

NAME: \_\_\_\_\_ CLASS PERIOD: \_\_\_\_\_

# Using a Computer to Calculate Payments for a Loan

## Introduction

Computers can be very helpful in figuring out various aspects of a loan. In the following situation, you will be working with mortgages, which are relatively large loans that are used to finance house purchases. Mortgage payments are typically made every month and are extended over many years—often 15 or 30 years.

Mortgages aren't free. Borrowers pay interest on their mortgage loans. And there are costs in addition to interest. Some of these are called closing costs. Closing costs vary from lender to lender depending upon the expenses the lender has for processing mortgage loans.

Let's analyze four different mortgages. These mortgages come with different down payments, different annual interest rates, and different time periods. In each case, however, the homebuyer is purchasing a \$175,000 house.

## The Four Mortgages

1. Sean and Amber Johnson made a 20 percent down payment and took out a \$140,000 mortgage at the local bank. It is a 30-year fixed-rate mortgage with an annual interest rate of 7 percent and closing costs of \$4,200.
2. Alvin and Emily Jin qualified for a special mortgage program in which the required down payment is only 5 percent of the cost of the home. They took out a \$166,250 mortgage. It is a 30-year fixed-rate mortgage with an annual interest rate of 7 percent and closing costs of \$4,987, plus private mortgage insurance (PMI) for 10 years for a cost of \$13,133. (When you make a down payment of less than 20 percent, lenders require mortgage insurance. For this insurance you pay an insurance premium each month, along with your mortgage payment, until the equity in your home is equal to 20 percent.)
3. Benny and Silvia Ramirez got a loan through a mortgage broker who found a lower interest rate (6 percent) than the one offered by the local bank. They made a 20 percent down payment and borrowed \$140,000 for 30 years. Their closing costs include more fees than they would have paid the bank, but their interest rate is 1 percentage point lower. Their closing costs are \$5,000.
4. Emily McGill knows that she can save money by paying off a mortgage quickly. She made a down payment of 20 percent and borrowed \$140,000 at a fixed rate of 5.5 percent. Because she will pay off her mortgage in 15 years, her annual interest rate is lower than she would have paid for a 30-year mortgage. The closing costs for this loan are \$4,200.

**Your Task**

Compare these four mortgages by completing the **Mortgage Comparison Table**. Enough information has been provided above for you to fill out most of the table. However, you will need to use a mortgage calculator to determine the monthly payment for each loan. Also, you will need to use the amortization table from the mortgage calculator to determine the total interest that will be paid over the life of each loan.

An additional piece of information has also been provided. Each loan has an APR that represents the true annual interest percentage cost of the loan. Mortgage APRs are calculated by including closing costs and other mortgage-related costs into the effective cost of the loan. You can find mortgage APR calculators online. Determining APR is particularly useful because it enables you to compare interest rates across different types of financing instruments. The Truth in Lending Law requires that the APR be identified for loans.

Using a mortgage calculator is easy. Just plug in the principal, annual interest rate, and term (in years) for each of the four mortgages. Check the monthly payment amounts and use the amortization table to calculate total interest payments. Then use a mortgage calculator and fill in the chart. If your teacher does not provide a website, try [www.bankrate.com](http://www.bankrate.com) to calculate the mortgage payment.

**Mortgage Comparison Table**

	<b>Mortgage 1</b>	<b>Mortgage 2</b>	<b>Mortgage 3</b>	<b>Mortgage 4</b>
Home price	\$175,000	\$175,000	\$175,000	\$175,000
Down payment %	20%	5%	20%	20%
Down payment \$				
Principal	\$140,000	\$166,250	\$140,000	\$140,000
Interest rate				
Term				
Monthly payment				
Total interest				
Closing costs and PMI	\$4,200	\$4,987 + 13,133 (PMI)	\$5,000	\$4,200
APR	7.295%	8.058%	6.331%	5.958%
Total payment, down payment, principal, interest, closing costs and PMI				

