drive	210,000/60000=0.035%

Rockwell, NC 28138	
230 Craver Ave. Salisbury, NC 28146	325,000/60000=0.054%
922 Scales St. Salisbury, NC	304,900 /60000=0.050%

II.   <mark>In 1-2 sentences, determine which houses are within your budget (remember, the housing ratio should be 20% or lower to be considered within budget).</mark>

e) **Calculate Total Amount Paid and Interest**

<mark>Choose one house that is within your budget that you would like to purchase.</mark>

I.   <mark>Calculate the total amount paid over the 30 years. Show the complete breakdown of your work.</mark> The Autumn Glen Drive would coast A=P+Prt

A=210,000+(210000x0.05x30) =525,000 A=525,000

II.   <mark>Calculate the total amount of interest paid. Show the complete breakdown of your work.</mark> The total amount of interest paid over the 30 year loan would be:

I=PRT   I=210000x0.05x30   I= 315000

f) **Calculate Closing Costs**

<mark>Before taking ownership of your new house, you will need to pay closing costs. Closing cost fees will be approximately 5% of the list price of the house you are purchasing. Calculate the closing costs for the house you chose in part (e). Show the complete breakdown of your work.</mark> 210,000x 0.05=$10,500 closing cost

g) **Financial Analysis**

Currently I am not able to buy anu of the houses I selected at the beginning of this assignment. I am hoping when I graduate and obtain a position that will pay me more money than I'm currently making I will be able to entertain the possibility of a new home. I don't think I would buy a new home though at this stage in my life. I believe that the interest rate suggested in this assignment would not be possible the way interest rates are headed, nor do I believe housing is an affordable option for many.