Section 11.4

2. Financing a Computer. Gilberto Garza purchased a computer on a monthly payment plan. The computer sold for $2350. He paid $500 down and $83.67 a month for 24 months.

a.) What finance charge did Gilberto pay?
b.) What is the APR to the nearest half a percent?

\[
\text{total amount financed} = 2350 - 500 = 1850
\]

Table 11.2 months APR finance charge/\$100

\[
\text{total monthly payments} = (83.67 \times 24) = 2008.08
\]

\[
\text{total charge} = 2008.08 - 1850 = 158.08
\]
\[
\text{ amt. financed \quad \frac{1850}{100} \times \frac{T}{100} = \text{ total finance charge}}
\]

\[
\left( \frac{1850}{100} \right) T = 158.08
\]

\[
18.5T = 158.08
\]

\[
\Rightarrow T = \frac{158.08}{18.50} = \frac{\#8.54}{18.50} \quad \text{months}
\]

Table 11.2

<table>
<thead>
<tr>
<th>months</th>
<th>8.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>8.54</td>
</tr>
</tbody>
</table>

The finance rate is 8.0%

Finish homework in Section 11.4
11.5 Buying a House with a Mortgage

**Down payment** – amount of cash the buyer must pay to the seller before the lending institution will grant the buyer a mortgage (5 – 50%).

**Homeowner’s mortgage** – a long-term loan in which the property is pledged as security for payment of the difference between the down payment and the sale price.
Conventional loan – interest rate is fixed for the duration of the loan.

Adjustable-rate loan – interest rate may change every period, as specified in the loan.

Closing – final step in sale process.

One point – 1% of mortgage money used to reduce interest rate of mortgage

But because points are paid, the stated interest rate is not the APR of mortgage.
1. Monthly Payment on a House. Craig Kelling is buying a house selling for $97,000. The bank is requiring a minimum down payment of 20%. The current mortgage rate is 8.5%.
   a.) Determine the amount of the required down payment.
   
   b.) Determine the monthly mortgage payment for a 30-year loan with a minimum down payment.
   
   c.) Determine the total interest payments over the life of the loan.
   
   d.) Determine the amount of interest and the amount of principal that are paid with the first monthly payment.
a) Down payment:

\[ 20\% \text{ of } 97600 = 0.20(97600) = \$19520. \]

b) Amount financed:

\[ 97600 - 19520 = \$78080. \]

Table 11.4

\begin{tabular}{|c|c|}
\hline
Rate & No. of Years \\
\hline
8.5 & 30 \\
\hline
7.69 & \\
\hline
\end{tabular}

\[ \text{monthly payment per } \$78080 \text{ financed} \]

\[ \frac{78080}{1000} \times (7.69) = \$596.74 \]
c. total monthly payments: 
(\$596.74)(12)(30) 
= \$214826.40 

214826.40 \text{ total no. payments} 
\text{ total interest} 
\text{ payments:} \quad \underline{\text{\$77600.00}} \quad \text{amt. financed} 
\underline{\text{\$137226.40}} \quad \text{total interest}
d) monthly payment: $596.74

1st month: \( i = prt \)

8.5% annual \( \Rightarrow i = 77600 \times (0.085) \times \left( \frac{1}{12} \right) \)

t = \frac{1}{2} \text{year} \Rightarrow i = \$349.67

amt. principal paid = $596.74 - $349.67 = $47.07
Your interest rate per period is 0.7083 % for 360 total periods (30.0000 years)

<table>
<thead>
<tr>
<th>Period</th>
<th>Years</th>
<th>Balance</th>
<th>Interest</th>
<th>Principal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.083</td>
<td>77600.00</td>
<td>549.67</td>
<td>47.01</td>
</tr>
<tr>
<td>2</td>
<td>0.167</td>
<td>77552.99</td>
<td>549.33</td>
<td>47.35</td>
</tr>
<tr>
<td>3</td>
<td>0.250</td>
<td>77505.64</td>
<td>549.00</td>
<td>47.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>----</td>
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<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>173</td>
<td>14.417</td>
<td>5922.24</td>
<td>41.95</td>
<td>722.21</td>
</tr>
<tr>
<td>174</td>
<td>14.500</td>
<td>5200.03</td>
<td>36.83</td>
<td>727.33</td>
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<tr>
<td>175</td>
<td>14.583</td>
<td>4472.70</td>
<td>31.68</td>
<td>732.48</td>
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<tr>
<td>176</td>
<td>14.667</td>
<td>3740.22</td>
<td>26.49</td>
<td>737.67</td>
</tr>
<tr>
<td>177</td>
<td>14.750</td>
<td>3002.55</td>
<td>21.27</td>
<td>742.89</td>
</tr>
<tr>
<td>178</td>
<td>14.833</td>
<td>2259.66</td>
<td>16.01</td>
<td>748.15</td>
</tr>
<tr>
<td>179</td>
<td>14.917</td>
<td>1511.51</td>
<td>10.71</td>
<td>753.45</td>
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<tr>
<td>180</td>
<td>15.000</td>
<td>758.06</td>
<td>5.37</td>
<td>758.79</td>
</tr>
</tbody>
</table>

**Total Payments:** $137548.80  
**Total Interest:** $59948.07
When a bank is deciding your maximum monthly payment:

1. Gross income
   - (any monthly payments with more than 10 months to go)
   "Net income"

2. Housing costs = mortgage payment + taxes + insurance
   = maximum of 28% of "net income"
2. Affordable Payments. Keith Stafford's gross monthly income is $2,500. He has 12 remaining payments of $95 on furniture and appliances. The taxes and insurance on the house are $105 per month.

a.) What maximum monthly payment does the bank's loan officer feel that Keith can afford?

b.) Keith would like to get a 30-year, $52,200 mortgage. Does he qualify for this mortgage with an 8% interest rate?

\[
a.1 \text{ Gross inc. } - \text{ mo. paymts} = 2,500 - 95 = 2,405 \\
28\% \text{ of } 2,405 = \#673.40 \\
\text{max. mortgage paymt.} = 673.40 - 105 = \#568.40
\]
b) 52200 at 8%, 30 years

Table 11.4

<table>
<thead>
<tr>
<th>Rate</th>
<th>30</th>
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<tbody>
<tr>
<td>8%</td>
<td>7.34</td>
</tr>
</tbody>
</table>

mo. mort. payment per $1000.

\[
\frac{52200}{1000} \times 7.34 = \$383.15
\]

Yes because

\[
\$383.15 < \$568.40
\]

actual < max

Homework Section 11.5