Section 9.6: The Cost of Home Ownership

Objectives

Understand mortgage options.

Compute the monthly payment and interest costs for a mortgage.

Compute payments and interest for other kinds of installment loans.

Mortgages

A mortgage is a long-term loan for the purpose of buying a home.

. The down payment is the portion of the sale price of the home that the buyer initially pays to the seller.

. The amount of the mortgage is the difference between the sale price and the down payment.

· Fixed rate mortgages have the same monthly payment during the entire time of the loan.

Computations Involved with Buying a Home

Many lending institutions require the buyer to pay one or more points at the time of closing—that is, the time at which the mortgage begins.

• A point is a onetime charge that equals ______ of the loan amount.

For example, two points means that the buyer must pay 2% of the loan amount at closing.

A document, called the *Truth-in-Lending Disclosure Statement*, shows the buyer the <u>APR</u> for the mortgage.

• In addition, lending institutions can require that part of the monthly payment be deposited into an <u>escrow</u>, an account used by the lender to pay real estate taxes and insurance.

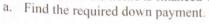


Loan Payment Formula for Installment Loans The regular payment amount, PMT, required to repay a loan of P dollars paid n times per years over t years at an annual rate r $PMT = \frac{P\left(\frac{r}{n}\right)}{1 - \left(1 + \frac{r}{n}\right)^{-nt}}.$ is given by Example 1: The price of a home is \$195,000. The bank requires a 10% down payment and two points at the time of closing. The cost of the home is financed with a 30-year fixed rate mortgage at 7.5%. t= 30 a. Find the required down payment. 10% of \$195,000 = 010 × 195,000 = \$19,500 b. Find the amount of the mortgage. -> LOAN, amount borrowed 195,000 = \$175,500 borrowed through mortgage c. How much must be paid for the two points at closing? 2% of loan amount = .02 × 175,500 = \$3,510 one-time fee d. Find the monthly payment (excluding escrowed taxes and insurance). PMT = $\frac{175,500}{\left(1-\left(1+\frac{.075}{12}\right)^{-12\times30}\right)} = \frac{4}{1227,12} \text{ monthly}$ $\Rightarrow \frac{1}{1227/mo}$ payment Example to nearest whole d e. Find the total interest paid over 30 years. [all payments] -{amount borrowed = (\$1227.00)(12)(30) - \$175,500 = \$441,720 - \$175,500

= 266,220 / Interest is more than original value

But you would have spent on rent anyway, &
now you own a valuable asset

Example 2: The price of a home is \$465,000. The bank requires a 20% down payment at the time of closing. The cost of the home is financed with a 30-year fixed rate mortgage at 5.5%.





b. Find the amount of the mortgage.

c. Find the monthly payment (excluding escrowed taxes and insurance).

$$PMT = \frac{372,000 \left(\frac{.055}{12}\right)}{\left(1 - \left(1 + \frac{.055}{12}\right)^{-12\times30}\right)} = \frac{1}{2112/m0}.$$

d. Find the total interest paid over 30 years.

$$(2112)(12)(30) - 372,000$$

 $(2112)(12)(30) - 372,000 = $388,320 | interest$

e. As another option, the family decides to consider a 20-year mortgage, still at 5.5% and with a 20% down-payment. Find the monthly payment and the total interest paid over 20 years. t=20 only charge

$$PMT = \frac{372,000 \left(\frac{.055}{12}\right)}{\left(1 - \left(1 + \frac{.055}{12}\right)^{-12 \times 20}} = \frac{4}{2559/mo.}$$

$$3539(12)(20) - 372,000$$
 = $372,000$ = $372,000$ = $372,000$ much less interest than in the 30 -year loan

Monthly Payments and Interest Costs for Other Kinds of Installment Loans

Example 3: You decide to take a \$20,000 loan for a new car. You can select one of the following loans, each requiring regular monthly payments: N = 1/2

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Installment Loan A: 3-year loan at 7%.

Installment Loan B: 5-year loan at 6%.

a. Find the monthly payments and the total interest for Loan A.

$$PMT = \frac{20,000 \left(\frac{.07}{12}\right)}{\left(1 - \left(1 + \frac{.07}{12}\right)^{-12 \times 3}} \approx \frac{4618}{618} = \frac{1}{12}$$

Interest:
$$(618)(12)(3) - 20,000$$

 $23,248 - 20,000 = 2,248$ Interest

b. Find the monthly payments and the total interest for Loan B.

$$PMT = \frac{20,000 \left(\frac{.06}{12}\right)}{\left(1 - \left(1 + \frac{.06}{12}\right)^{-12 \times 5}} \approx \frac{4}{387/mo}$$

c. Compare the monthly payments and total interest for the two loans.