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Math 1050-042

Project Part 2

1- The house I choose from part one of the project was listed for a price of $164,900. A 10% down payment would be $16,490. If I subtract $16,490 from the listed price of $164, 900, I would need a mortgage for the amount of $148,410.

2- The 30 year interest rate I found from part one of the project was 3.375%. I used this interest rate and the formula given to calculate the monthly payment. For the mortgage amount of $148,410, a 30 year loan, and the interest rate of 3.375% the monthly payment would be $656.12.

$$PMT = \frac{P\left(\frac{r}{12}\right)}{1-\left(1+\frac{r}{12}\right)^{-12y}} \qquad \frac{\$148{,}410\left(\frac{0.03375}{12}\right)}{1-\left(1+\frac{0.03375}{12}\right)^{-12(30)=-360}} \qquad \frac{417.403125}{0.6361737741} = \$656.12$$

r = rate
y = years

$$1 - 0.3638262259 = 0.6361737741$$

3- The 15 year interest rate I found from part one of the project was 2.625%. I used this rate and the given PMT formula to calculate what my monthly payment would be. For the mortgage amount of $148,410, a 15 year loan, and the interest rate of 2.625% the monthly payment would be $998.34.

$$PMT = \frac{P\left(\frac{r}{12}\right)}{1-\left(1+\frac{r}{12}\right)^{-12y}} \qquad \frac{\$148{,}410\left(\frac{0.02625}{12}\right)}{1-\left(1+\frac{0.02625}{12}\right)^{-12(15)=-180}} \qquad \frac{324.646875}{0.325187202} = \$998.34$$

$$1 - 0.674812798 = 0.325187202$$

4- A 15 year loan would allow you to pay off the loan in half as much time as a 30 year loan. The interest rate is much lower and has less time to accrue than a 30 year loan. These things make it so the home owner would pay thousands of dollars less money in saved interest payments over the entire loan. Over the life of the mortgage a 15 year loan can be a much better financial deal. The con of a 15 year loan is that you have a much larger monthly payment. In the instance of the

home I choose for this assignment, it would be about $342 dollars more each month for the 15 year loan. It may not be possible for the home owner to pay the higher monthly mortgage payments.

The benefit of a 30 year loan is that the monthly payment is significantly less money than that of a 15 year loan. A 30 year loan will allow you to have lower monthly payments which will allow you to have more flexibility with your income like the ability to save more money, make other investments, or prepare for the possibility of a financial emergency.

I think people would need to look closely at their finances and determine whether a 30 year or 15 year loan is the best option for them. If a homeowner can afford the monthly payments for a 15 year loan than this option might be best because it would save the most money in the long run of the loan. If it would be a financial stretch to make the 15 year loan monthly payments or if a person's income varies monthly then it might be best to stick with a 30 year loan.

5- I used the amortization schedule calculator from the website www.amortization-calc.com.

6- The amortization schedule for a 30 year loan found that the monthly payment for the home I picked would be $636.11, the total interest paid would be $87,791.39, and the interest plus the original home cost would be a total cost of $236,201.39. The payoff date would be February 2043.

7- Based on the amortization schedule I used it will take until the 113th payment in September 2022 before the amount applied to the principal will be more than the amount applied to the interest.

8- The amortization schedule for a 15 year loan found that the monthly payment for the home I picked would be $998.34, the total interest paid would be $31,290.91, and the interest plus the original home cost would be a total cost of $179,700.91. The payoff date would be February 2028.

9- Based on the amortization schedule I used it will be immediate that the amount applied to the principal will more than the amount applied to the interest.

10- For this question I used a different amortization calculator from the website bretwhissel.net/amortization/ because it allowed me to enter in the additional monthly payment of $100.

If I paid an additional $100 each month on my 15 year loan than the length of time to pay of my loan would be 160 months (13.42 years). The total interest paid would be $27,707.11. The total amount I would pay for the home would be $176,117.77.

15 year loan	15 year loan + $100 monthly
Payment : $998.34	Payment: $1098.34
Payoff time: 180 months	Payoff time: 160 months
Total interest: $31,290.91	Total interest: $27,707.11
Total cost: $179,700.91	Total cost: $176,117.77

If I added an additional $100 to my monthly payments for a 15 year loan, over the life of the loan it would save me a total of $3,583.14 in interest and it would save me a total of 20 payments. I would end up saving $3583.14 by paying the additional $100 a month.

11- Renting a home may be necessary for some people who are unable or uninterested in purchasing a home but financially it makes more sense to buy rather than rent. By buying a home the payments go directly to your equity. The house becomes something you own and something that can be sold. When renting a home the monthly payments do not go towards equity but instead to the owner of the home. You cannot buy or sell the property. The payments aren't going directly towards purchasing a product but instead renting it. Financially speaking over the long term it seems to me like the best option would be purchasing a home because it becomes an investment.