Why:
As an engineer, you will need to make graphs and charts of data and results for analysis.

Learning Objectives:
1. How to create a bar, line and pie chart.
2. Be able to format a chart.
3. Make a graph with a logarithmic axis.

Performance Criteria:
1. You can create professional looking graphs and charts.

Resources:
1. MS Excel Help Files.
2. Class notes
3. Other students
4. Instructor

Plan:
1. Create a COLUMN CHART graph showing the various components of a Die Cast Alloy. The proportional parts of the alloy are shown in the table below. Your graph should have the bars in decreasing order from left to right. The “y-axis” is to range from 0 to 45 percent. Do not show any decimals on this scale.

<table>
<thead>
<tr>
<th>Die Cast Alloy</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin</td>
<td>13.4%</td>
</tr>
<tr>
<td>Lead</td>
<td>24.3%</td>
</tr>
<tr>
<td>Zinc</td>
<td>38.7%</td>
</tr>
<tr>
<td>Aluminum</td>
<td>12.3%</td>
</tr>
<tr>
<td>Copper</td>
<td>11.3%</td>
</tr>
</tbody>
</table>

2. Create a 3-D exploded pie graph (PIE CHART) of the data given above. A sample is shown.
3. Create a line chart (LINE CHART) of the same (unsorted) data. The “y-axis” is to range from 0 to 45 percent. Do not have any decimals on this scale. Show the data points as 7-point circles. The data series line should be a blue line. A sample graph is shown below. Place the data in the order shown.

![Components of a Die Cast Alloy](image)

4. The test data shown in the table below were taken during a fatigue test of a certain steel. Create an XY(Scatter) chart of the data shown below. The number of cycles is to be plotted along the abscissa while the stress is to be plotted along the ordinate. The abscissa has to have a logarithmic scale.

   - Solid, black data series line
   - Red diamond data points
   - Major and minor gridlines on x-axis
   - Major vertical gridlines are 2.25 pt
   - X-axis scale from 1,000 to 10,000,000
   - Set the Log Scale Base to 10 to properly set the X axis increments.
   - Y-axis from 0 to 90 ksi
   - No legend required
   - Format x-axis numbers to include commas to make reading easier.
   - Add a secondary axis to display SI stress units, which are mega-pascals (MPa). 1 ksi = 6.895 MPa.
   - Use the titles shown in the figure. The secondary axis is “Stress (MPa)”.

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Life (cycles)</th>
<th>Stress (ksi)</th>
<th>Specimen</th>
<th>Life (cycles)</th>
<th>Stress (ksi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2000</td>
<td>80.3</td>
<td>6</td>
<td>161000</td>
<td>37.5</td>
</tr>
<tr>
<td>2</td>
<td>14000</td>
<td>53.5</td>
<td>7</td>
<td>23000</td>
<td>48.2</td>
</tr>
<tr>
<td>3</td>
<td>49000</td>
<td>42.8</td>
<td>8</td>
<td>2354000</td>
<td>29.4</td>
</tr>
<tr>
<td>4</td>
<td>565000</td>
<td>32.1</td>
<td>9</td>
<td>1325000</td>
<td>30.5</td>
</tr>
<tr>
<td>5</td>
<td>9937000</td>
<td>26.8</td>
<td>10</td>
<td>885000</td>
<td>31.6</td>
</tr>
</tbody>
</table>

Hints:
- Format Data Series
  - Marker Options
    - Built-in
    - Type (filled circle)
    - Size 7

Hints:
- Layout Tab
  - Gridlines
    - Primary Axis Gridlines
  - Format Axis
    - Axis Options
    - Logarithmic scale

Data (needs to be sorted increasing by cycles):