

7-6 Law of Sines

HW: p. 381 #16-24 even

$$16.) \quad m\angle L = 45^\circ$$

$$m\angle K = 63^\circ$$

$$l = 22$$

Find k .

$$\frac{\sin L}{l} = \frac{\sin K}{k}$$

~~$$\frac{\sin 45}{22} = \frac{\sin 63}{k}$$~~

~~$$\frac{k \sin 45}{\sin 45} = \frac{22 \sin 63}{\sin 45}$$~~

$$k = 27.7$$

$$18.) \quad m = 10.5$$

$$k = 18.2$$

$$m\angle K = 73^\circ$$

Find $m\angle M$.

$$\frac{\sin M}{m} = \frac{\sin K}{k}$$

~~$$\frac{\sin M}{10.5} = \frac{\sin 73}{18.2}$$~~

$$\frac{10.5 \sin 73}{18.2} = \frac{18.2 \sin M}{18.2}$$

$$\boxed{33^\circ = M} \quad (\text{2nd Sin})$$

$$20.) m\angle L = 88^\circ$$

$$m\angle K = 31^\circ$$

$$m = 5.4$$

Find l . $m\angle M = 61$

$$\begin{array}{r} 88 \\ + 31 \\ \hline 119 \end{array} \quad \begin{array}{r} 180 \\ - 119 \\ \hline 61 \end{array}$$

$$\frac{\sin L}{l} = \frac{\sin M}{m}$$

$$\frac{\sin 88}{l} = \frac{\sin 61}{5.4}$$

$$\frac{l \sin 61}{\sin 61} = \frac{5.4 \sin 88}{\sin 61}$$

$$l = 6.2$$

$$22.) m\angle Y = 71^\circ$$

$$y = 7.4$$

$$m\angle X = 41^\circ$$

$$\frac{\sin Y}{y} = \frac{\sin X}{x}$$

$$\frac{\sin 71}{7.4} = \frac{\sin 41}{x}$$

$$\begin{array}{r} 71 \\ + 41 \\ \hline 112 \end{array}$$

$$\begin{array}{r} 180 \\ - 112 \\ \hline \end{array}$$

$$\boxed{68}$$

$$\frac{\sin W}{w} = \frac{\sin Y}{y}$$

$$\frac{\sin 68}{w} = \frac{\sin 71}{7.4}$$

$$\frac{w \sin 71}{\sin 71} = \frac{7.4 \sin 68}{\sin 71}$$

$$\boxed{w = 7.3}$$

$$\frac{7.4 \sin 41}{\sin 71} = \frac{x \sin 71}{\cancel{\sin 71}}$$

$$\boxed{5.1 = x}$$

$$m\angle W = \underline{68^\circ}$$

$$x = \underline{5.1}$$

$$w = \underline{\quad}$$

$$24.) \ m\angle X = 25^\circ$$

$$m\angle W = 52^\circ$$

$$y = 15.6$$

$$\frac{\sin Y}{y} = \frac{\sin X}{x}$$

$$\frac{\sin 103}{15.6} = \frac{\sin 25}{x}$$

$$\frac{15.6 \sin 25}{\sin 103} = \frac{x \sin 103}{\sin 103}$$

$$\boxed{6.8 = x}$$

$$\begin{array}{r} 25 \\ + 52 \\ \hline 77 \end{array}$$

$$\begin{array}{r} 180 \\ - 77 \\ \hline \end{array}$$

$$\boxed{103}$$

$$\frac{\sin W}{w} = \frac{\sin Y}{y}$$

$$\frac{\sin 52}{w} = \frac{\sin 103}{15.6}$$

$$\frac{15.6 \sin 52}{\sin 103} = \frac{w \sin 103}{\sin 103}$$

$$\boxed{12.6 = w}$$

$$m\angle Y = \underline{103^\circ}$$

$$x = \underline{6.8}$$

$$w = \underline{12.6}$$