Amortization Schedule Exercise

1. Enter Data and Apply Formatting to Create the above table.
3. Enter Following Formulas:
   - \( C6 = \text{Price} - \text{Down Pymt} \)
   - \( E4 = \text{PMT}\left(\frac{\text{Rate}}{12}, 12\times\text{Years}, -\text{Loan Amt}\right) \)
   - \( E5 = 12\times\text{Years}\times\text{Monthly Pymt} - \text{Loan Amt} \)
   - \( E6 = 12\times\text{Years}\times\text{Monthly Pymt} + \text{Down Pymt} \)
4. Add a Data Table using the Fill Down for the % values:
   - \( C9 = E4 \)
   - \( D9 = E5 \)
   - \( E9 = E6 \)

### Varying Interest Rate Table

<table>
<thead>
<tr>
<th>Rate</th>
<th>Monthly Pymt</th>
<th>Total Interest</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.50%</td>
<td>$1,183.57</td>
<td>$91,042.82</td>
<td>$245,042.82</td>
</tr>
<tr>
<td>7.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.00%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.50%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.00%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.50%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.00%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Add a Data Table using the Fill Down for the % values:
   - \( C9 = E4 \)
   - \( D9 = E5 \)
   - \( E9 = E6 \)

5. Select the range B9:B20
   - From the Data menu, select Table
   - Enter the Rate for the Column Input Cell (Rate/$E$2)
   - Format to Comma style
5. Add Conditional Formatting to highlight the row with the data that matches the input value:
   - Select B10:B20
   - Select Conditional Formatting from the Format menu
   - Select Cell Value Is and then Equal To the Rate/$E$2

6. Amortization Schedule - Shows the beginning and ending balances and the amount of payment that applies to the principal and interest for each year over the life of the loan.
   - Add Column Headings
   - Fill-down years 1-18

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
</tr>
<tr>
<td>Yr</td>
<td>Beginning Balance</td>
<td>Ending Balance</td>
<td>Paid to Principal</td>
<td>Interest Paid</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>$26,103.55</td>
<td>$13,588.01</td>
<td>$12,515.53</td>
<td>$1,687.32</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>$13,588.01</td>
<td>$0.00</td>
<td>$13,588.01</td>
<td>$614.84</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>$0.00</td>
<td>$(14,752.40)</td>
<td>$14,752.40</td>
<td>$(549.55)</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>$(14,752.40)</td>
<td>$(30,768.96)</td>
<td>$16,016.56</td>
<td>$(1,813.71)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>$(30,768.96)</td>
<td>$(48,158.02)</td>
<td>$17,389.06</td>
<td>$(3,186.20)</td>
<td></td>
</tr>
</tbody>
</table>

7. Add Formulas:
   - H3 =C6
   - I3 =PV(Rate/12, 12*(Years-G3),-Monthly_Pymt)
     =PV($E$2/12, 12*($E$3-G3),-$E$4)
   - J3 =H3-I3
   - K3 =12* Monthly_Pymt- J3
     =12*$E$4-J3
   - H4 =H3-J3
   - Fill-down the formulas

8. This loan was determined for 15 years. As you exceed 15 years, the ending balance becomes negative. To avoid this, use an IF statement that will zero out any additional years.
   - I3=IF(G3<+Years, PV($E$2/12, 12*(Rate-G3),-Monthly_Pymt), 0)
   - K3 =IF(G3<=Years, 12* Monthly_Pymt -J3, 0)
     OR
     =IF(H3>0, 12*$E$4-J3, 0)
   - Fill Down
   - Clear out 0’s
PAYMENT: =PMT(rate, payment, loan amount)

Rate is the interest rate per payment period
Payment is the number of payments
Loan amount is the amount of the loan

Values returned by the PMT function are considered debits and thus are negative values.
Annual interest rates need to be calculated on a monthly basis =PMT(rate/12, 12*years, -loan_amt)

FUTURE VALUE: =FV(rate, periods, payment)

Returns the future value of an investment based on periodic, constant payments and a constant interest rate

PRESENT VALUE: =PV(rate, periods, payment)

Returns the present value of an investment (the total amount that a series of payments is worth now).

Note for #7 Ending Value is calculated by determining the present value of the remaining payments.