

# *Light, the Universe, and Everything*

## *Color mixing on the printed page*

Examine the various printed materials with your naked eye (i.e., without microscope — glasses and contacts are OK). Some especially good examples of large areas of a uniform color are marked for you.

Some cheap printed materials, such as the Sunday comics and most cereal boxes, have a *registration*, a small pattern showing boxes or circles of pure inks, somewhere outside the picture.

⇒ Find a registration and see what the cyan, magenta, yellow, and black inks look like unmixed. When you watch a color printer at work, you see that it prints the picture 4 times, once with each ink. Cheaply printed materials often do not have perfect registration of the four inks, allowing us to look around the margins of color images to see which inks were used.

The actual work of a pigment is to absorb light. (The light that is transmitted through the pigment has not interacted with it.) Think about each ink, and what part of the visible light it absorbs. What light is left to return to your eye? When the inks do not completely overlap on the page, what part of the spectrum returns to your eye?

⇒ Find and examine *marked* examples of **red**, **green**, and **blue** with the dissecting microscope, and see how each is composed. Does this jibe with the color mixing algebra you have just worked out with the filters and projectors?

As you look closely at the printed material, try to see whether the inks are completely mixed, or whether you can see one on top of another. Do you see the white paper between ink marks? Is one ink laid down solidly, and another patterned? Is the pattern uniform? Think about what part of the spectrum of the white light in the room is getting to your eye from the paper.

- ✓ Make sure you understand how this process works, and how it fits into the algebra of color mixing.