Review Exercise Set 15

Exercise 1: A local developer is selling homes for $125,000 with a required down payment of 6%. Find the amount of the required down payment and the mortgage.

Exercise 2: A couple obtained a loan for $130,000 to purchase their home. How much would the loan origination fee be if the couple had to pay 3 points on the loan. (Loan origination fee = Mortgage * Points).

Exercise 3: New houses in a neighborhood are selling for $175,000. A down payment of $18,000 is required and a 25-year mortgage at an annual interest rate of 8% is available. Find the monthly mortgage payment.
Exercise 4: Office Depot has a warehouse with a 20-year mortgage of $250,000 at an annual interest rate of 9%. During a month when $1,650.33 of the monthly mortgage payment is principal, how much of the payment is interest?

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<tr>
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<th>7%</th>
<th>8%</th>
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<tbody>
<tr>
<td>1 year</td>
<td>0.0865267</td>
<td>0.0869884</td>
<td>0.0874515</td>
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<tr>
<td>5 years</td>
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Exercise 5: The monthly mortgage payment on a house is $824.36, and the homeowner must pay an annual property tax of $930. Find the total monthly payment for the mortgage and the property tax.
Review Exercise Set 15 Answer Key

Exercise 1: A local developer is selling homes for $125,000 with a required down payment of 6%. Find the amount of the required down payment and the mortgage.

\[
\text{down payment} = \text{selling price} \times 6% \\
\text{down payment} = 125000 \times 0.06 \\
\text{down payment} = 7500
\]

\[
\text{mortgage} = \text{selling price} - \text{down payment} \\
\text{mortgage} = 125000 - 7500 \\
\text{mortgage} = 117500
\]

Down payment is $7,500 and the mortgage is $117,500.

Exercise 2: A couple obtained a loan for $130,000 to purchase their home. How much would the loan origination fee be if the couple had to pay 3 points on the loan. (Loan origination fee = \text{Mortgage} \times \text{Points}).

\[
\text{Mortgage} = 130000 \\
\text{Points} = 3 = 0.03
\]

\[
\text{Loan origination fee} = 130000 \times 0.03 \\
\text{Loan origination fee} = 3900
\]

The loan origination fee would be $3,900.

\text{Points is a term used to represent a percentage. So 3 points would be the same as 3%}.

Exercise 3: New houses in a neighborhood are selling for $175,000. A down payment of $18,000 is required and a 25-year mortgage at an annual interest rate of 8% is available. Find the monthly mortgage payment.

\[
\text{Selling price} = 175000 \\
\text{down payment} = 18000 \\
\text{interest rate} = 8\% = 0.08 \\
\text{time} = 25 \text{ years} = 300 \text{ months} (25 \times 12)
\]

First, we will compute the total interest for the loan

\[
I = P \times R \times T \\
I = (175000 - 18000)(0.08)(25) \\
I = (157000)(0.08)(25) \\
I = 314000
\]
Example 3 (Continued):

Next, compute the maturity value which is the principal plus the interest

\[ M = P + I \]
\[ M = 157000 + 314000 \]
\[ M = 471000 \]

Now, compute the monthly payment by dividing the maturity value by the number of months in the loan.

\[ \text{Monthly payment} = \frac{M}{300} \]
\[ \text{Monthly payment} = \frac{471000}{300} \]
\[ \text{Monthly payment} = 1570 \]

The monthly payment would be $1,570.

Exercise 4: Office Depot has a warehouse with a 20-year mortgage of $250,000 at an annual interest rate of 9%. During a month when $1,650.33 of the monthly mortgage payment is principal, how much of the payment is interest?

Monthly Payment Table

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First, calculate the monthly payment using the table

\[ \text{Monthly payment} = \text{Mortgage} \times \text{Interest Factor (9%, 20 yr)} \]
\[ \text{Monthly payment} = 250000 \times 0.0089973 \]
\[ \text{Monthly payment} = 2249.325 \]

The monthly payment is $2,249.33

Now, figure the interest portion by subtracting out the principal portion.

\[ \text{Interest payment} = \text{monthly payment} - \text{principal payment} \]
\[ \text{Interest payment} = 2249.33 - 1650.33 \]
\[ \text{Interest payment} = 599 \]

$599 of the monthly payment went toward interest.
Exercise 5: The monthly mortgage payment on a house is $824.36, and the homeowner must pay an annual property tax of $930. Find the total monthly payment for the mortgage and the property tax.

Monthly property tax = annual property tax ÷ 12
Monthly property tax = 930 ÷ 12
Monthly property tax = 77.5

Total monthly payment = monthly mortgage + monthly property tax
Total monthly payment = 824.36 + 77.50
Total monthly payment = 901.86

The total monthly payment for the mortgage and property tax would be $901.86.