

Viewed in Another Light

Purpose:

To view the colors of M & Ms in the presence of varying colors of incident light and to use the principle of color subtraction to explain the varying color appearances.

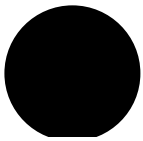

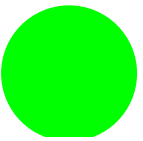
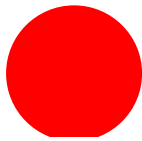
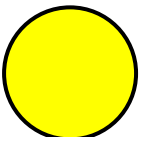
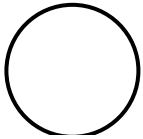
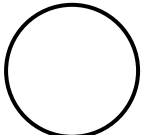
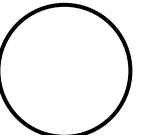
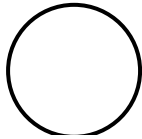
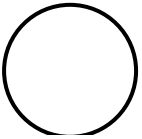
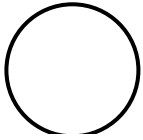
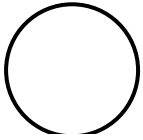
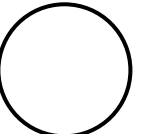
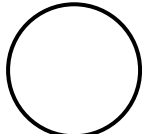
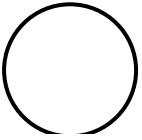
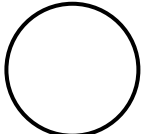
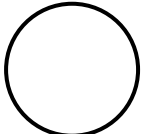
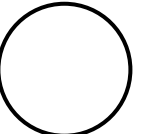
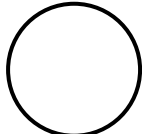
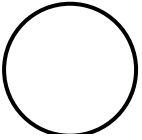
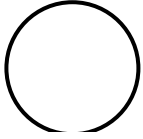
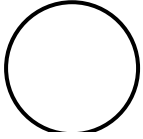
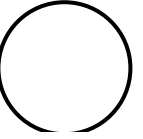
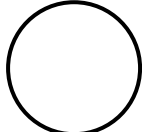
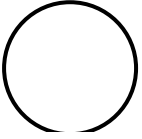
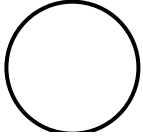
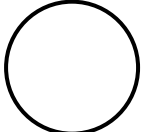
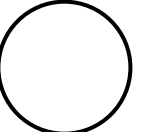
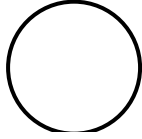
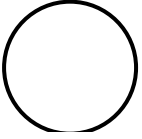
Getting Ready:

Navigate to the **Stage Lighting Interactive** at TPC (<http://www.physicsclassroom.com>).

Home Page ==> Physics Interactives ==> Light and Color ==> Viewed in Another Light

Tap **Launch Interactive**. Resize the Interactive as desired. Once ready, use the on-screen buttons to view the M&Ms in different colors of light. We suggest viewing the M&M with both a white background and a colored background. Using a BLACK, BLUE, GREEN, RED, or YELLOW markers, color in the appearance of each of these M&Ms when viewed under each of these lights.

Data:

WHITE LIGHT					
RED LIGHT		1 	2 		
BLUE LIGHT			3 		
GREEN LIGHT			4 	5 	6 
MAGENTA LIGHT	7 	8 	9 	10 	
CYAN LIGHT	11 	12 	13 	14 	

Analysis:

Notice that some cells of the table have numbers. These are the ones that turn out pretty well ... just as the Physics would predict. We'll call these numbers the trial #s. Here's how you will use them. Pick one trial from #1-6 and three trials from #7-14, and explain why the observed color is observed; complete the table below. Use the Incident-Absorbed-Reflected model that the instructional videos have been discussing. Fill in each cell of the table with a single letter representing one or more of our primary colors of light. That is, don't write cyan; instead write B + G (since cyan light is composed of blue and green light).

R=red **G**= green **B**=blue **0**=Black (i.e., no light ... or darkness)

Complete the incident/absorbed/reflected diagram (showing incident and reflected arrows) in the last column. Add text (color names) to the diagram or change the color of the incident and reflected arrows to R, G, B, C, Y, M, or Black(0). Then you're done.

Trial (see dir'ns)	Incident (primary colors only)	Absorbed (primary colors only)	Reflected (primary colors only)	Diagram (complete with text or actual color, using R, G, B, C, M, Y, 0)
				