

Graphing with M&M's

Subject: Technology/Mathematics

Grade: 3-8

Time: 2.5 hours

Group: Whole/small group

Standards: NETS – Students 1a, 1b, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, 6b

Indicators: LCSD#1 Performance Indicators 3-5

Objective:

- Students will be introduced to the concept or explore the concept of graphing.
- Students will record color distribution in a spreadsheet format.
- Students will create a bar graph and a circle graph.

Resources/Materials Needed:

- Microsoft Office suite- Word, Excel, PowerPoint or other word processing, spreadsheet, presentation applications.
- Assorted M&M candies. Individual packaging or candies can be placed in plastic sandwich bags.
- Internet

Internet sites:

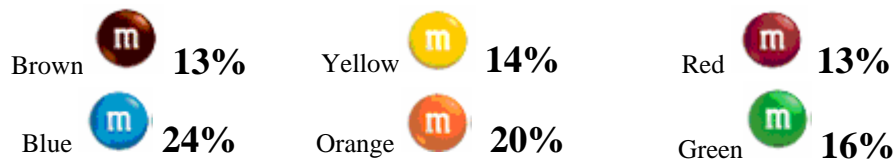
- <http://us.mms.com/us/>
- <http://atozteacherstuff.com/pdf.htm?m&mschart.pdf> -graphing worksheet
- <http://www.cyberbee.com/probability/graph3.html> -company estimates per bag

Activities/Procedures:

Discuss:

- Introduce the concept of charting and discuss why some data collection is easier to interpret in bar charts, while data may be better shown other forms of charts. (Bar charts allow for a comparison of values within a category, line charts emphasize a progression of change, and pie charts show the relationship of a part to the whole.
- Explain that this lesson requires them to work with bags of candy. The will be sorted by color and then recorded in an Excel worksheet. The data will be shown in both a worksheet table and several types of charts
- Students can use Internet Explorer to visit the [M&M's Web page](#) and take a virtual tour of the factory. They can send electronic mail to the company, indicating which colors they like best and which colors they would like to see in future bags of candies.
- Safe Internet practices and correct citations for a research project.
- Expectations of behavior with the computers.

- The M&M Company estimates the bag on average has these percentages of colors.



Demonstrate:

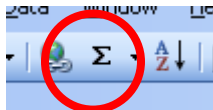
- Open Excel and show the students how they will enter data.
- Also show the students the 'Chart Wizard' button on the toolbar.

Practice: Entering data into an Excel Worksheet

- Open a worksheet in Excel. In cell A1, type the title "Candy Is Dandy!" or a title of your choosing.
- In row 2, beginning in cell A2, type the following headings: "Colors", "My Bag", "Percentage"

	A	B	C	D
1	Candy is Dandy!			
2	Color	My Bag	Percentage	
3	Red			
4	Green			
5	Yellow			
6	Green			
7	Brown			
8	Orange			
9	TOTAL			
10				
11				

- In column A, beginning in cell A3, list all of the colors of M&M's you found in your bag.
- Next, sort the list alphabetically: Highlight the cells. From the **Data** menu, choose **Sort**. Type "Total" in the cell (C9) below your last entry.
- Enter the number of the same-color M&M's in the corresponding cells on your chart, in the column labeled "My Bag".
- Use the AutoSum function to total your columns. Highlight cells B3:B9. Click on the Sum toolbar



button.

- From the **Edit** menu, Choose **Fill**, and then choose **Right**.
- Now you can automatically calculate the percentage number of each color in your bag.
 - Click in cell C3, then type the formula =**B3/B9**.
 - Click in cell C4, then type the formula =**B4/B9**.
 - Click in cell C5, then type the formula =**B5/B9**.
 - Click in cell C6, then type the formula =**C6/C9**.
 - Click in cell C7, then type the formula =**B7/B9**.
 - Click in cell C8, then type the formula =**C3/C9**.

- In the **Percentage** column, format cells highlight the **C3:C8**. Click on the Percentage Style Button from the **Formatting** toolbar.



- Now, so that each whole number has no decimal places, click on the **Decrease Decimal** button on the **Formatting** toolbar. Keep clicking to remove all the number places behind the decimal point.
- Compare your Percentage data to the company's data. How close were you to the M&M estimate?

Practice: Using the Chart Wizard to create a chart for your data.

- Use the Chart Wizard in Excel to produce at least two different charts. With the Chart Wizard you can choose the chart types that best represent the data, such as bar chart or pie chart.
- Highlight cells A3:B8. From the **Insert** menu, choose **Chart**. (There is also a Chart Button on the **Formatting** toolbar.)
 - Click the **Column chart** type, and then click **Next**. Click the **DataRange** tab, and be sure **Columns** is selected next to **Series In**, and then click **Next**.
 - In step 3 of the wizard (Chart Options), click the **Titles** tab. Add titles for the chart and its axes. Click the **Gridlines** tab, and experiment with gridline options. Choose a gridline that makes it easier to understand the data. Click the **Legend** tab, choose a location for the legend, and then click **Next**.
 - Use Excel to place the chart as an object on the original worksheet, so that worksheet entries are visible as you examine the chart.

Conclusion: Analyze you data and use Word to type your report or PowerPoint to present the findings.

- Describe in detail:
 - The research project.
 - The procedures you used to sort and count the candies.
 - What the data revealed about candy colors and color distribution.
 - How does the data compare with the M&M company percentages?
- Describe the expected color distribution with actual survey results. Copy and paste spreadsheet and chart data into Word/PowerPoint where appropriate.
- Discuss the advantages/disadvantages of representing data in spreadsheet tables, column charts, bar graphs, or pie charts. When is it best to use on chart type instead of another? How did the result compare to others. Were all the bags the same?

Closing:

- Give students the opportunity to share their graphs and information.
- Evaluate the lesson—
 - What was learned?
 - What new skills were learned?
 - How can these skills be implemented in future projects?