Type a data table from which to create a chart

Type the data to be used for a chart like this:

<table>
<thead>
<tr>
<th>Type of Pet</th>
<th>1992</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Cat</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td>Dog</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>No Pet</td>
<td>25</td>
<td>24</td>
</tr>
</tbody>
</table>

If you have an occasional blank cell, that is fine, but do not leave any completely blank columns or completely blank rows in the area of your data table.

If some of your labels are numbers, as shown, leave the first cell blank as shown, Excel understands that the first row and the first column contain labels describing the data. In ordinary spreadsheets, typing a label in that first cell can confuse Excel into treating the “1992” and “1993” as data points rather than labels.

If you want to put a label in the first cell there are a couple of solutions. Typing an apostrophe before each of the years (eg, ‘1992) will not change the appearance of the numbers, but it forces Excel to treat them as text. Alternatively, using “Format as Table” on the data table, as below, makes Excel treat the whole first row as headers, not as data points/numbers.

**Insert Ribbon**

Click a chart type to see a list of available subtypes; click desired subtype to create chart.

Create a “mini-chart” inside a spreadsheet cell

**Make a chart from a data table**

1. After typing your data, click any cell within it, or select the cell range.
2. Click the Insert tab to view the Insert Ribbon
3. In the *Charts* group, click on the desired chart type. A drop-down menu of subtypes (variations on the theme) will appear. Click to select the desired subtype. The chart will appear on the same page of the workbook as the data source.
Common Chart Types

- Pie charts are a special category of chart which uses only a single series of data. Pie charts are used to show the relationship of parts to the whole. This is the only chart type that is limited to displaying a single series of data. [Doughnut charts, available under the Other Charts button, use concentric circles to compare multiple series, in a “pie like” manner.]
- Bar and column charts are used to compare values across categories. They come in variations, like cones and cylinders.
- Line charts are commonly used to track values over time.
- Excel offers many more types of charts. You can find an excellent article about chart types and when to consider each type by searching the Help for “Available chart types”.

Select a Chart or a Chart Element

- When a chart is selected, it appears surrounded by a translucent frame (see below). Individual chart components can be clicked to select them; they will have frames with round “pearls” at the corners (see the title in the sample chart.)
- When a text element is selected, such as the legend, or the chart title in the figure below, the tools in the Font group on the Home Ribbon can be used to format it in the same way as any other text.
- If you click on a pie wedge, column, etc., that represents a single data point, handles will appear on all the wedges, columns or points in the series. They can then be formatted as a unit.
- To select a single data point (pie wedge, column, etc.), click the desired point, wait a few seconds, and click it again. Only the selected point will have handles, and that point can now be formatted by itself.

Move a Chart

Place the mouse pointer in the upper right hand corner of the Chart Area (the white background). The pointer will look like this: ⬇️ Press the left mouse button and drag the chart to the desired location; release the mouse.

Re-size a chart (with the mouse)

Click the white background to select the entire chart. A translucent frame will surround the chart; dots at the corners and centers of the frame mark the locations of the handles. Place your mouse pointer over a handle, press the left button and hold it while you drag the handle. The chart will grow or shrink in that direction.
Chart-Related Contextual Ribbons

When a chart is selected, tabs for three contextual ribbons are available at the top right of the window. Almost all customization and formatting of the chart is done through these ribbons.

Design Ribbon

Use this ribbon to change chart types, choose a pre-defined chart layout or style, or move the chart to another worksheet (or its own worksheet).

Select from a set of pre-defined layouts for each chart type
Select from a menu of pre-defined visual styles (3-D effects, color shadings, backgrounds) for each chart type
Move data displayed along the X axis to the Y axis and vice versa
Move chart from one sheet to another or to its own sheet in the workbook

Layout Ribbon

Use this ribbon to select chart components; turn on and off labels for various chart elements; add colors and effects to the area immediately surrounding the chart (plot area) or the entire background (chart area); add trendlines and arrow bars to charts.

Select chart components
Turn labels on and off for all elements of chart; set position of labels
Analyze data with trendlines, error bars, etc.
Format horizontal and vertical axes and gridlines behind charts
Format chart background areas

Format Ribbon

Use this ribbon to change the appearance of lines and shapes by altering fill colors and changing line styles; also add and format WordArt (fancy lettering), work with multiple graphic elements in the Arrange group, resize a chart to a particular measurement.

Choose from a set of preset fill/line options for shapes
Create and format WordArt lettering
Size a graphic to a specific measurement
Customize fill colors and patterns
Apply visual effects (shadows, glows, 3-D styles)
Launch Advanced Formatting dialog box
Arrange graphical elements relative to one another
Advanced Formatting

- Advanced formatting options for most chart elements can be accessed by either
  1. right-clicking on the chart element itself or
  2. clicking the Dialog Box Launcher on the *Shape Styles* group on the Format Ribbon.
- The title bar on the formatting dialog box tells you what element of the chart you are focusing on.
- You can change the element being focused on by clicking a different chart element. The title bar will change to reflect the new focus.
- The tools and choices on the formatting dialog boxes are context sensitive; they only show tools that are appropriate for the type of chart or element you are working with (for example, 3-D Rotation – which lets you customize 3-D charts with respect to rotation, angle of view, perspective and apparent height of the chart components – is only present if you are using a 3-D chart.)

Remove a series from the chart

Click on the data series you wish to remove. (You will see handles on that series.) Click the Delete key on the keyboard.

Printing Charts

1. If the chart is on its own Chart page, click the Office Button then choose Print from the list. The chart will be scaled to fill the paper.
2. If the chart is on a page with its source data, it can be printed alone, filling the page, or the page can be printed as it appears on the screen, showing both chart and data.
   a. To print the chart alone on a page, click the chart so you can see the translucent frame. Print as usual. The chart will appear as in #1 above.
   b. To print the worksheet as it appears on the screen, click any cell on the worksheet. Click the Office Button in the top left corner of the screen, then click the arrow beside the Print icon in the menu, and click Print Preview button to view your page printing as it appears on the screen. Use Page Break Preview to adjust page breaks if necessary before printing.

Add a trendline and its equation to a chart

Trendlines are used to display trends in data over time. You can extend a trendline in a chart beyond the actual data to attempt to predict future values.

1. Click the chart area to select the chart, and click the data series you wish to analyze.
2. Click to view the Layout Ribbon, and click the Trendline button in the *Analysis* group.
3. A list of trendline types appears. Select the type of line you think best expresses the data (linear, exponential, etc.). The selected trendline appears on the chart.

4. Select the trendline by clicking the dropdown arrow in the Current Selection group, and clicking the name of the trendline. (You cannot select the trendline by clicking it directly.)

5. Click the Trendline button in the Analysis group again, and click “More Trendline Options” at the bottom of the list.
   a. On the Format Trendline box, click the checkbox at the bottom marked “Display equation on chart”. The equation will be displayed in slope-intercept form (y=mx+b).
   b. If desired, also click the box marked “Display R£ values on Chart”. The R£ value is an indication of how well the line fits the data. Values closer to 1 are better, and mean that predictions using the equation are more likely to be accurate.

Add a Sparkline to a data table

Sparklines are mini-charts that fit inside a single spreadsheet cell. They are useful to give a snap picture of a trend over time, and they are often incorporated into dashboard-style reports.

1. Select the row or column of data you wish to analyze.
2. On the Insert tab, click the Line, Column or Win/Loss button in the Sparklines group. (Choose Win/Loss for data that has both positive and negative values.)
3. The Create Sparklines dialog box appears. Click the spreadsheet cell where you want to place the Sparkline. The Sparkline appears in the designated cell.
4. If you want Sparkline for many lines in a data table, you can create the first one and then use the fill handle (Class 1) to copy the Sparkline into the cells below.
Practice Exercises

1. Type a spreadsheet with the following data:

<table>
<thead>
<tr>
<th>SALES</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAN</td>
<td>5947</td>
<td>5540</td>
<td>6128</td>
<td>9988</td>
</tr>
<tr>
<td>FEB</td>
<td>5559</td>
<td>5380</td>
<td>6284</td>
<td>9378</td>
</tr>
<tr>
<td>MAR</td>
<td>5487</td>
<td>5020</td>
<td>6725</td>
<td>9128</td>
</tr>
<tr>
<td>APR</td>
<td>5740</td>
<td>5670</td>
<td>5673</td>
<td>7050</td>
</tr>
<tr>
<td>MAY</td>
<td>5396</td>
<td>4787</td>
<td>4401</td>
<td>6822</td>
</tr>
<tr>
<td>JUN</td>
<td>4918</td>
<td>4517</td>
<td>4650</td>
<td>6075</td>
</tr>
<tr>
<td>JUL</td>
<td>4718</td>
<td>4993</td>
<td>4328</td>
<td>6080</td>
</tr>
<tr>
<td>AUG</td>
<td>4809</td>
<td>4587</td>
<td>4102</td>
<td>6397</td>
</tr>
<tr>
<td>SEP</td>
<td>4777</td>
<td>3488</td>
<td>5155</td>
<td>7333</td>
</tr>
<tr>
<td>OCT</td>
<td>6126</td>
<td>3095</td>
<td>2385</td>
<td>7377</td>
</tr>
<tr>
<td>NOV</td>
<td>5501</td>
<td>5286</td>
<td>4421</td>
<td>6792</td>
</tr>
<tr>
<td>DEC</td>
<td>4109</td>
<td>3791</td>
<td>7194</td>
<td>5917</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c.  Create a chart title reading "Annual Sales".
d.  Position the legend below the chart.
e.  Drag the chart below the data table.
f.  Print the chart alone on a page (or use Print Preview to view it that way.)
g.  Print the chart on the page with the data table (or use Print Preview to view it that way.)
h.  Stretch the chart by the lower right hand corner so that it is as wide as possible in the screen. If you cannot clearly see the lines, stretch the chart taller until they are clear.
i.  Move the chart to a separate chart page.
j.  Change the color of the Year 1 columns from blue to orange (or a color you prefer!) Add a 3-D effect to this series.
k.  Change the color of the background (Plot Area).
l.  Change the column chart to a bar chart. How much of your custom formatting carries over?
m.  Go back to the page with your data on it. Using the same data, create a stacked column chart with the years along the horizontal access.

2. Open the ongoing Household Budget project.

<table>
<thead>
<tr>
<th>A</th>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Electricity</td>
<td>$ 69</td>
</tr>
<tr>
<td>3</td>
<td>Phone/Internet</td>
<td>$ 65</td>
</tr>
<tr>
<td>4</td>
<td>Call Phone</td>
<td>$ 34</td>
</tr>
<tr>
<td>5</td>
<td>Mortgage</td>
<td>$ 526</td>
</tr>
<tr>
<td>6</td>
<td>Gas</td>
<td>$ 28</td>
</tr>
<tr>
<td>7</td>
<td>Gasoline</td>
<td>$ 60</td>
</tr>
<tr>
<td>8</td>
<td>Groceries</td>
<td>$ 120</td>
</tr>
<tr>
<td>9</td>
<td>Cable</td>
<td>$ 15</td>
</tr>
<tr>
<td>10</td>
<td>Total</td>
<td>$ 1,559</td>
</tr>
</tbody>
</table>

c.  Turn off the legend.
d.  Add data labels as follows:
   i.  Position should be Outside End
   ii. Display Category Name and Value
   iii. Show Leader Lines

e.  Set rotation to 90 degrees.
f.  Move the chart onto its own page.
g.  Experiment with the Chart Styles on the Design Ribbon. Find a style you like.
h. Right-click your pie chart and choose Format Data Series from the menu. 
Experiment with the 3-D Formats: 
   i. Use bevels to turn your pie into a Frisbee (try the Circle bevel with numbers near 50.) What other bevels do you like? 

ii. Try out the Surface effects. What happens if you select Dark Edge? Warm Matte? Powder? Clear? 
   i. Save your workbook.

3. Type a spreadsheet with the following data:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Buffalo</strong></td>
<td>6773</td>
<td>8525</td>
<td>7591</td>
<td>7600</td>
<td>8492</td>
<td>7709</td>
<td>7608</td>
<td>8574</td>
<td>7442</td>
<td>8215</td>
<td>9001</td>
<td>6390</td>
</tr>
<tr>
<td><strong>California</strong></td>
<td>30854</td>
<td>33972</td>
<td>35343</td>
<td>39464</td>
<td>39816</td>
<td>40806</td>
<td>43392</td>
<td>38474</td>
<td>41350</td>
<td>44340</td>
<td>27215</td>
<td></td>
</tr>
<tr>
<td><strong>Florida</strong></td>
<td>19018</td>
<td>42293</td>
<td>31958</td>
<td>27024</td>
<td>28809</td>
<td>23364</td>
<td>27122</td>
<td>27131</td>
<td>21326</td>
<td>28551</td>
<td>30341</td>
<td>15794</td>
</tr>
<tr>
<td><strong>Michigan</strong></td>
<td>8605</td>
<td>12624</td>
<td>10338</td>
<td>12376</td>
<td>11209</td>
<td>12388</td>
<td>12161</td>
<td>13077</td>
<td>12668</td>
<td>12810</td>
<td>12460</td>
<td>10793</td>
</tr>
<tr>
<td><strong>New York</strong></td>
<td>11615</td>
<td>18178</td>
<td>13859</td>
<td>15407</td>
<td>15550</td>
<td>16407</td>
<td>15710</td>
<td>16149</td>
<td>14297</td>
<td>15730</td>
<td>17097</td>
<td>12103</td>
</tr>
</tbody>
</table>

a. Use the Chart Wizard to create a line chart. 
   i. Use the Line with Markers style. 
   ii. Drag the chart below the data table. Use handles to make the chart about the same width as the data table. 
   iii. Change the font size for all text on the chart to 12 points. 
   iv. Add a trendline to calculate a linear equation for the Buffalo sales. Display the equation on the chart. 
   v. Format the California line to have purple circles and a purple line rather than the colors and shapes it started with. 

b. In the column to the right of your data table (probably column N), create Sparklines for each city’s sales. 
   i. Try out all three types of Sparkline (Line, Column and Win/Loss). Which do you think shows the information most clearly? After experimenting, change all Sparklines back to Line. 
   ii. Place a marker on the high and low month for each city. Format the high marker green and the low marker red. 
   iii. Select all Sparklines and set them to have the same vertical axis. (Remember you need to set both the Vertical Axis Minimum and the Maximum.) How do the lines change? In this case, are the month-to-month changes clearer or less clear when all cities are plotted on the same vertical axis?