Mortgages

Terminology:

Mortgage	• An annuity where the present value is the amount borrowed to purchase a home and the loan is secured by the value of the real estate property
Collateral	• Asset(s) used to guarantee the repayment of debt (in the case of a mortgage, it would be the property)
Down Payment	• Percent of the purchase price required as a deposit at the start of the mortgage
Mortgage Term	• Length of the mortgage agreement (for example, the length of time for which the interest rate would be "fixed") • At the end of the term, the mortgage must be paid off or renewed at the current rate of interest
Amortization Period	• Length of time needed to eliminate a debt (how long it will take to pay off the mortgage)
Variable Rate Mortgage	• A mortgage where the interest rate fluctuates with the prime interest rate
Fixed Rate Mortgage	• A mortgage with a constant, fixed interest rate
Equity	• A financial gain (value of home minus amount still owed on the mortgage)

Some Common Ways to Save Interest on a Mortgage

1. Shortening the payment period
   Typically, payments are made monthly, but paying more frequently reduces the amount of interest you pay in the end

2. Making a lump sum payment
   In addition to your regular payments, making a lump sum payment reduces the outstanding principal (what you owe) and therefore reduces the interest paid for the remainder of the mortgage

3. Shortening the amortization period
   When you borrow money for less time, less interest will be owed in the end.

Example 1   Kara recently bought her first home for $255 000. As a first-time homebuyer, Kara can make a 5% down payment on the house and take out a mortgage for the remaining balance. Her mortgage broker found a bank offering an annual interest rate of 5.49% for a five-year fixed rate mortgage based on an amortization period of 25 years.

a.   Calculate the down payment and the amount to be mortgaged.

b. Use a TVM Solver to determine the monthly payment.

c. Calculate the total principal paid in 5 years.

d. Calculate the total interest paid in five years.

e. Calculate the approximate value of Kara's house after five years if it has an **appreciation rate** of 5% per year.

Example 2   Consider this **amortization table** for the first year of a $368 000 mortgage.

a. Calculate the monthly payment.

Month	Principal Pd. ($)	Interest Pd. ($)
1	554.20	1754.55
2	556.84	1751.91
3	559.49	1749.26
4	562.16	1746.59
5	564.84	1743.91
6	567.53	1741.22
7	570.24	1738.51
8	572.96	1735.79
9	575.69	1733.06
10	578.43	1730.32
11	581.19	1727.56
12	583.96	1724.79

b. Calculate the total amount paid in the first year.

c. Describe the trend in the Principal Paid column. Then, calculate the total principal paid in the first year.

d. Describe the trend in the Interest Paid column. The, calculate the total interest paid in the first year.

e. How much debt is owed on the house at the end of one year?