Tricks, Tips, and Stats with Google Sheets

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Features and Tools

Conditional Formatting
Conditional formatting causes a cell to change colors based on the cell’s value (or another condition). The example below is a custom formula that will change the color of an entire row if the date in month in Column A and the day in Column B matches today’s date. (Note that there are four header rows, so the data range begins in cell A5.)

=DATEVALUE(CONCATENATE($A5,$B5))=TODAY()

Data Validation
Data validation sets limits on a cell’s contents. It can be used to create dropdown menus or add checkboxes to a sheet. Accessed by going to Data > Data validation.

Pivot Tables
Pivot tables convert sets of data into useful summaries. Create a pivot table by highlighting a range and then going to Insert > Pivot table. An easy and universally useful way to use Google Sheets to view information in a readable format is:

1. Set up a Google Form to collect responses as they occur (for daily gate counts, daily program attendance, or similar).
2. Link the Google Form to a Google Sheet.
3. Build a pivot table from the responses.
Google Apps Script
JavaScript, but for Google. The Google Apps Script editor can be accessed from within any Google Sheet by going to Extensions > Apps Script. Each function can be assigned a trigger (like "On edit" or "Every hour") that automatically runs the function.

This example will automatically fill in the date in Column B as soon as information is entered in Column D when combined with an "On edit" trigger.

```javascript
function fillDate() {
  var s = SpreadsheetApp.getActiveSheet();
  if( s.getName() == "Curbside" ) {
    var r = s.getActiveCell();
    if( r.getColumn() == 4 ) {
      var nextCell = r.offset(0, -2);
      nextCell.setValue(new Date()).setNumberFormat("MM/dd/yyyy");
    }
  }
}
```

Useful Functions

**ARRAYFORMULA**
Used to apply a formula down the entire length of a column. Useful for extracting the month, year, and more from a full date for the purpose of creating a pivot table.

This example will first check that the cell in Column A is not blank. If Column A has a value, then the formula takes the date in the same row in Column B and returns only the year.

```excel
=ARRAYFORMULA({"YEAR";if(A2:A <> "", TEXT(B2:B, "YYYY"), "")})
```
DCOUNTA
Along with its sibling DCOUNT, DCOUNTA counts the number of values that match a set of criteria. For example, a DCOUNTA formula in a spreadsheet that tracks study room use might check each row for values that match a certain month and year, and then count a value like the patron name for each matching entry.

DGET
Works like DCOUNTA, but instead of counting the number of entries that match the criteria, it instead looks for a single value that matches.

DSUM
Works like DCOUNTA, but instead of counting the number of entries that match the criteria, it adds values in a specified column. For instance, DSUM could be used to add the number of masks distributed for all rows that match a particular month and year.

The example below looks at another sheet called "Visits" for any rows where the value in the "Year" column matches the value in cell I4 (here a dropdown menu of different years created with data validation). It then adds the numbers in the column called "Patrons" for each matching entry.

=DSUM(Circulation!A:D,"Circulation",{{"Year";I4}})

INDIRECT
Converts a string into a cell reference. Can be used to allow a cell to reference itself or to reference another cell in relation to itself. The example below references a cell one row above the cell where the formula sits.

=OFFSET(INDIRECT("RC",FALSE),-1,0)
**IMPORTRANGE**
Pulls data from one spreadsheet to another. Useful for building centralized statistics spreadsheets.

**QUERY**
Uses Google Visualization API Query Language (which is similar to SQL) to filter, sort, and perform functions on data in a way that is more flexible and much broader — but also infinitely more finicky — than using a pivot table or a set of database formulas.

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**Resources**

**Google Help Center**
- Save form responses to a sheet
- Protect, hide, and edit sheets
- Add & use checkboxes
- Create a dropdown list
- Conditional formatting
- Create & use pivot tables
- Customize a pivot table
- Database functions
- Google Apps Script overview

**Google Learning Center**
- Google Forms
- Google Sheets

**Additional Resources**
- Stack Overflow