

Finance Project (100 points possible – This is worth 12.5% of your course grade)

This project must be completed independently. You are only permitted to use the materials that are posted on your MAT 105 Blackboard Site and assignments that you have completed in class as resources. You may not ask for help from others or give help to others on specific project questions.



Type your name in the space below to certify that you understand this policy and have abided by it.

- **Show all work for credit. A good rule of thumb is that if you type it in your calculator, you should write it on your paper!**
- ***If rounding is necessary and no directions are provided, you choose how to round.***
- **Include appropriate labels with results from all calculations (\$, dollars/person, etc).**

Part 1: Saving for Retirement

1. Devon is young and has just graduated college with her associate's degree. She plans to start saving money for retirement as soon as she starts her new job. By taking 10% of her monthly gross income, Devon is able to contribute **(a)\$ 390** each month to a retirement plan. The account is expected to earn interest with an APR of 5.25% compounded monthly.

- a. How much money will be in Devon's retirement account if she continues to make the same monthly investment for 40 years? (3 pt)

- b. Overall, Devon contributed how much of her own money into the retirement account? (4 pt)

- c. What percent of the final balance in Devon's retirement account was interest? (4 pt)

2. Later in life, Devon convinces her friend Taylor to start saving for retirement as well. Even though Taylor is the same age as Devon, she hasn't started saving for retirement yet. With only 20 years left until they both plan to retire, Taylor decides she needs to invest at least twice as much as Devon each month to try to catch up to Devon's retirement plan. Taylor opens a similar retirement account to Devon's that also has an APR 5.25% compounded monthly. She will invest (b)\$ 790 per month.

- a. How much money will be in Taylor's retirement account if she continues to make the same monthly investment for 20 years? (3 pt)

- b. By the time she retires, Taylor will have contributed how much of her own money overall? (4 pt)

- c. What percent of the final balance in Taylor's retirement account will be interest? (4 pt)

3. Write a complete sentences that identifies which person had the higher amount and by how much.

- a. Who had more money in their retirement account when they planned to retire? How much more? (4 pt)

- b. Who contributed more to their retirement account? How much more? (4 pt)

Part 2: Buying a Car

4. Andre wants to buy a new car in a few years. He sets a goal to have (c)\$ 29,000 in his savings account in order to buy a new car. Andre plans to save money for 5 years by making monthly deposits to a savings account that has an APR of 2.5% compounded monthly.

a. In order for Andre to reach his savings goal, how much will Andre need to save each month? (3 pt)

b. Overall, Andre contributed how much of his own money into the savings account? (4 pt)

5. Walter is Andre's friend and is impressed by the new car. As such Walter thinks it's a good time for a new car as well. Since Walter has not been saving money, he plans to take out a loan to pay for the car. He is able to finance (c)\$ 29,000 with a 5-year loan. The loan has an APR of 3.25% compounded monthly.

a. What is the minimum payment amount Walter will need to make for his car loan? (3 pt)

b. How much will Walter pay altogether over the life of his car loan? (4 pt)

6. Both men purchased a (c)\$ 29,000 car. Who spent more of their own money for the car and by how much? (3 pt)

Part 3: Student Loans

7. Cassandra recently graduated college with her associate's degree and owes (d)\$ 11,400 in student loans with an APR of 4.6% compounded monthly. She is expected to pay off the loan in 15 years.

a. Under the current terms of her loan, what is Cassandra's minimum monthly payment? (3 pt)

b. What is the total amount Cassandra will pay when the loan is complete? (4 pt)

c. How much will Cassandra pay in interest? (4 pt)

8. Cassandra decides to pay more than the required minimum monthly amount for her loan to pay off the loan faster. She wants to have her loan paid in full after 10 years of payments.

a. Assuming all the same conditions of the original student loan, what would Cassandra's new monthly payment need to be if she wants to pay off the loan in 10 years? (3 pt)

b. What is the total amount Cassandra will pay if she pays off the loan in 10 years? (4 pt)

c. With the 10 year loan, how much will Cassandra pay in interest? (4 pt)

9. By committing herself to a 10-year plan, how much more does Cassandra need to pay each month? (3 pt)

10. How much money does Cassandra save by paying her loan off in 10 years instead of 15? (3 pt)

Part 4: Mortgages

11. The Yang family plans to buy a new house soon and is considering mortgage options. They are considering two options, a 15-year mortgage with an APR of 2.75% or a 30-year mortgage with an APR of 3.14%. Both options compound interest monthly. Currently the Yangs are spending (e)\$ 890 per month in rent and plan to spend the same amount on a mortgage payment. They do not currently have a down payment and will finance the full price of the home.

- a. If the Yang family chooses the 15-year mortgage, how much will they be able to borrow? (3 pt)

- b. If the Yang family chooses the 30-year mortgage, how much will they be able to borrow? (3 pt)

- c. Which option will allow the Yang family to borrow the most? By how much? Respond in a complete sentence. (3 pt)

- d. Under which option will the Yang family spend the most overall? By how much? Respond in a complete sentence. (4 pt)

Name 4 financial decisions you can make over the course of your life regarding borrowing or saving money to improve your financial circumstances for when you retire. Use complete sentences. (4 x 3 pt = 12 pt)

a.	
b.	
c.	
d.	