

Quiz.

1. Tomatoes are red because
 - a. they reflect all other colors and absorb red light.
 - b. they absorb all other colors and reflect red light.
 - c. it absorbs all other colors and transmits blue light.
 - d. it transmits all other colors and absorbs blue light.

2. Blue glass is blue because
 - a. they reflect all other colors and absorb red light.
 - b. they absorb all other colors and reflect red light.
 - c. it absorbs all other colors and transmits blue light.
 - d. it transmits all other colors and absorbs blue light.

3. The additive primary colors are
 - a. red, yellow, and blue.
 - b. red, green, and blue.
 - c. magenta, cyan, and yellow.

4. Two complimentary colors add to produce white.
 - a. True
 - b. False

5. The subtractive primary colors are
 - a. red, yellow, and green.
 - b. red, green, and blue.
 - c. magenta, cyan, and yellow.

6. Water is green-blue (cyan) because
 - a. water absorbs red light and reflects the complementary color.
 - b. water reflects red light and absorbs the complementary color.
 - c. water absorbs red light and transmits the complementary color.
 - d. water transmits red light and absorbs the complementary color.

7. Sunsets are red because
 - a. the atmosphere absorbs blue light.
 - b. long wavelengths scatter more easily than short ones.
 - c. light must travel through more atmosphere, scattering more.

8. Why clouds are white?
 - a. Clouds are actually full of snow at such high altitudes.
 - b. Clouds scatter light at all wavelengths.
 - c. We only see underneath the clouds, which don't get exposed to the sun.
 - d. Clouds are too thin to absorb any light.

9. Red + blue = _____.
- a. magenta
 - b. yellow
 - c. cyan

Answer Key.

1. b)

Opaque materials are the same color as the light they reflect. They absorb light of all other wavelengths.

2. c)

Transparent materials are the same color as the light they reflect. They absorb light of all other wavelengths.

3. b)

The primary additive colors of light are different from the primary colors of paint. We only see red, green, and blue light, and all other colors we see are just linear combinations of these in different proportions. All three added in equal amounts produce white light, and an absence of light produces black.

4. a)

Subtracting a primary color from white light will leave behind its complementary color, therefore adding complementary colors produces white light.

5. c)

white light - red light = cyan light
white light - green light = magenta light
white light - blue light = yellow light

6. c)

Water absorbs red visible light and infrared light and allows cyan light to be transmitted. However, water may also reflect the blue light of the sky, causing it to appear even more blue.

7. c)

Short wavelength light scatters more readily than light with longer wavelengths. At sunset and sunrise, because of the position of the sun with respect to the curvature of Earth, there is more atmosphere the sunlight must travel through, which gives the longer wavelengths time to scatter. Also, the more particles in the atmosphere the more that light will scatter, which is why polluted skies may have more colorful sunrises and sunsets.

8. b)

Clouds are made of a variety of molecule sizes, so they are able to scatter light of all wavelengths and from all angles, producing white light.

9. a)

Since green and magenta are complementary colors, red and blue must add to produce magenta light.