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Mastering the Mortgage

After graduating from the Kellogg School of Management, Jose takes a job in Chicago, IL. The days of renting apartments are over for him. “Homeownership is a great American dream,” says his father. For once, Jose thinks his father is right. The money he would pay for renting an apartment could be better used for buying a home. The upsides are many: homeownership provides the basis for a stable life, the right to customize the place, and perhaps a reasonable return on investment due to appreciation in home value. However, Jose is also concerned that a mortgage will “lock” him into fixed monthly payments and wants to get a clear picture of the costs and loan payments that will have to be made over the life of the loan.

Chicago and its metropolitan area are not designated high-cost of living areas, as defined by HUD and FHA, meaning that a conforming mortgage (one guaranteed by the government and presumably less expensive to the borrower) is capped at a loan amount of $417,000. Additionally, conforming loans typically require a 20% down-payment. Jose does not want to purchase a jumbo-loan or non-conforming loan, as he recalls reading that spreads on these loans are large.

By the end of the next bonus cycle in 9 months, Jose expects to have saved nearly $100,000 available for a home purchase. This suggests he can buy about a $500,000 home and still get a conforming loan. He calls the local mortgage lender, who offers him a conforming 30-year 6% annual interest fixed-rate loan. Jose likes this product, as the interest rate and his monthly payments will not change over the life of the loan.

Still, the loan rate and its availability are subject to a credit check, application process, and the identification of a house to buy. Jose has just begun thinking about buying and will not have his bonus money and down payment money for at least another 9 months. He reads projections from economists that are calling for inflationary periods, meaning that interest rates would be expected to increase. On the other hand, some other economic projections suggest that with more banks lending under the government stimulus, mortgage rates may in fact go down. Jose wonders what the impact of such changes would be on his monthly payments and ability to borrow. Wanting to retire his loan as soon as possible, Jose is also interested in exploring shorter-term loans, such as 10 year and 15 year mortgages.

a. For a 20% down payment on a $500,000 home, what will be Jose's monthly payment for the conforming loan quoted to him?
b. Jose wants to determine how the monthly payment over the life of the mortgage will be divided into payment toward the interest on the loan balance and payment toward the principal. He would like to chart the results for better understanding.
c. Given the uncertain economic environment, Jose would like to analyze the impact of interest rate changes and the term of the loan on his monthly payments. Specifically, he would like to calculate how his monthly payment would change as the interest rate varies between 4% and 8%, and the terms of the loan can be 10, 15 or 30 years.
d. Finally, if Jose would like to limit his monthly payment to $2000, how much can he borrow? What is the maximum price of a home that he can afford? Consider the conforming loan quoted.