Financial Lit Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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WS Assessment

Target 16:

Mortgage vs rental

**I can:**

* Compute the monthly cost of paying for a house.
* Understand the research that is necessary before

you purchase a home.

* Estimate closing costs. Create an amortization table for a fixed rate mortgage / with extra payments.
* Compute costs of purchasing a cooperative or a

condominium.

* Understand the advantages and disadvantages of

different forms of homes.

**Unit 7 Math Topics:**

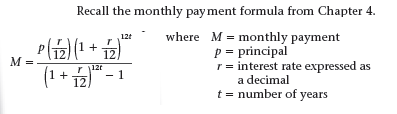
* Area and scale factor; Area of irregular regions
* Bar graphs; Exponential regression
* Greatest integer function; Literal expressions
* Monte Carlo method Probability
* Rational and exponential equations
* Scale drawings; Scatterplots and linear regression
* Spreadsheets and formulas
* Systems of linear equations and inequalities in two variables

Buying a house is probably the most expensive investment you will ever make. **Market value** is the amount for which a house could be sold. Homeowners pay **property taxes**, also called **real estate taxes**. The assessed value of a home is an amount used to determine the property taxes. The **assessed** **value** may not be the same as the market value. Property taxes help pay for government services, such as schools, libraries, and police.

After making the required **down payment**, most people take out a loan to pay the balance owed on their new home. These loans are **mortgages**. Because interest rates differ, shopping for a mortgage can

be important.

Heather is planning to buy a home. She has some money for a down payment already. She sees a home she would like and computes that she would need to borrow $190,000 from a bank over a 30-year period. The APR is 6.4%. What will be her total interest for the 30 years?



Kevin and Cathy Mackin have a mortgage with National Trust Bank. The bank requires that the Mackins pay their homeowner’s insurance, property taxes, and mortgage in one monthly payment to the bank through an **escrow**. Their monthly mortgage payment is $1,233.56, their semi-annual property tax bill is $5,206, and their annual homeowner’s insurance bill is $1,080. How much is the monthly payment they make to National Trust?

Banks use several factors, including credit rating, to decide if they will lend money. The bank wants to be paid back. They want assurance that the borrowers can afford the monthly payments.

One indicator is the front-end ratio, which is a ratio of monthly housing expenses to monthly gross income.

Front-end ratio = (Monthly housing expenses) / (Monthly gross income)

Banks often want the front-end ratio to be 28% or less before they lend the money.

Tom and Lori Courtney are considering buying a house and are researching the potential costs. Their adjusted gross income is $135,511. The monthly mortgage payment for the house they want

would be $1,233. The annual property taxes would be $9,400, and the homeowner’s insurance premium would cost them $876 per year. Will the bank lend them $190,000 to purchase the house?

Bill and Terry Noke are considering buying a house and need to figure out what they can afford and what a bank will lend them. Their adjusted gross income is $166,988. Their monthly mortgage

payment for the house they want would be $1,544. Their annual property taxes would be $9,888 and the homeowner’s insurance premium would cost them $1,007per year. They have a $510 per month car

loan, and their average monthly credit card bill is $5,100. Would the bank lend them $210,000 to purchase their house?

**What will the American dream cost you?**

Once you have your mortgage approval, you are a big step closer to home ownership. Below are a few questions that you must investigate thoroughly before buying a home

• What is the cost of the home? • Will you need to make a down payment?

• Where is the home located? • How many rooms does the home have?

• What is the size of the property you will own? • What condition is the house and property in?

• What type of heating/cooling system does the house have?

• What is the approximate cost of running the house (electricity, gas, water, and so on)?

**Recurring costs** are costs that occur on a regular basis. Some examples of recurring costs are

mortgage payments, insurance payments, and property taxes.

**Non-recurring costs** are one-time costs. Moving costs and many of the costs at **the closing** are non-recurring. **The closing** is a meeting attended by the buyer, seller, their attorneys, and a representative of

the lending institution. The official sale takes place at this meeting. The **buyer** is responsible for paying **closing costs**. Although they can differ from state to state, some of the most common non-recurring closing costs are **Earnest Money Deposit; Attorney Fees; Origination Fee; Title; Points; Prepaid Interest** and **Transfer Tax**

The rule of thumb: The closing costs expects to run from 2% to 7% of the purchase price. These numbers vary depending upon the location of the house and on any special circumstances.

Leah and Josh are buying a $600,000 home. They have been approved for a 7.25% APR mortgage. They made a 15% down payment and will be closing on September 6th. How much should they expect to pay in prepaid interest at the closing? (2431.20)

Trudy and Tom have been approved for a $300,000, 15-year mortgage with an APR of 5.75%. How much of their first monthly payment will go to interest and principal?

An **amortization table** is a listing of the unpaid principal, the monthly payment, the amount allocated to paying down the principal, and the amount allocated to interest. There are many websites

that offer mortgage amortization calculators. Some of them generate the amortization table.



Set up the Amortization table for Trudy and Tom





**Adjustable Rate Mortgages (ARMs)**

In the previous examples, each of the homebuyers had a fixed rate mortgage. In a fixed rate mortgage, the interest rate remains the same throughout the term of the loan. In an adjustable rate mortgage or ARM, the interest rate can change periodically. Therefore, the monthly payments change as well, based upon those rates.

Chris and Gene have a 6-month adjustable 15-year mortgage. They borrowed $300,000 and were quoted an initial rate of 5%. After 6 months, their rate increased by 1%.

Copy your amortization table to new sheet and modify it for Chris and Gene. Stamp

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**What alternatives?** Maintaining your own house requires time as well as money. Mowing

lawns, shoveling snow, and making repairs keep the average homeowner very busy. Some people prefer not to be responsible for these chores.

A **condominium** is a form of home ownership where each unit is individually owned. The common parts of the property, such as the grounds, are jointly owned. Condominium owners are responsible for the maintenance of the inside of their own units. Condominium owners are charged a **maintenance fee.**

Last year, Burt paid a monthly condominium maintenance fee of $912. Fifteen percent of this fee covered his monthly property taxes. How much did Burt pay last year in property taxes on his condo?

Gary Larson’s job is relocating to a new city. He knows he will be there for at least 10 years. Gary is uncertain as to whether he should rent an apartment or buy a home for the time he will be working there. He knows that he eventually wants to return to his home city. Gary wants to compare the accumulated mortgage costs versus the accumulated rental costs before making a decision. Gary knows that he can afford a monthly rent of $2,500 with inflation rate 2%. If he buys, he can put $100,000 down and take out a $350,000 mortgage for 20 years with an APR of 6%.

Create a spreadsheet to assist Gary in making the comparison.





**Do c**omparison after 10 years

**Assessment Target 16**

* **I can…** Calculate area and of irregular regions

 The monthly rent for a one-bedroom apartment at North Shore Towers for six consecutive years is shown in the table.

**a.** Represent the years using the numbers 5, 6, 7, 8, 9, and 10 respectively. Draw a scatterplot for the data.

**b.** Find the exponential regression equation that models the rent increases. Round to the nearest thousandth.

**c.** Predict the rent in the year 2021. Round to the nearest dollar. Stamp

The Tensers bought a mobile home for $89,500. They rent space in a trailer park for $900 per month. The rent increases 2% per year.

If they put a down payment of $10,000 on the trailer, how much must they borrow?

If they borrow the amount from part a for 15 years at an APR of 6%, what will the monthly payment be to the nearest cent?

What will be the first monthly payment? final monthly payment?

How much will they pay each month for their trailer and the space for the first year?

Show Spreadsheet. Stamp

Use spreadsheets to compare these situations after 10 years. Stamp

Buying Renting

Total paid and total paid to Total amount paid for a $2,600

the principal for a $300,000, monthly rent that has an annual

15-year mortgage with a 6.5% increase of 2% after 10 years

APR