

Interest-Mortgage-Annuity Worksheet

1) You borrow \$400,000 from a mortgage company to purchase a home.

Scenario 1: A 25 year loan at an interest rate of 7.4%.

- a) What are your monthly payments? _____
- b) What is the total amount you pay back to the loan company? _____
- c) How much did you pay in interest? _____

Scenario 2: A 25 year loan at an interest rate of 7.5%.

- a) What are your monthly payments? _____
- b) What is the total amount you pay back to the loan company? _____
- c) How much did you pay in interest? _____

The only difference between scenario 1 and 2 is a tenth of a percent in interest.

What is the difference in interest you pay back between the two loans? _____

Scenario 3: A 35 year loan at an interest rate of 7.4%.

- a) What are your monthly payments? _____
- b) What is the total amount you pay back to the loan company? _____
- c) How much did you pay in interest? _____

The only difference between scenario 1 and 3 is the length of the loan (25 vs 35 years).

Notice your monthly payments are lower, but what is the difference in interest you pay back between the two loans?

2) You buy a car and need to borrow \$28,000. The lender will give you a 5 year loan at 6.34% interest.

What are your monthly payments? _____

Scenario 1: You take the full 5 years to pay off the loan.

a) What is the total amount of money you pay back to the lender? _____

b) How much money did you end up paying in interest? _____

Scenario 2: You make monthly payments for 3 years and then decide you would like to pay off the loan.

a) What lump sum of money would you have to give to the lender at this time?

b) What is the total amount of money you pay back to the lender? _____

c) How much money did you end up paying in interest? _____

3) You have \$4000 you wish to put into a savings account and you will not withdraw any of it for a 8 year period. You have 2 possible scenarios.

Scenario 1: How much would be in the account at the end of the 8 years at 11.4% interest compounded semiannually?

Scenario 2: How much would be in the account at the end of the 8 years at 11.2% interest compounded monthly?

Is the higher interest rate always a better deal? _____

4) You are hired to work for a company at age 25 and the company has a retirement plan where you can put up to 6% of your salary into the plan each month and they will match that amount. Your starting monthly salary is \$6,100, assume for simplicity sake you never get a raise, and the retirement plan guarantees a 6.28% interest rate over the life of the plan.

Scenario 1: You decide to start the retirement plan right away and you can afford to put the full amount (6% of your salary) into the plan each month.

- a) What is 6% of your salary? _____
- b) Since your company matches what you put into your retirement account, what is the total amount put into your account each month? _____
- c) How much money will you have in the retirement account when you reach full retirement age, the time when you can start taking money out of the account, which is 62 years old? _____
- d) How much money did you put into the account? _____
- e) How much money did your employer put into your account? _____
- f) How much money did your account gain in interest over the years? _____

Scenario 2: You decide to start the retirement plan right away, but you can only afford to put 3% of your salary into the plan each month.

- a) What is 3% of your salary? _____
- b) Since your company matches what you put into your retirement account, what is the total amount put into your account each month? _____
- c) How much money will you have in the retirement account when you reach full retirement age, the time when you can start taking money out of the account, which is 62 years old? _____
- d) How much money did you put into the account? _____
- e) How much money did your employer put into your account? _____
- f) How much money did your account gain in interest over the years? _____

What is the difference in the amount of money you will have at age 62 between scenarios 1 and 2? _____

What is the difference in the amounts of money you put into retirement between scenarios 1 and 2? _____

How much more money did you get from your employer in scenario 1 than 2? _____

5) This question is similar to question 4 where the company you work for will match what you put into retirement, but they will match up to 5% of your salary. Assume you will make \$7,000 each month (again no raises), you start work at 25 years of age and the retirement account pays 6.1% interest. If you put the full 5% of your salary and are matched by the company, at age 65 you will have \$1,439,736.08 in your account. If you decided not to put any money into retirement until you are 40 years old and still hoped to have the \$1,439,736.08 when you are 65 years old,
a) How much money would have to be paid into the retirement plan each month?

b) Since the company still only matches up to 5% of your salary, how much would you be putting into retirement each month?

6) You borrow \$650,000 from a mortgage company for a 30 year loan at 7.1% interest to purchase a home.

What are your monthly payments? _____

Scenario 1:

a) How much money do you still owe the lending company after making the above monthly payments for 20 years?

b) If you pay off the loan at this time, what is the total amount of money you paid back to the lender?

Scenario 2:

a) You can afford to pay the lending company \$4800 each month in hopes of paying off the loan faster. How much money do you know owe the lending company after making monthly payments of \$4800 each month for 20 years?

b) If you pay off the loan at this time, what is the total amount of money you paid back to the lender?

7) A credit card company charges 17.6% interest. You use your credit card to go on vacation and charge \$3000 dollars on your credit card. Your monthly payment statement from the credit card company tells you your minimum monthly payment would be \$45. After making monthly payments of \$45 for 15 years you decide it's about time to pay off the loan. At this time,

a) How much money do you still owe the credit card company? _____

b) How much money have you already paid back to the credit company? _____