Retirement Investment

**Observation**

1. The spreadsheet is pretty bare in that it has only a few cells, all that are related to a professional retirement account. The first tab "Display" has basic parameters and two calculated fields that are just to help us understand the data in better terms.
2. The second tab "Data" has a few headings and what appears to be a starter row of data but it is really missing anything substantial.

**Demonstration**

Explain how we want to extend the retirement calculator from our senior year (age 21 with $0 saved) all the way to a potential retirement at 65 (it used to be that people retired a bit earlier than 65 but now many people are retiring later).

1. Increase the age by +1 to each subsequent cell. Fill down.
2. Increase the year by +1 to each subsequent cell Fill down.
3. Take the contribution from as 12x the monthly contribution amount from the other tab. Fill down and see how the amount gets messed up. Show how the equation changes by incrementing the reference cell D4 to D5, D6, D7, etc. Fix by prepending the cell with $ which means to keep this exact cell.
4. Take the matching as 12x the monthly matching amount from the other tab. Fill down.
5. Set the return rate by referencing the correct cell in the "Display" tab. Use $ and fill down.
6. Set the dividend amount using the previous year's balance and the dividend rate from the Display tab. Fill down.
7. Next, set a formula for the balance that is last year's balance plus the annual contributions, matching contributions, dividends, and this year's growth. Fill down.
8. Finally, fill in the growth column that gives a dollar amount for how much the account grew dollars wise. Fill down.
9. Let's finish up by summing all of the total contributions, matching contributions, and dividends. This will help us grasp how much the account grew due to its return, versus our contributions.

**Improvements**

The table we created was very informative but the data can be displayed better in a chart.

1. DEMO: Add a chart with Insert → Chart and switch it to a Line chart. Set the data range by clicking on the four-square field and then dragging and dropping over the data table. Be careful to select the header rows but *not* the summary rows at the bottom.  
     
   Add the Year or Age as the x-axis, then go and remove all of the y-axis except for Balance.

Customize by adding a title and messing with the tics and gridlines.

1. TASK: Tell the students to create a similar chart that shows year-by-year Growth.  
     
   Emphasize the overall account value and how much money is gained via growth in comparison to the contributions. Make sure that the students understand the importance of investing early and being consistent throughout their careers.

**Next Level**

Bring up the CSB Memory Verses Spreadsheet. Explain that Professor Tallman is involved with a church ministry for boys and that his specific responsibility is to oversee the 3rd-6th grade curriculum. There are a bunch of "Modules" (e.g., workbooks) on all sorts of topics from Camping to First Aid to Gardening and that each module contains 4-5 Bible verses that are somehow related to the topic. There are many volunteers who help write these modules and they all seem to choose the exact same verses. So one of Professor Tallman's jobs is to encourage everyone to spread the Bible verses they choose throughout the Bible. He created a spreadsheet to help him do this.

Show how new data is added to the spreadsheet on the Database Tab.

Show the user interface on the Lookup Tab including the Repeated Passages List, the Passage Lookup List, and the Bible Distribution Histogram.

Then explain that a lot of intermediate calculations have to be done in order to create the user interface. Show the Scratch Tab but explain that it's probably a little dry and really long to go through all the calculations. So instead, there's a formula example sheet that shows how the bulk of the work was done.