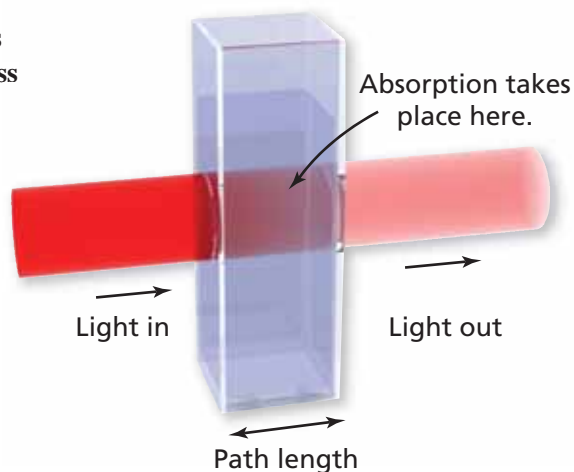




Absorbance The figure shows light passing through a glass container that contains a substance. Absorbance is a unitless measure of the amount of light that a substance absorbs as light passes through it. In Exercises 13–16, (a) describe the pattern of the absorbance values, (b) make a scatter plot of the data, and (c) predict the next absorbance value in the pattern. (See Examples 5 and 6.)



13. The table shows the absorbance of light with a wavelength of 630 nanometers for a solution of the food dye Blue No. 1 in a 1-centimeter glass container at various concentrations.

Concentration (mg/L)	Absorbance
0	0
1	0.164
2	0.328
3	0.492
4	0.656

15. The table shows the absorbance of light with a wavelength of 527 nanometers for a solution of the food dye Red No. 3 with a concentration of 4 milligrams per liter in glass containers of various path lengths.

Path length (cm)	Absorbance
0	0
0.2	0.088
0.4	0.176
0.6	0.264
0.8	0.352

14. The table shows the absorbance of light with a wavelength of 625 nanometers for a solution of the food dye Green No. 3 in a 1-centimeter glass container at various concentrations.

Concentration (mg/L)	Absorbance
0	0
2	0.312
4	0.624
6	0.936
8	1.248

16. The table shows the absorbance of light with a wavelength of 500 nanometers for a solution of the food dye Red No. 40 with a concentration of 5 milligrams per liter in glass containers of various path lengths.

Path length (cm)	Absorbance
0	0
0.3	0.078
0.6	0.156
0.9	0.234
1.2	0.312



17. **Yellow No. 5** The absorbance of light with a wavelength of 428 nanometers for a solution of the food dye Yellow No. 5 in a 1-centimeter glass container is proportional to the concentration of Yellow No. 5. The absorbance of a solution with a concentration of 2 milligrams per liter is 0.106. What is the absorbance of a solution with a concentration of 5 milligrams per liter? (See Examples 5 and 6.)



18. **Yellow No. 6** The absorbance of light with a wavelength of 484 nanometers for a solution of the food dye Yellow No. 6 with a concentration of 6 milligrams per liter is proportional to the path length. The absorbance of the solution in a 0.5-centimeter glass container is 0.162. What is the absorbance of the solution in a 1.1-centimeter glass container? (See Examples 5 and 6.)