

Google Sheets

[Create a new spreadsheet](#)

[Converting/Opening Excel Sheets](#)

[Basics](#)

[Naming a cell and range](#)

[Adding Text to a Cell](#)

[Moving Rows and Columns](#)

[Copying Cell Data](#)

[Sheets Tab](#)

[Formatting Sheet](#)

[Text wrapping](#)

[Cell Text Alignment](#)

[Paint Roller](#)

[Cell border](#)

[Cell fill](#)

[Theme/Alternating Colors](#)

[Insert Menu](#)

[Insert rows/Columns etc](#)

[Insert Form](#)

[Insert Image](#)

[Insert Link](#)

[Insert Checkboxes](#)

[Insert Comments](#)

[Insert Notes- Remove Notes](#)

[Share Permissions](#)

[Version History](#)

[Formatting Sheet](#)

[View- Gridlines/Freeze Panes](#)

[Conditional Formatting](#)

[Sort Data \(top bar\).](#)

[Filter Toolbar icon](#)

[Filter Views](#)

[Slicer](#)

[Google Sheets Pivot Table](#)

[Data Validation](#)

[Data Toolbar](#)

[Functions/Formulas Sheet](#)

[What are functions and formulas?](#)

[Format Number](#)

[Create a Formula](#)

[Creating a Function](#)

[Copying Cells with Functions](#)

[Creating Absolute cell references](#)

[Insert chart](#)

[Google Sheets Explore Tool](#)

<p>All activities can be created using a practice Google Sheet. To get the copy of the sheet go to rebrand.ly/GoogleSheetPractice</p>	
<p>Create a new spreadsheet</p> <p>There are three ways to create a Google Doc.</p> <ol style="list-style-type: none"> 1. Option 1- Sign into your Google Account (SEE PAGE), Go to the Google Apps icon ("waffle" shape of 9 dots) next to the Google Sign in icon, click on the Google Sheets icon. 2. Option 2- Go to Sheets.Google.com, You can choose a template to create a Google Sheet or select the rainbow + to create a blank document. 3. Option 3- In the address bar URL type Sheets.new. <p>Once you have created a new blank document- Rename the file by creating a name in the top left text box next to the sheets icon.</p>	<p>https://youtu.be/KH41f8TD0-s</p>
<p>Converting/Opening Excel Sheets</p> <ol style="list-style-type: none"> 1. In Drive, find the Excel file. (The logo is a green X.) 2. Double click and the file will open with a black border, and Open With will be at the top of the page. 3. Click on the Open With dropdown menu and select Google Sheets. 4. The file will be opened with Google Sheets but will remain in 	<p>https://youtu.be/0b4VI6c0abM</p>

<p>Office Excel Format.</p> <p>To Convert the file to Google Sheets format - With the Excel file open in Google Sheets, go to the file menu and choose Save as Google Sheets. Doing so will create a new copy of the file in Google Sheets format.</p>	
<h2>Basics</h2>	
<p>Naming a cell and range</p> <p>Google Sheets are created using a series of columns and rows that create cells. A Row is a horizontal set of cells labeled numerically, and a Column is a vertical set of cells labeled alphabetically. Cell is a single point of data where a column and row intersect.</p> <p>Each cell in the practice Google Sheet has a name. The cell is named for the column letter and then the row number. A1</p> <p>Range: A range of cells across a row, a column or both. A range of cells is written with the first cell name, separated by a colon, and the final cell. A3:A7</p> <p>In the Practice Google Sheet look for a range of cells highlighted yellow, and mark them as a range.</p>	<p>https://youtu.be/ONMD3MPsEWE</p>
<p>Adding Text to a Cell</p> <p>In the Practice Google Sheet click on the top left cell on the sheet (A2) to start adding text. Try formatting the text using the features below.</p> <p>An active cell will have a blue border, Type your name in the cell. When you are done entering the data-</p> <ul style="list-style-type: none"> • If you press enter you will move down. • If you press the tab key you will move right. • Use the arrow keys to move in any direction. • Click on any cell to jump directly to that cell. <p>For cells that already have data-</p> <ul style="list-style-type: none"> • Clicking the cell ONCE will highlight the entire cell and will replace 	<p>https://youtu.be/VV69Xo_XpL0</p>

<p>the data if you type.</p> <ul style="list-style-type: none"> Clicking the cell TWICE enters into the cell, and allows you to edit the data in the cell without replacing it. <p>Formatting Text Similar to a word processor Google Sheets allows you to format the text. Using the top toolbar you can change:</p> <ul style="list-style-type: none"> Font- Click on the default font style and change the font. Font size - select the 10, and choose the size from the drop-down menu. Bold Italic Strikethrough Font Color <p>Select the format menu and select clear formatting to clear the text format.</p> <p>To add an “enter” within a cell, use CTRL+ Enter on a pc, or COMMAND+Enter on a mac.</p>	
<p>Moving Rows and Columns</p> <p><u>Rows-</u></p> <p><u>To Highlight all cells in a row-</u> To highlight all cells in a row, click on the number to the left to highlight the entire row.</p> <p><u>Highlight multiple rows-</u> Click the number once, and before letting go hold the control/command key and select each row by clicking on the row number.</p> <p>To select an entire “list” of cells. Click on the number of the first row, hold on the shift key and click the number of the last row.</p> <p><u>Move an entire row-</u> Click on the number heading of the row, hover over the row until a hand icon appears. Click and drag the row to the desired location and release. Or Highlight the row to move, click on the edit menu, select move up or move down.</p> <p><u>Delete an entire row-</u> Highlight the entire row, right click, click on delete row. OR highlight the entire row, click on the edit menu, select delete row.</p>	<p>https://youtu.be/cFRU2e1Fjl</p>

Add an entire row - **Highlight the row** close to the row to highlight, **right-click**, from the menu **select insert 1 row** above or below.

Change the height of a row

Columns-

To Highlight all cells in a column- To highlight all cells in a row, **click on the letter heading** on top of the column to highlight the entire column.

Highlight multiple columns- **Click the letter heading once**, and before letting go **hold the control/command key** and **select each column** by clicking on the column letter.

To select an entire "list" of cells. **Click on the letter** of the first column, **hold on the shift key** and click the letter of the **last column**.

Move an entire column- **Click on the letter** heading of the column, **hover over the column** until a hand icon appears. Click and **drag the column** to the desired location and release. Or Highlight the column to move, click on the edit menu, select move right or move left.

Delete an entire column- **Highlight the entire column, right click, click on delete column**. OR highlight the entire column, click on the edit menu, select delete column.

Add an entire column- **Highlight the Column** close to the row to highlight, **right-click**, from the menu **select insert 1 column** to the left or to the right.

Change the width of a column

In the **Practice Google Sheet** practice moving, adding and deleting rows and columns.

Copying Cell Data

In the **Practice Google Sheet** practice Sheet, we are going to practice copying cells. In the same top left cell type a word.

Make sure the active cell is highlighted with the dark blue border, in the bottom right of the activated cell is a blue square.

<https://youtu.be/OUIKogxykJ4>

<p>Copy cell data- In the active cell, drag the blue square to a range of cells to copy the data to that range of cells.</p> <p>Creating an ordered list- In the first active cell, type in a word that is part of a list. For example weekdays, months, alphabet etc. When you click and drag the blue square it will automatically finish the rest of the list.</p> <p>If you type a word in front of the numbered list, if you highlight the first two options and drag the square it will continue the numbering with the word in front.</p>	
<p>Sheets Tab</p> <p>Google Sheets consists of small sheets as well as the main spreadsheet. The Sheets are named on a tab on the bottom of the full spreadsheet.</p> <p>Add a sheet-</p> <ol style="list-style-type: none"> 1. Click on the + symbol on the bottom of the spreadsheet to add a new sheet. <p>Sheet menu-</p> <p>Click on the triangle on the new sheet tab to open the sheet menu. From this menu you can</p> <ul style="list-style-type: none"> • Delete- Delete the current sheet • Duplicate- Make a copy of the sheet. • Copy- Copy the tab to a brand new spreadsheet or an existing spreadsheet. • Rename- rename the sheet • Change Color- Change the color of the sheet tab- this is a thin line on the bottom of the name. • Protect Sheet- set permissions for specific sheets, where only certain people can move and edit data. • Hide Sheet- This will hide the sheet from the active document, however, everyone still has access to the sheet if they go to the view menu and select the hidden sheet to view. • Move right or Move Left <p>You can move the sheet by dragging it to a different place. In the Practice Google Sheet create, name, color and delete a Google Sheet.</p>	<p>https://youtu.be/KP9IhbTmmNg</p>
<p style="text-align: center;">Formatting Sheet</p> <p>In the Practice Google Sheet, go to the Formatting sheet on the spreadsheet. https://youtu.be/BYGO0HPUDgE</p>	

All of these steps can also be completed using the **Format menu** in the menu bar.

Text wrapping

- Overflow-Text is in one cell, but will overflow to adjacent empty cells. If you type in the empty cells, the adjacent cell text will appear cut off.
- Clip- Text will be cut off inside the width of the cell.
- Wrap Text - Will keep the width of a column, but will extend the row to fit the text.

In the Practice Google Sheet, go to the Formatting sheet and practice changing the text wrapping. Change the very first description cell to Text Wrapping and change the column width.

<https://youtu.be/G9ONLmrqxA>

Cell Text Alignment

In each cell text can be formatted in three different ways using the tools on the top toolbar.

1. Highlight the text or row/column to be formatted.
2. Select from the top toolbar the horizontal align, vertical align or text rotation icon.
3. Three options will appear as a drop down, select from these options-
 - Horizontally Align text- Left, center or right.
 - Vertically Align text- Top, middle or bottom.
 - Text Rotation- Tilt up, Tilt down, stack vertically, rotate up, rotate down or create a custom angle.

In the **Practice Google Sheet**, go to the **Formatting sheet** and align the “animal” column of information to the center and middle of the cell.

<https://youtu.be/3az0R6qxTo4>

Paint Roller

Copy text formatting from one cell to another cell.

1. **Highlight the cell** you would like to match the formatting.
2. On the toolbar, **click the “paint format” icon**.
3. The cursor will turn into a paint roller to show that the format has been copied.
4. **Highlight the text you want to apply the format to** and the formatting will be copied over.

In the **Practice Google Sheet**, go to the **Formatting sheet** and highlight the first description cell and use the paint format icon to format the rest of

<https://youtu.be/G9ONLmrqxA>

the text.	
<p>Cell border</p> <ol style="list-style-type: none"> 1. Highlight the cell or cells you would like to format. 2. In the toolbar select the cell border button, select the style of border for the highlighted section. Note- borders will be formatted for the entire selected area. 3. Select the border line color 4. Select the border line style <p>In the Practice Google Sheet, go to the Formatting sheet and create a border around the description as well as the animal information.</p>	<p>https://youtu.be/quAtU0PJLn4</p>
<p>Cell fill</p> <ol style="list-style-type: none"> 1. Highlight the cell or cells you would like to change the background color. 2. On the top toolbar click on the fill bucket icon, select the color for the fill color. 3. You can also select a custom color from the color menu. <p>In the Practice Google Sheet, go to the Formatting sheet and fill the animal cells with a different background color.</p>	<p>https://youtu.be/2p7O2lr_10</p>
<p>Theme/Alternating Colors</p> <p>Google sheets has themed colors for headers, alternating fill colors to easily fill all multiple cells at the same time.</p> <ol style="list-style-type: none"> 1. Highlight the range you would like to format with alternating colors (you can adjust the range in the alternating colors menu). 2. Select alternating colors from either the format menu or from the color fill icon > alternating colors. 3. An alternating color menu will appear on the right of the screen. From this menu- <ul style="list-style-type: none"> • Adjust the data range • Select a different header or footer color • Select a color pattern from the default color styles or • Create a custom color pattern of your own. <p>An alternative to alternating colors is to select a theme for the sheet. The theme will change the colors of not just cells, but also charts, tables and cells.</p>	<p>https://youtu.be/MwvpkDA7LC8</p>

<ol style="list-style-type: none"> 1. Select the format menu 2. Select theme 3. On the theme menu on the right select an overall theme color scheme. The theme will not fully implement unless there are charts and graphs. <p>In the Practice Google Sheet, go to the Formatting sheet and add alternating colors to your sheet.</p>	
<h2 style="text-align: center;">Insert Menu</h2>	
<h3>Insert rows/Columns etc</h3> <p>From the insert menu, you can add rows, columns and cells. Look at the section above to see how to add rows and columns by right clicking.</p> <ol style="list-style-type: none"> 1. Select the insert menu 2. From the drop-down menu click on adding rows or columns. 	https://youtu.be/N5vHDrDuhY8
<h3>Insert Form</h3> <p>You can insert a Form sheet to the already created spreadsheet. Create the form questions right in Google Sheets. The Google Form will be linked to the Google Sheet and will be housed in the same drive folder.</p>	
<h3>Insert Image</h3> <p>You can insert an image into Google Sheets.</p> <ol style="list-style-type: none"> 1. Click on the cell where you want to insert an image. 2. Select the insert menu, and select insert image. 3. Choose either image over cells or insert image in cell. <p>You can add an image by</p> <ul style="list-style-type: none"> • Uploading from your computer • Camera image • By URL link • From Google Photos • Google drive • Or search right from Google Image search <p>*All Google image search items are labeled for reuse.</p> <p>In the Practice Google Sheet, go to the Formatting sheet and insert an image for each creature on the list in the B column.</p>	https://youtu.be/_isXP8EpUgk

<h3>Insert Link</h3> <p>Insert a link to another site or file in the Google Sheet.</p> <ol style="list-style-type: none"> 1. Select the cell to insert the link and type the text to reference. 2. Highlight the reference text. 3. From the insert menu (or the link icon on the toolbar) select insert link. 4. Add the website link, and click apply. 5. The link will now be active. <p>In the Practice Google Sheet, go to the Formatting sheet and insert link for one of the creatures to an external site.</p>	https://youtu.be/3hQP5o5gB3Q
<h3>Insert Checkboxes</h3> <p>Insert clickable checkboxes to keep track of information or tasks.</p> <ol style="list-style-type: none"> 1. Highlight the column or row to insert checkboxes. 2. Select the insert menu. 3. Select checkboxes. Clickable checkboxes will then be added to the highlighted cells. <p>In the Practice Google Sheet, go to the Formatting sheet and insert checkboxes in column C next to the creature images.</p>	https://youtu.be/y4xbpwAAgE
<h3>Insert Comments</h3> <p>Comments can be added to individual cells.</p> <ol style="list-style-type: none"> 1. Select the cell to leave a comment. 2. From the insert menu select insert comment (or click on the comment icon on the toolbar). 3. To send a comment to a specific person, type @ and the person's email. 4. Click on the green comment button, a triangular flag will appear in the top right corner of the cell with a comment. 5. Hover over that cell and the comment will appear. Click on the Resolve button to clear the comment. 6. To see all comment history for the document, click on the comment icon next to the green share button in the top right corner of the Google Sheet. <p>To delete a Comment</p>	https://youtu.be/2KukJbCMcPk

<ol style="list-style-type: none"> 1. Click on the cell until the comment appears. 2. Click the three dots on the top right corner of the comment. 3. Click on delete comment and delete. 	
<p>Insert Notes- Remove Notes</p> <p>You can also leave a note about particular information instead of a comment to others.</p> <ol style="list-style-type: none"> 1. Select the cell to leave a note. 2. From the insert menu select insert note. 3. Type the note in the space provided. 4. Click off of the cell, a black triangular flag will appear in the top right corner of the cell with a note. 5. Hover over that cell and the note will appear. <p>To delete a note</p> <ol style="list-style-type: none"> 1. Right click on the cell 2. Click on Clear notes or 3. Select clear notes from the edit menu 	<p>https://youtu.be/VMvBza-7MQM</p>
<p>Share Permissions</p> <p>You can invite someone to become an editor on your Sheet, which allows people to collaborate on a sheet in “real-time.”</p> <ol style="list-style-type: none"> 1. In the top right corner of the Google Sheet, select the green Share button. 2. Type in the name or email address of the person you would like to share the file with. <ol style="list-style-type: none"> a. A message option will appear. You can write a message that will be sent with the file through email. If you choose not to email the file, click the “<i>notify people</i>” option off. 3. Next to the email, select the pencil icon to change sharing permissions. There are three main categories. <ul style="list-style-type: none"> • View- people can view, but can’t make any changes to the file itself, or share the file with others. They can make their own copy. • Comment- People can make comments and suggestions in the document, but can’t share the file with others. • Edit- people can make changes, accept or reject suggestions and share the file with others. 	<p>https://youtu.be/9WdHW48fIE8</p>

*To access more settings- select the “Advanced Options” in the bottom right corner. You can prevent editors from changing access and adding new people as well as disable the option to download or copy the file when shared.

4. When you are finished click **done**.

The shared file will be in the recipient's “shared with me” drive. They can open the file and collaborate in real time. The collaborator's icon will appear above the toolbar, the active cell will be outlined in a different color.

SHARE USING A SHAREABLE LINK

If you don't have a specific person you want to share a file with, or the number of people you want to share with is large, share with a shareable link.

1. In the top right corner of the Google Sheet, select the green **Share** button.
2. A pop up to *share with people and groups* will appear. Use the drop-down arrow to change the setting for the shareable link. (This is separate from the “share” button settings.)
3. **Select** if you want members in your domain (ours is APS) to **edit, comment or view** the sheet. Remember if you select *edit* anyone can change the document.
4. If you want to share the document outside of the domain, **select more**- you can then make the document accessible to anyone with the link, or public on the web. Before clicking on save, be sure to **change the settings for access to view, edit or comment** using the blue drop down menu.
5. Select **save**. Select the **copy link** and send that link to anyone you want to share the document with.

Version History

You can see all the changes that have been made in a Google Sheet over time.

1. In the top menu bar select the **File** menu, Select **Version History** and then **See Version History**.
2. A new pane will open on the right. You can select different versions of the Google Sheet to see any changes that have been made.
3. You can either **Make a copy** of a different version or **Restore** a previous version of the sheet.

<https://youtu.be/YkNZsrYt5AI>

<h2 style="text-align: center;">Formatting Sheet</h2> <p style="text-align: center;">In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet. This will give you data that can be manipulated and filtered.</p>	
<p>View- Gridlines/Freeze Panes</p> <ol style="list-style-type: none"> 1. On your computer, open a spreadsheet in Google Sheets. 2. Select a row or column you want to freeze or unfreeze. 3. At the top, click View > Freeze. 4. Select how many rows or columns to freeze. <p>Or- select the thicker gray bands in the top right corner of the Google Sheet and drag to where you want the freeze panes to go.</p> <p>In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet, freeze the top row.</p>	https://youtu.be/sbxWx709DcA
<p>Conditional Formatting</p> <p>Conditional formatting changes the color of a cell depending on the value inside the cell.</p> <ol style="list-style-type: none"> 1. Select the cells you want to apply Conditional formatting to. 2. Click Format and then Conditional formatting. A toolbar will open to the right. 3. Create a rule for the conditional formatting. <ol style="list-style-type: none"> a. Single color: Under "Format cells if," choose the condition that you want to trigger the rule. Under "Formatting style, choose what the cell will look like when conditions are met. b. Color scale: Under "Preview," select the color scale. Then, choose a minimum and maximum value, and an optional midpoint value. To choose the value category, click the Down arrow. 4. Click Done. <p>In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet, apply conditional formatting to one of the percentage columns.</p>	https://youtu.be/DOvAV08UOZ4
<p>Sort Data (top bar),</p> <p>Sort a Column (sort sheet)</p> <ol style="list-style-type: none"> 1. Click on the letter of the column you want to sort the sheet by. 2. Next to the letter a drop-down arrow will appear. Click on the 	https://youtu.be/B-jOrCVaxNs

<p>drop-down arrow.</p> <p>3. Select to either sort the sheet by A to Z, or Z to A. (Note: sheets will sort headers unless the headers are frozen).</p> <p>Sort a range-</p> <ol style="list-style-type: none"> 1. Highlight the group of cells you'd like to sort 2. Click on the Data menu, select sort range. 3. If you have a header title, select header has a row. 4. Create a sorting order. 5. Then click sort. <p>Note: Sorting the range will not sort the entire sheet, only the range selected.</p> <p>In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet, Sort one of the columns.</p>	
<p>Filter Toolbar icon</p> <ol style="list-style-type: none"> 1. Click on the filter icon on the top toolbar. 2. A filter icon will appear on each heading, click on the column you want to filter the sheet by. 3. From the menu select how to filter the data- <ol style="list-style-type: none"> a. Filter by color- choose which text or fill color to filter by when there is conditional formatting. b. Filter by condition- choose conditions from the drop-down c. Filter by values- Data points are already created for each column, uncheck or check the box next to the data points to view. d. Click the filter icon to turn the filter off. <p>Filter a range of data</p> <ol style="list-style-type: none"> 1. In the top menu select Data. 2. Then select Sort Range. 3. In the Pop-up menu choose the columns or rows you would like to sort the data by, you can sort by more than one option. <p>In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet, use the filter to filter information.</p>	<p>https://youtu.be/d-ID_3woMaM</p>
<p>Filter Views</p> <p>Another way to view just a particular subset of data is to use filter view. Filter views are similar to filters but allows you to name and save filters.</p> <ol style="list-style-type: none"> 1. Click Data on the menu bar 	<p>https://youtu.be/R1brX_QNw_w</p>

<ol style="list-style-type: none"> 2. Select filter views, a new window will open to the right. 3. Select either <ol style="list-style-type: none"> a. Create a new filter view - Allows you to create a filter after the “filter” view appears. Filter information, then name the filter in the top bar, close the filter view (Filter view will have a dark border.) b. Save a filter - Allows you to save a filtered view of the sheet. When the data is already filtered. 4. To access saved filters either go to Data > Filter views> and select the named filter from the menu or select the drop down on the filter icon to reveal the list. 5. Delete a filter view- open the filter view and click on the cog wheel and select delete. <p>In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet, create filter view with one set of data</p>	
<h3>Slicer</h3> <p>Slicers are quick drop down menus to filter data by specific information.</p> <ol style="list-style-type: none"> 1. Select the data menu > Slicer 2. Select the column to filter data 3. Choose to apply to pivot tables 4. Move the slicer to anywhere on the sheet 5. Use the slicer drop-down to filter the data quickly <p>In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet, create a slicer using one of the column data sets.</p>	https://youtu.be/sFD6hS0AmjU
<h3>Google Sheets Pivot Table</h3> <p>Pivot tables are used to narrow down data sets.</p> <ol style="list-style-type: none"> 1. Select the cells of data you want to include on a pivot table. 2. Select the Data menu and click on Pivot table. 3. A new sheet will be created. On the right menu panel, select the rows and columns, click add and choose the values and how they should be displayed (list, sort, summarize, filter). <p>Note: There are recommended pivot tables at the top of the menu.</p> <p>In the Practice Google Sheet, go to the Filtering Sheet on the spreadsheet, create a pivot table.</p>	https://youtu.be/Ei0yyWviQbw
<h3>Data Validation</h3> <p>Data validation creates drop-downs or interactive icons in the</p>	https://youtu.be/54ifBwsYTLs

spreadsheet cells.

1. Select the data menu
2. Select on data validation

You are able to create a

- List from a range - create a drop-down list from a range.
 - List of items- create a drop-down from a list of items.
 - Number- create a drop-down of a number range.
 - Text- allows only specific text to be inputted into a cell (ie a URL)
 - Date- creates a date range
 - Custom formulas
 - Checkboxes- interactive checkboxes
3. Input data and select save. You can copy the data validation across multiple cells.

In the **Practice Google Sheet**, go to the **Filtering Sheet** on the spreadsheet, create a List of Items for a quick drop-down menu.

Data Toolbar

From the data toolbar you will be able to-

- Sort Sheets by data sets.
- Sort selected range of data.
- Turn off filters and filter views
- Data validation- Create properties for cells. (See data validation section)
- Pivot table- create a table of specific data points that can be toggled off and on (See Pivot table section)
- Name range- give a specific name to a range of cells to make formulas easier.
- Protected sheets and ranges- set permissions for a range of cells or a specific sheet.
- Remove duplicates- remove duplicate data.
- Trim whitespace-
- Group data- Group cells to be collapsed

In the **Practice Google Sheet**, go to the **Filtering Sheet** on the spreadsheet, create a named range or protect different sheets.

<https://youtu.be/Vn8kW2QsgyU>

Functions/Formulas Sheet

In the **Practice Google Sheet**, go to the **functions sheet** on the spreadsheet.
 This will give you data you can use to create formulas and functions

<p>What are functions and formulas?</p> <p>Formula- A formula is used to perform a calculation such as adding, subtracting, multiplying and dividing.</p> <p>Mathematical operators- Add (+), Subtract (-), Multiply (*) Divide (/)</p> <p>Function- A function is a predefined formula that performs calculations using a value in a particular order. Functions are created using a key function tag before adding cell references. (ie sum, average, count if etc)</p> <p>Cell reference- creating a formula or function using a particular range or cell address to pull in the data. This way if data inside a cell changes, the formula will automatically recalculate.</p>	
<p>Format Number</p> <p>To make formulas and functions calculate easier make sure to format numbers. Numbers can be formatted in a variety of ways. Format numbers using the Format menu or using the toolbar.</p> <ol style="list-style-type: none"> 1. Highlight the cells to format 2. Click on the format menu > select number and choose how to format the text <ul style="list-style-type: none"> • Number • Percentage • Scientific • Money • Date • Time • Decimals <p>(there are more subcategories available)</p> <p>*Decimal amounts can also be formatted using the arrow numbers on the toolbar.</p> <p>In the Practice Google Sheet, go to the functions sheet on the spreadsheet.</p> <p>Format the cells E4:K4 to percentages with no decimals.</p>	<p>https://youtu.be/pj5Z3l5OIT4</p>
<p>Create a Formula</p> <ol style="list-style-type: none"> 1. Select the cell that will display the calculated value 2. Type the equal sign (=) to signal a formula 3. Type the cell address (or select the cell) you want to reference. 	<p>https://youtu.be/5yQqGHKuH-4</p>

<p>That cell will have a dotted border with a specific color.</p> <ol style="list-style-type: none"> 4. Type in the Mathematical operator. (+, -, *, /) 5. Type the cell address (or select the cell) of the second cell you want to reference. 6. Press enter and the formula will calculate and display the result in the cell. (To view the formula look at the formula bar on the top of the sheet). <p>In the Practice Google Sheet, go to the functions sheet on the spreadsheet.</p> <p>Underneath the student data practice creating a formula by creating two reference cells as well as using mathematical operators.</p>	
<h3>Creating a Function</h3> <p>A function has three main parts = (equal sign) Function name (ie SUM) and argument which is usually part of a range (A1:A20). Arguments are always written within parentheses. =SUM(A1:A20)</p> <ol style="list-style-type: none"> 1. Select the cell that will display the calculated value. 2. Type the equal sign (=) to signal a function creation. 3. Type in the function name (Sum, average, max etc) 4. Type open parentheses (5. Select the range of cells to include in the function A1:A20 6. Type closed parentheses) 7. Press enter <p>In the Practice Google Sheet, go to the functions sheet on the spreadsheet.</p> <p>Find the average for all the student grades on the data sheet.</p>	<p>https://youtu.be/wPdDtDXZli4</p>
<h3>Copying Cells with Functions</h3> <p>You do not need to create a new formula for each row of a Google Sheet, Create a single formula in the top cell, and drag the formula down. This will create a relative reference- this means Google Sheets will automatically change the cell reference for each formula.</p> <ol style="list-style-type: none"> 1. Select the cell that will contain the formula or function. 2. Type in the Formula or function using the range of data as a cell reference. 3. Select the blue dot on the bottom right of the calculated cell, drag the handle over the cells you want to add the formula/function to. 4. Double click the filled cells to check their formulas for accuracy. 	<p>https://youtu.be/pWkEd22lGig</p>

<p>In the Practice Google Sheet, go to the functions sheet on the spreadsheet. Drag the average formula cell down the column to automatically calculate the average for each student.</p>	
<p>Creating Absolute cell references</p> <p>There may be times you do not want a cell reference to automatically change when you copy a filling cell. You can use an absolute reference to keep the same row or column in a formula.</p> <p>An absolute reference is kept the same with a dollar sign. \$A\$1- The column and row won't change when copied A\$1- The row will not change when copied \$A1- The column does not change when copied</p> <p>In the Practice Google Sheet, go to the functions sheet on the spreadsheet.</p> <p>After calculating the averages on the practice sheet, a general number will be determined based on the percentage grade. The formula uses a Vlookup function which states- Look up the score in the previous cell, if the percentage is within a specific range on a chart, assign the cell a number (1-4). The function in column M uses an absolute reference in order to keep referencing the same cells in the chart for the VLookup function.</p> <p>Look at the functions in columns M, U and AS to see how the functions were created.</p>	<p>https://youtu.be/iLW6nn1M4j8</p>
<p>Insert chart</p> <ol style="list-style-type: none"> 1. Select the cells you want to include in your chart. 2. Click the insert chart menu 3. Sheets will take that data and insert a chart. On the right of the screen a chart editor will appear. From the editor you can <ul style="list-style-type: none"> Change Setup <ul style="list-style-type: none"> Change chart type Update data ranges Change data series Customize <ul style="list-style-type: none"> Chart style Chart & Axis titles Series 	<p>https://youtu.be/ZKR_WYFjpr8</p>

<p>Legend Horizontal axis Vertical axis Gridlines</p> <p>To change the overall colors for the chart- select the format menu > Theme > and on the right select the theme colors.</p> <p>You can drag a chart to anywhere on the sheet or click on the three dots in the right top corner (more menu) and move the chart to a solitary sheet. You can also delete or publish the chart through the more menu.</p> <p>In the Practice Google Sheet, go to the functions sheet on the spreadsheet. Select different data and practice creating charts.</p>	
<p>Google Sheets Explore Tool</p> <p>Use the Explore feature to ask questions about the data in your spreadsheet in Google Sheets. You can also see suggestions based on your data for formatting along with charts and analysis.</p> <ol style="list-style-type: none"> 1. First select the area of the graph you would like to be analyzed. 2. In the bottom right corner of Google Sheets select the green Explore tool icon. 3. In the new window pane there will be suggestions of charts and graphs for the data. You can also ask questions about the data to generate visual representations. 	