

EMBARGOED  
 Until Release Date

**YOU CAN**  
 beakman & jax  
 questions@beakman.com  
 More at [www.bonus.com](http://www.bonus.com)

Dear Jax,  
 How do you make black or white if the primary colors are red, blue and yellow?  
 Michelle Phillips  
 Tipp City, Ohio

Beakman or Jax  
 P.O. Box 30177  
 Kansas City, MO 64112  
 Questions, name & address

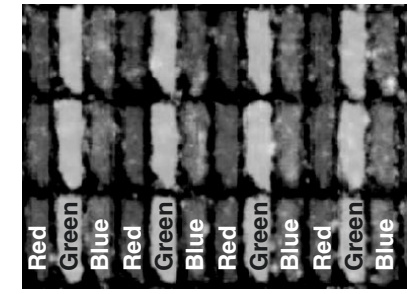
Dear Michelle,  
 We're usually taught that there is 1 set of primary colors. But that is *not* true. There are *several* sets of primary colors.  
 See, when you mix inks or paints, the primary colors are red, blue and yellow.  
 But when you mix light, the primary colors are red, green and blue. Really.

Jax Place  
 Jax Place

## Black & White

Black and white are about light. They are not about paint or ink. Black happens when there is no light. We say black is the absence of light. White is all colors of light mixed together. There is such a thing as white paint. But it does not contain red, blue or yellow. Instead, it uses a chemical that reflects all colors of light. Paints that absorb all colors of light, and do not reflect any colors, are black.

## What Color is This?



I held a microscope up to the screen on our TV and took this picture. Every color you can see on a TV is made from just three colors mixed in different amounts. That is what primary

colors are: the building blocks you use to make all other colors. These are tiny bars that glow with red, blue and green light, and when they mix together, we see white. The color on the TV in this photo is the color *white*. When you're working with the *primary colors of light*, you make white by mixing *all* the primary colors together. Black, meanwhile, is made by having *none* of the primary colors. The easiest way to see this for yourself is to hit the pause button and look very closely on your own TV. And then back up. Sitting close to TV can't be good.

Mixing it Up a Bit

You Can use food colors to experiment with mixing the primary colors of paints or inks. Keep adding them together in a glass of water to see what you get.

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No matter how much red, blue and yellow you mix, you will never be able to create white or black with these primary colors.

P.S. from Beakman: One reason there is so much of the toxic metal lead in our environment is that lead used to be in most white paint. Lead carbonate (white lead) paint was banned because kids chew on woodwork.



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