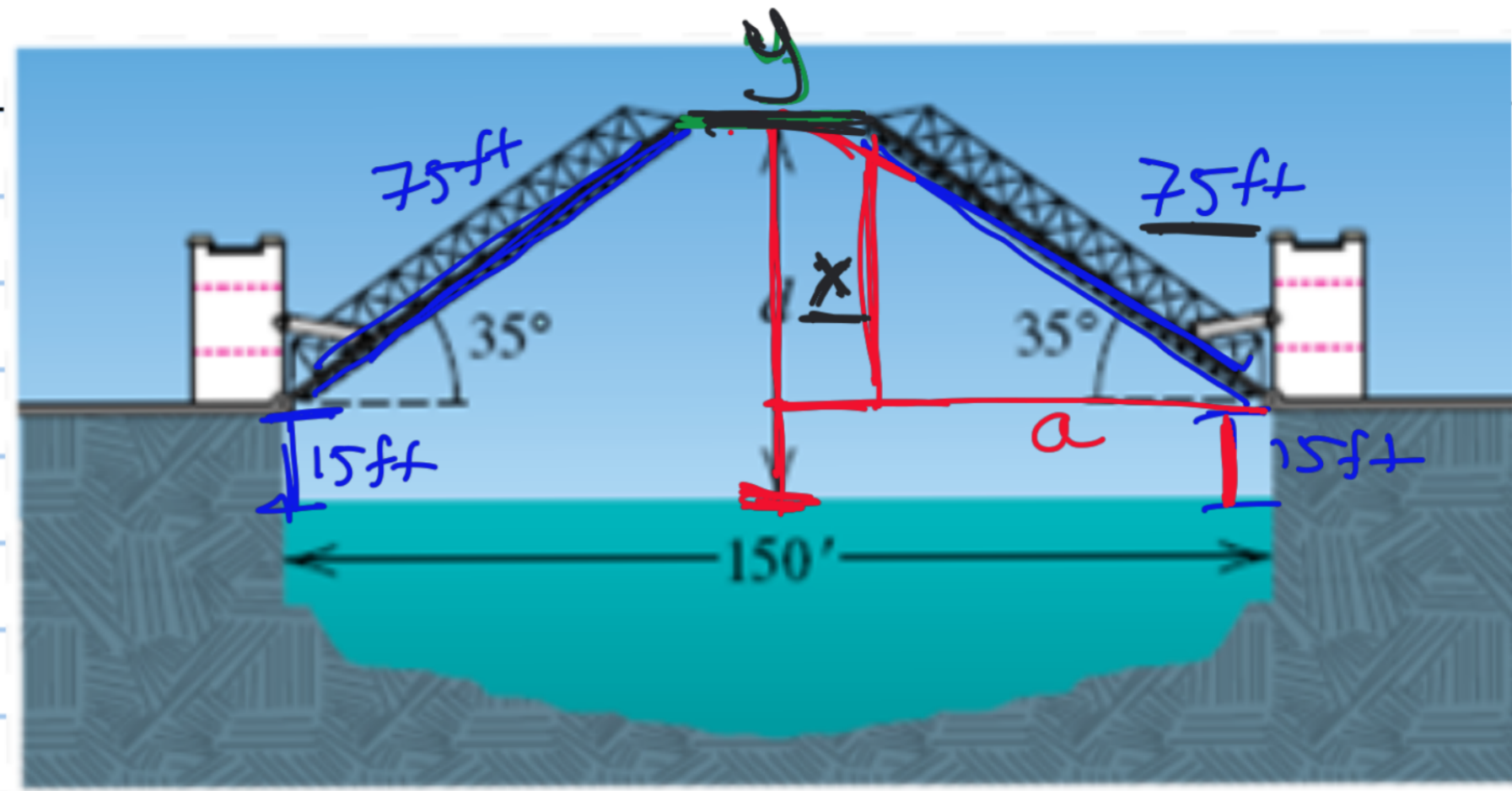


Example

The two sections of the bridge can be rotated upward through an angle of 35 degrees.

a) If the water level is 15 ft below the closed bridge, find the distance d .



a) the distance d is 58.018 ft.

$$\sin 35 = \frac{x}{75}$$

$$75 \sin 35 = x$$

$$43.02 \approx x$$

$$\begin{array}{r} +15 \\ \hline 58.018 \text{ ft} \end{array}$$

b) Approximately how far apart are the ends of the sections when the bridge is fully opened.

b) the sections are approx. 27.127 ft apart.

$$\cos 35 = \frac{a}{75}$$

$$75 \cos 35 = a$$

$$61.436 = a$$

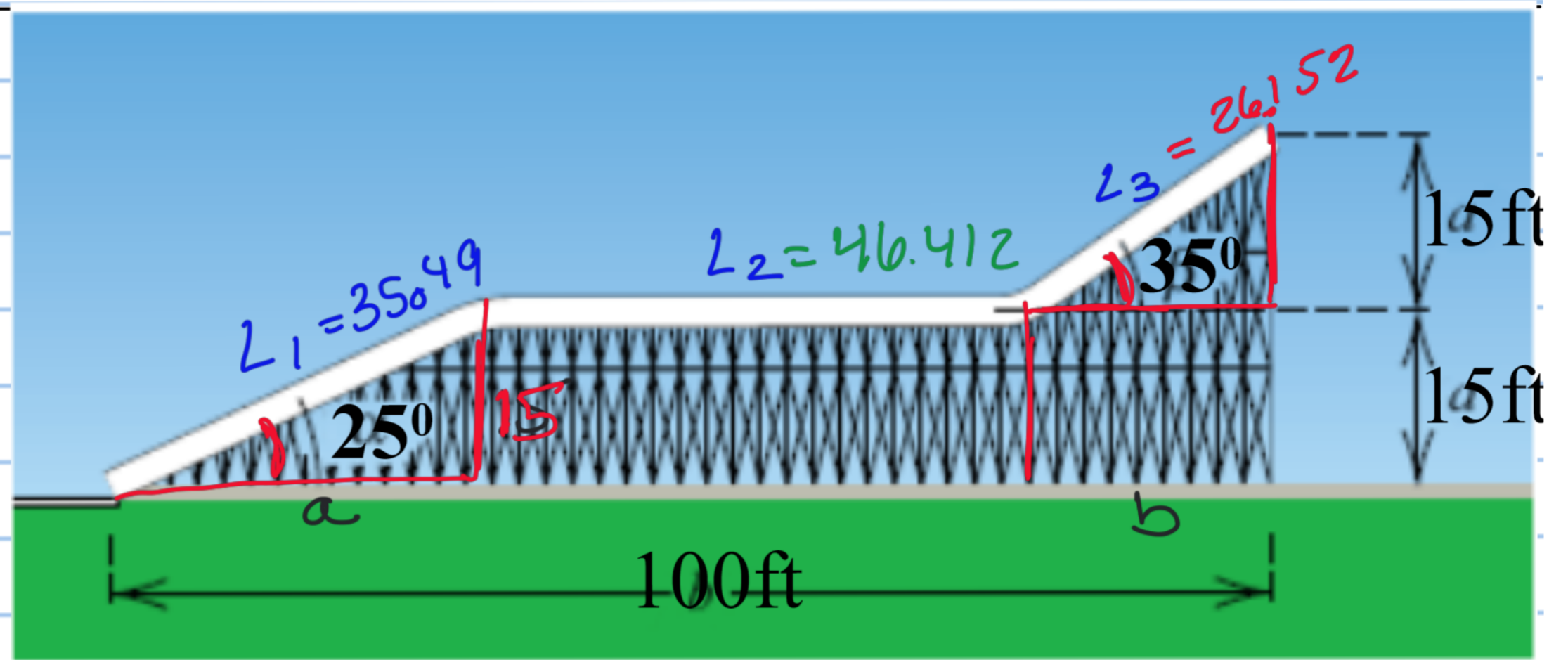
$$\begin{array}{r} 150 \\ - 2(61.436) \\ \hline 27.128 \text{ ft} \end{array}$$

c) Why are these measurements important?

Example

The design for a water slide is given.
Find the total length of the slide to the nearest foot.

The length of the slide is 108.05 ft.



$$\sin 25 = \frac{15}{L_1}$$

$$\sin 35 = \frac{15}{L_3}$$

$$L_1 = \frac{15}{\sin 25}$$

$$L_3 = \frac{15}{\sin 35}$$

$$L_1 = 35.49$$

$$L_3 \approx 26.152$$

$$\tan 25 = \frac{15}{a}$$

$$\tan 35 = \frac{15}{b}$$

$$a = \frac{15}{\tan 25}$$

$$b = \frac{15}{\tan 35}$$

$$a = 32.168$$

$$b = 21.42$$

$$\begin{array}{r} 100 \\ - 32.168 \\ - 21.42 \\ \hline 46.412 \end{array}$$