

Financial Math Midterm

Step-by-Step Project Instructions

Also view: Power Point titled "Midterm Project Example"

1. New Car

- Choose a new car or truck, then "build and price" a vehicle on the manufacturer's website. (See slide #2 & 3 of the power point) (Make sure there is an option to lease this car. If not, then pick a different package for that car or a different car.
- Do not provide your email address or other contact information to auto dealerships, whose sales staff may contact you repeatedly.
- Do not leave your new car website before you completely answer questions: 1, 11 and 12. Do those questions BEFORE doing any other questions!!!
- Question 2: Find the safety information. Do a google search for "Safety Ratings for a ___". (Do not give a Critic's or Consumer's rating!) (See slide #4 of the power point)
- Complete Questions 3 & 4 using Bankrate.com. (See slide #5 of the power point)
- Complete Questions 5-10.

2. Leased Car

- This must be the EXACT same car as the new car above!
- Complete Questions 13 & 14.

3. Used Car

- Look for a used car. (See slide #6 & 7 of the power point) It must be two years old and of the same make and model of your new car. (It does not have to have the same features.)
- Do not leave your used car website before you completely answer question #15.
- Question 16: Find the safety information. Do a google search for "Safety Ratings for a ___". (Do not give a Critic's or Consumer's rating!) (See slide #4 of the power point)
- Complete Questions 17 & 18 using Bankrate.com. (See slide #5 of the power point)
- Complete Questions 19 - 23.

4. Comparing your Options

- Complete Questions 24 -28.

Name: _____ Period: _____

FM Midterm Project

Comparing Options for a Vehicle Acquisition

NEW CAR

1. Build and price a new car of your choice.

a. Car:

b. Year:

c. Price:

2. **a.** Safety Rating (Not consumer or Critic rating!):

3. Situation A: Calculate your monthly payment for a four-year term, 3% interest rate, with a \$5,000 down payment.

$$\frac{\text{Cost of Car}}{\text{Down Payment}} - \frac{5,000}{\text{Loan Amount}} = \text{_____}$$

Loan term in years: 4

Rate: 3 (Do NOT convert to a number – Leave as a percent!)

a. Monthly Payment: _____

4. Situation B: You lost your savings and can no longer afford to put money down on the car. The day worsens when the dealership informs you that your credit rating is less than ideal, and your interest rate is going to be 18%. What would be your payment for a 4 year term?

Loan Amount (Price of Car):

Loan term in years: 4

Rate: 18 (Do NOT convert to a number – Leave as a percent!)

a. Monthly Payment: _____

5. Total price you will have paid for the car.

a. Situation A:

$$\frac{\text{Monthly Payment}}{\# \text{ of months}} \times 48 + \frac{5,000}{\text{Down Payment}} = \text{Amount Paid for Car}$$

b. Situation B:

$$\frac{\text{Monthly Payment}}{\# \text{ of months}} \times 48 = \text{Amount Paid for Car}$$

6. How much more are you paying for the car in comparison to the selling price?

a. Situation A:

$$\frac{\text{Amount Paid for Car}}{\text{Price of Car}} - \frac{\text{Price of Car}}{\text{Price of Car}} = \frac{\text{Amount You Paid Over the Price}}{\text{Price of Car}}$$

b. Situation B:

$$\frac{\text{Amount Paid for Car}}{\text{Price of Car}} - \frac{\text{Price of Car}}{\text{Price of Car}} = \frac{\text{Amount You Paid Over the Price}}{\text{Price of Car}}$$

7. **a.** Why are you paying more than the cost of the car?

8. How much did your bad credit score cost you to buy a new car?

a. $\frac{\text{Amount Paid for Car in B}}{\text{Amount Paid for Car in A}} - \frac{\text{Amount Paid for Car in A}}{\text{Amount Paid for Car in A}} = \frac{\text{Cost of Bad Credit}}{\text{Amount Paid for Car in A}}$

9. What is the expected value of your car at the end of 4 years?

a. $\frac{\text{Original cost of car}}{\text{Original cost of car}} \times \frac{\text{Decrease in value of 50\%}}{\text{Decrease in value of 50\%}} = \frac{\text{Expected Value}}{\text{Original cost of car}}$

10. Amount spent to drive the car for 4 years for Situation A

a. $\frac{\text{Amount Paid for Car}}{\text{Expected Value}} - \frac{\text{Expected Value}}{\text{Expected Value}} = \frac{\text{Amount spent to drive the car for 4 years}}{\text{Expected Value}}$

Name: _____ Period: _____

FM Midterm Project

Comparing Options for a Vehicle Acquisition

LEASED CAR

11. Find a leasing deal for the new car you picked in question 1.

- a. Cost:
- b. Down Payment (may be called "Due at signing"):
- c. Monthly Payment:
- d. Length of Lease in months:

12. What is the penalty per mile if you go over the allowed miles?

- a. _____¢ per mile over the b. _____ miles allowed at the end of the lease

13. The average miles an adult in the U.S. drives is 1,370 per month. What fee would you pay if you drove this many miles per month? (Don't forget to multiply by the number of months of the lease.) **Show your work.**

a. _____ X _____ = _____
Avg. U.S. Miles per Month # of months in lease Your Estimated Miles

b. _____ - _____ = _____
Your Estimated Miles Miles allowed in lease Penalty Miles

c. _____ X _____ = _____
Penalty Miles Penalty per mile **FEE YOU OWE AT THE END OF THE LEASE**

14. Total cost to drive the car for 4 years.

- a. Amount spent to drive the car for 4 years =

_____ x _____ + _____ + _____ =
Monthly Payment # of months Down Payment Mileage Fee

= _____
Amount Spent

Name: _____ Period: _____

FM Midterm Project

Comparing Options for a Vehicle Acquisition

USED CAR

15. Visit a website that sells used cars (example: AutoTrader.com) to find a used car of the same make and model as in question 1. The used car MUST be two years.

a. Car:

b. Year:

c. Price:

16. a. Safety Rating (Not consumer or Critic rating!):

17. Situation C: Calculate your monthly payments for a four-year term, 3% interest rate, with \$5,000 as your down payment.

$$\underline{\hspace{2cm}} - \underline{5,000} = \underline{\hspace{2cm}}$$

Cost of Car Down Payment Loan Amount

Loan term in years: 4

Rate: 3 (Do NOT convert to a number – Leave as a percent!)

a. Monthly Payment: _____

18. Situation D: You lost your savings and can no longer afford to put money down on the car. The day worsens when the dealership informs you that your credit rating is less than ideal, and your interest rate is going to be 18%. What would be your payment for a 4 year term?

Loan Amount (Price of Car):

Loan term in years: 4

Rate: 18 (Do NOT convert to a number – Leave as a percent!)

a. Monthly Payment: _____

19. Total price you will have paid for the car.

a. Situation C:

$$\underline{\hspace{2cm}} \times \underline{48} + \underline{5,000} = \underline{\hspace{2cm}}$$

Monthly Payment # of months Down Payment Amount Paid for Car

b. Situation D:

$$\underline{\hspace{2cm}} \times \underline{48} = \underline{\hspace{2cm}}$$

Monthly Payment # of months Amount Paid for Car

20. How much more are you paying for the car in comparison to the selling price?

a. Situation C:

$$\frac{\text{Amount Paid for Car}}{\text{Price of Car}} - \frac{\text{Price of Car}}{\text{Price of Car}} = \frac{\text{Amount You Paid Over the Price}}{\text{Price of Car}}$$

b. Situation D:

$$\frac{\text{Amount Paid for Car}}{\text{Price of Car}} - \frac{\text{Price of Car}}{\text{Price of Car}} = \frac{\text{Amount You Paid Over the Price}}{\text{Price of Car}}$$

21. How much did your bad credit score cost you to buy a used car?

a. $\frac{\text{Amount Paid for Car in D}}{\text{Amount Paid for Car in C}} - \frac{\text{Amount Paid for Car in C}}{\text{Amount Paid for Car in C}} = \frac{\text{Cost of Bad Credit}}{\text{Amount Paid for Car in C}}$

22. What is the expected value of your car at the end of 4 years?

a. $\frac{\text{Cost of used car}}{\text{Cost of used car}} \times \frac{.50}{\text{Decrease in value of 50\%}} = \frac{\text{Expected Value}}{\text{Cost of used car}}$

23. Amount spent to drive the car for 4 years for Situation C

a. $\frac{\text{Amount Paid for Car}}{\text{Expected Value}} - \frac{\text{Expected Value}}{\text{Expected Value}} = \frac{\text{Amount spent to drive the car for 4 years}}{\text{Expected Value}}$

Name: _____ Period: _____

FM Midterm Project

Comparing Options for a Vehicle Acquisition

COMPARING ALL THREE OPTIONS

24. Rewrite the cost of driving the car for 4 years:

New car cost (Answer on Question 10a):

Leased car cost (Answer on Question 14a):

Used car cost (Answer on Question 23a):

25. How much would you save if you chose to buy the used car instead of the new car?

a. $\frac{\text{_____}}{\text{Cost of new car (Q10a)}} - \frac{\text{_____}}{\text{Cost of used car (Q23a)}} = \frac{\text{_____}}{\text{Saved}}$

26. How much would you save if you chose to buy the new car instead of leasing the car?

a. $\frac{\text{_____}}{\text{Cost of leased car (Q14a)}} - \frac{\text{_____}}{\text{Cost of new car (Q10a)}} = \frac{\text{_____}}{\text{Saved}}$

27. Which option new, leased or used would you choose?

28. (Short essay) Why did you choose that option? **(20 points)**