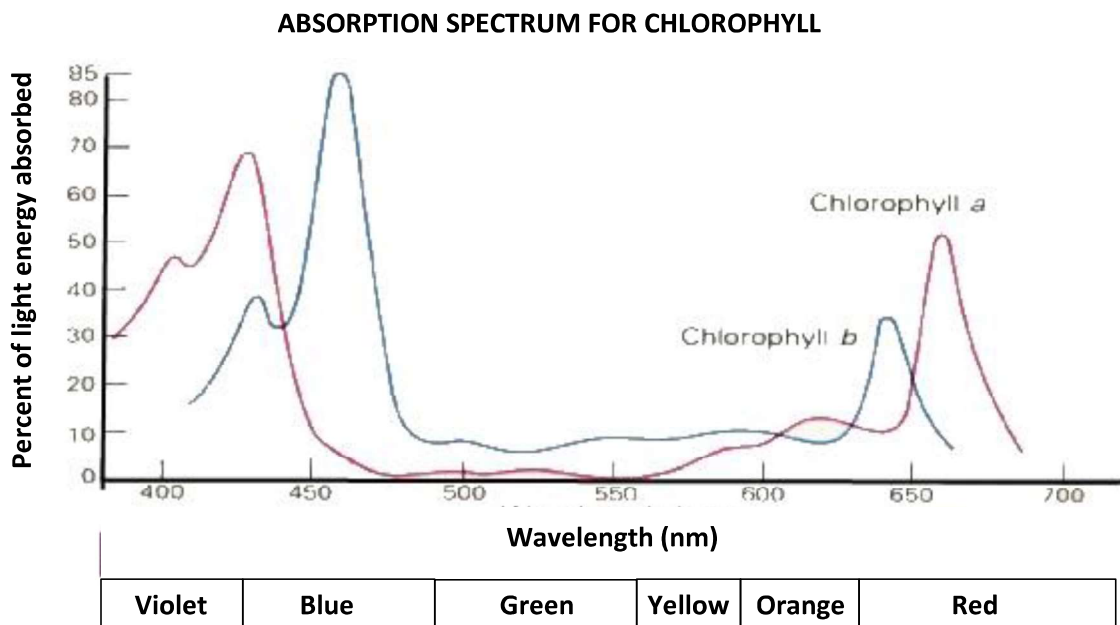


Absorption Spectrum for Chlorophyll

A pigment is a substance that absorbs light of particular wavelengths. For example, the green-yellow color of a leaf is due to a pigment in the leaf called chlorophyll. When white light (which contains all of the colors of the spectrum) shines on chlorophyll, the chlorophyll absorbs most of the red, orange, blue, and violet, and it reflects most of the green and yellow. That is why you see a green-yellow color. Think of a pigment as a sponge that soaks up all of the other colors of the spectrum except the one you see.

A spectrophotometer is an instrument that is used to measure the amount of light absorbed by a pigment. Below is a graph showing the percent of light energy reflected for the absorption spectrum for chlorophyll. The highest peaks represent colors that chlorophyll absorbs the most. Therefore, they are seen the least.

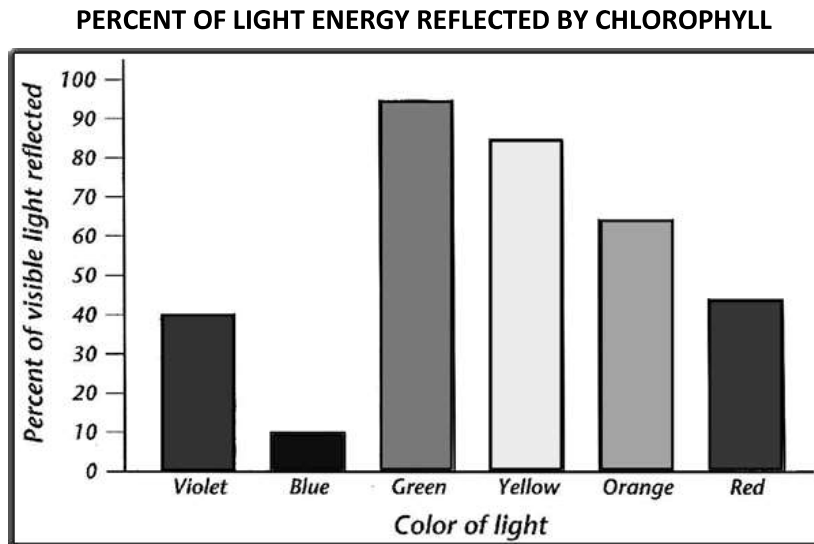


1-9. Refer to the preceding graph in arriving at your answers.

1. Which of the colors absorbed by chlorophyll is seen least? _____
2. What is its approximate wavelength? _____
3. What percent of light energy absorbed does this peak represent? _____
4. How much of this color is being reflected? _____
5. What percent of light energy absorbed by chlorophyll does the orange spectrum peak represent? _____
6. Why would you say there are no peaks in the range between 500 nm and 600 nm?

7. Are you able to see the light in the green-yellow part of the spectrum? _____
Explain why. _____
8. Arrange the colors in the absorption spectrum of chlorophyll in order of their visibility. Put the most visible color first. _____

9.-12. Below is a bar graph of the percentage of light energy reflected by chlorophyll. It was derived from the chlorophyll absorption spectrum. Refer to the graph in answering the questions.



9. Which color in this spectrum is most visible? _____
10. What is the approximate percentage of light energy reflected for this color? _____
11. What percent of light absorbed does this represent? _____
12. If everything above 50% of light energy reflected is visible to the human eye, is red light part of the mixture of colors seen in light reflected by chlorophyll? _____