



TAKE IT TO THE MAT

A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION



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In the past three issues of *Take It to the MAT*, we examined how to create different styles of bar graphs to display the frequencies of colored candies. In this edition, we will look at another common way to display the data—the *circle graph* or *pie graph*. We continue to use the data shown in the table at right.

Think back to ways you constructed circle graphs when you were a student. You may have been taught to total the counts in the table, then divide that number into 360, since there are 360 degrees in a circle. In the case of our data, $360^\circ \div 19 \approx 18.9^\circ$. That means a count of one candy corresponds approximately to a 19-degree slice of pie. The table at right shows the approximate number of degrees in each slice of the pie graph for our data. The angle measures are rounded to the nearest whole degree; rounding produces an extra degree in the total.

Alright, get out your protractor and compass. Draw a circle and start measuring those angles. Your graph should look something like the one shown at right.

While the method described above produces an accurate and complete graph, one may wonder if there is a little simpler, more conceptual way to create circle graphs. Of course there is, and here's how to do it.

First, draw a circle. It shouldn't be too small or too large; its size will depend on how many pieces of data one has and the materials used to make the graph. More on that later.

Next, place the actual candies, or some other manipulative to represent the candies, around the circumference of the circle. The candies should be evenly spaced as shown in the figure at right. Make sure to keep the colors together. (If you find yourself cramming the candies together, you may need to draw a larger circle. If its hard to space the candies evenly because they are so spread out, draw a smaller circle.)

Last, draw line segments from the center of the circle to the circle itself, and label the sectors of the circle with the appropriate color. Shade in the slices of the pie, if desired.

While a bar graph is great for comparing the relative counts of each color, that is the parts of a whole bag, the circle graph is appropriate for comparing the parts *to the whole*. We can quickly see that yellow is about one-third of all the candies and that green makes up a very small portion all the candies. This is the strength of circle graphs—comparing part to whole.

Color	Tally	Count
Red	////	4
Green	/	1
Blue	///	3
Orange	////	4
Yellow	#####	7

Color	Count	Angle
Red	4	76°
Green	1	19°
Blue	3	57°
Orange	4	76°
Yellow	7	133°
Total	19	361°

