

Section 7.3 Mortgages and Amortization

1. For each five-year fixed term mortgage listed:
 - i) Determine the monthly payment.
 - ii) Calculate the total amount paid over the term of the mortgage.
 - iii) Calculate the total principal paid over the term of the mortgage.
 - iv) Calculate the total interest paid over the term of the mortgage.
 - a) \$179 000 amortized over 20 years at an annual interest rate of 4.75%.
 - b) \$289 000 amortized over 25 years at an annual interest rate of 5.25%.
 - c) \$450 000 amortized over 35 years at an annual interest rate of 4.99%.
2. Refer to question 1. Each homeowner has made a \$75 000 down payment, and property values appreciate 3.5% per year. Determine the value of each home at the end of the five-year term, to the nearest thousand dollars.
3. Consider this amortization table for the first year of a \$225 000 mortgage amortized over 20 years.

Month	Principal Paid (\$)	Interest Paid (\$)
1	728.93	973.96
2	731.51	971.38
3	734.10	968.79
4	736.70	966.19
5	739.31	963.58
6	741.93	960.96
7	744.56	958.33
8	747.20	955.69
9	749.84	953.05
10	752.50	950.39
11	755.16	947.73
12	757.84	945.05

- a) Calculate the monthly payment.
 - b) Calculate the total amount paid in the first year.
 - c) Calculate the total principal paid in the first year.
 - d) Calculate the total interest paid in the first year.
 - e) How much debt is owed on the house at the end of one year?
4. Truong purchased a used car. Part of an amortization table for Truong's one-year personal loan is shown.

Principal Paid (\$)	Interest Paid (\$)
553.87	65.62
559.06	60.43
564.30	55.19
569.59	49.90
574.93	44.56
580.32	39.17
585.76	33.73
591.25	28.24
596.79	22.70
602.39	17.10
608.04	11.45
613.70	5.75

- a) Determine the amount of Truong's monthly payment.
- b) Calculate the total amount needed to repay the loan.
- c) Calculate the total interest paid.
- d) Determine the amount Truong borrowed.
- e) Graph the data to show the remaining amount owing each month.



Name: _____

Date: _____

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5. Liang and Gerpreet recently purchased their first home for \$179 000. They made the minimum 5% down payment and mortgaged the rest. They agreed to a five-year fixed term mortgage amortized over 25 years at 5.25% per year.
 - a) Calculate the down payment.
 - b) Calculate the amount of the mortgage.
 - c) Use a TVM Solver to determine the amount of their monthly payment.
 - d) Determine the amount still owing after five years.
6. Liang and Gerpreet sold their home for \$200 000 and used the money as a down payment toward a \$375 000 house. They chose a variable rate mortgage with a five-year term amortized over 20 years at an annual interest rate of 6.75%.
 - a) Calculate the amount of the mortgage.
 - b) Determine Liang and Gerpreet's monthly mortgage payment.
 - c) How much debt was owed on the mortgage after one year?
 - d) After one year, the annual interest rate decreased to 6%. Recalculate the monthly payment for the remainder of the amortization period.
7. Latesha purchased a two-bedroom condominium for \$189 000 with a 5% down payment. The mortgage rate is 5.65% per year, amortized over 25 years.
 - a) Determine Latesha's monthly payment.
 - b) Assume the interest rate remains constant. How much will Latesha end up paying before the condominium is truly hers?
 - c) How much interest was charged over the life of the mortgage?
 - d) Housing prices are expected to appreciate by 4% per year. Express the growth in the selling price of the condominium as an exponential relation.
- e) Calculate the estimated selling price of Latesha's condominium in 25 years.
- f) By how much did the condominium increase in value?
8.
 - a) Use an on-line amortization table generator to create a table for a \$10 000 credit card loan with an annual interest rate of 18.79% amortized over 10 years.
 - b) Calculate the principal and the interest paid during year 3.
 - c) Calculate the principal and the interest paid during year 6.
 - d) In which year did the amount of principal paid become greater than the amount of interest paid?
9. Denzel needs a \$389 000 mortgage for his new home. One financial institution offers a five-year fixed rate of 5.75% per year, amortized over 25 years.
 - a) Use a TVM Solver to determine Denzel's monthly payment.
 - b) If Denzel can make a down payment of \$39 000, what will be his new monthly payment?
 - c) At another financial institution, Denzel is offered an interest rate of 5.0% provided he can make a down payment of \$50 000. Which financial institution should he sign with? Explain.
10. Create a mortgage and amortization problem. Exchange problems with a classmate and solve each other's problem.

