Pie Charts are fun again!

PC Guy:
“This light-gray area can represent hang out time, whereas this dark-gray area can represent just kicking in”

Mac Guy: “Yeah, no, I feel like I was there.”
What You’ll Learn Today

– What are spreadsheets?
– Entering and formatting data
– Excel as a convenient Desk Calculator
– Using decision logic to make calculations dependent on data inputs

Why spreadsheets?

Spreadsheets was the first killer-app.
Triumph of the Nerds Video
– Apple 2 36:00 -- 40:00
– VisiCalc 40:00 -- 45:05

What do Spreadsheets do?
– Viewing/organizing data
– Calculations related to that data
– Tabulating results for record keeping
– Data-based analysis -- what-if scenarios
– Charting/Graphing
Example:
A Spreadsheet Calculation

Consider this example:

What are the…
– Inputs
– Process
– Outputs

Now let’s build our own in Excel…

Excel Data Entry…

Let’s input some data for several cars:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cost of Gas/Gallon</td>
<td>$3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Annual Miles Driven</td>
<td>5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Years of Operation</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Model</td>
<td>Price</td>
<td>HWY MPG</td>
<td>Annual Fuel (Gallons)</td>
</tr>
<tr>
<td>8</td>
<td>Honda Civic Hybrid</td>
<td>$23,800</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Subaru Forester</td>
<td>$20,295</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Chevrolet Cobalt</td>
<td>$14,990</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toyota Prius</td>
<td>$22,400</td>
<td>48</td>
<td></td>
</tr>
</tbody>
</table>

Click on a cell, and start typing...
Use formatting menu bar:
Formula Bar

The formula bar allows entry of text, numbers, or formulas.

For example when cell D8 is selected
the formula bar shows:

```
=SUM2/C7
```

Creating and Using Formulas

A formula is a mathematical expression, built with the mathematical operators:

+ Addition
- Subtraction
* Multiplication
/ Division
^ Exponentiation
Creating and Using Formulas

Example: Calculating annual fuel consumption:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Gas/Gallon</td>
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<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The formula entered in cell D7 is:

\[ \text{Annual Fuel (Gallons)} = \frac{\text{B2}}{\text{C7}} \]

Note that formulas always start with the = sign.

Formula Syntax

Syntax refers to specifying our ideas in the form that the software/language expects.

Syntax rules in Excel formulas:
- Formula can consist of operators, function names, cell references, and cell names
- Always begins with an = sign
- Must use Excel operator precedence
Operator Precedence

The arithmetic operators will be evaluated in this order:

<table>
<thead>
<tr>
<th>Precedence</th>
<th>Operator</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>%</td>
<td>Percentage</td>
</tr>
<tr>
<td>2</td>
<td>^</td>
<td>Exponentiation</td>
</tr>
<tr>
<td>3</td>
<td>*, /</td>
<td>Multiplication, Division</td>
</tr>
<tr>
<td>4</td>
<td>+, -</td>
<td>Addition, Subtraction</td>
</tr>
</tbody>
</table>

If you need a different precedence/order, use parenthesis to make the order clear.

Formulas: Apply to multiple data

You can drag a formula to apply it to multiple cells.

Example:

<table>
<thead>
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<td>10</td>
<td>Toyota Prius</td>
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<td></td>
</tr>
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</table>

Be ware: cell references in formulas are relative by default.
Other Quick Calculations…

Other calculations and what-if scenarios…
– Annual Fuel Consumption
– Annual Fuel Cost
– 10 year Operating Cost
– Cost per year
– Cost per mile

What You Learned Today
– Spreadsheets, the killer app
– Data entry, formatting
– Arithmetic and Formulas
Announcements and To-Do

- HW 02: HTML due 9/22
- Video Tutorials:
  - Excel Tutorial - Spreadsheet Basics:  
    http://www.youtube.com/watch?v=8L1OVkw2ZQ8
  - Excel Tutorial - Editing Data, Formatting  
    http://www.youtube.com/watch?v=lJqfZw5j2R0
  - Excel Tutorial - Arithmetic  
    http://www.youtube.com/watch?v=rpCaVZCURZQ
  - Excel Tutorial - Using Functions  
    http://www.youtube.com/watch?v=sYxiYzx0_yY&NR