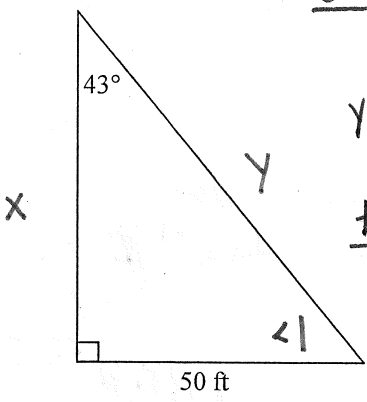


Solve the following triangles.

1.)



$$\frac{\sin 43}{1} = \frac{50}{y}$$

$$y = \frac{50}{\sin 43} = 73.3\text{ ft}$$

$$\frac{\tan 43}{1} = \frac{50}{x}$$

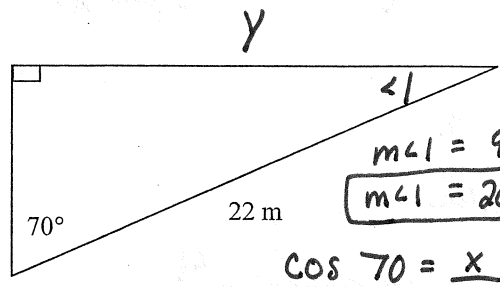
$$x = \frac{50}{\tan 43}$$

$$x = 53.6\text{ ft}$$

$$m\angle 1 = 90 - 43$$

$$m\angle 1 = 47^\circ$$

2.)



$$m\angle 1 = 90 - 70$$

$$m\angle 1 = 20^\circ$$

$$\cos 70 = \frac{x}{22}$$

$$22 \cos 70 = x$$

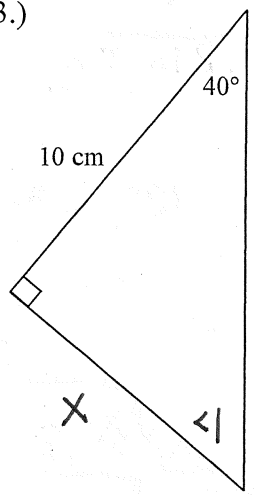
$$7.5\text{ m} = x$$

$$\sin 70 = \frac{y}{22}$$

$$22 \sin 70 = y$$

$$20.7\text{ m} = y$$

3.)



$$90 - 40 = 50 = m\angle 1$$

$$\frac{\cos 40}{1} = \frac{10}{y}$$

$$y \frac{\cos 40}{\cos 40} = \frac{10}{\cos 40}$$

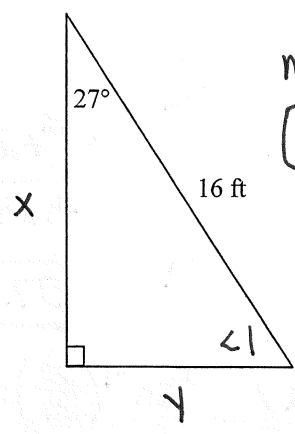
$$y = 13.1\text{ cm}$$

$$\tan 40 = \frac{x}{10}$$

$$10 \tan 40 = x$$

$$8.4\text{ cm} = x$$

4.)



$$m\angle 1 = 90 - 27$$

$$m\angle 1 = 63^\circ$$

$$\cos 27 = \frac{x}{16}$$

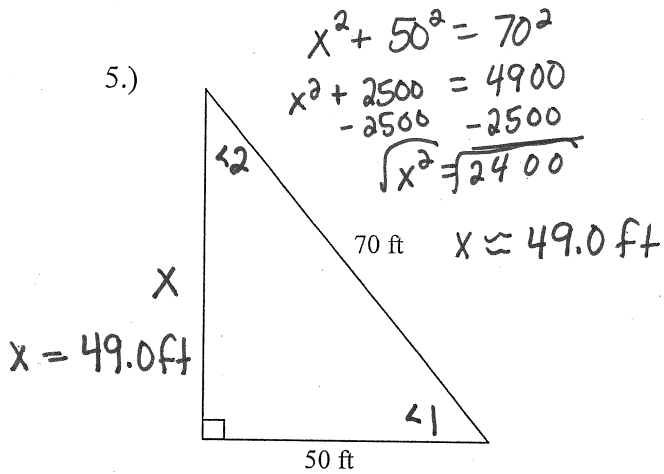
$$16 \cos 27 = x$$

$$14.3\text{ ft} = x$$

$$\sin 27 = \frac{y}{16}$$

$$16 \sin 27 = y$$

$$7.3\text{ ft} = y$$



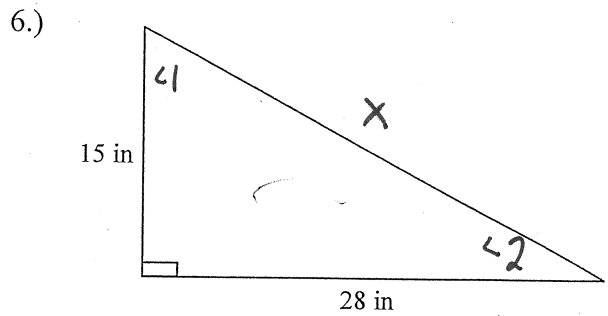
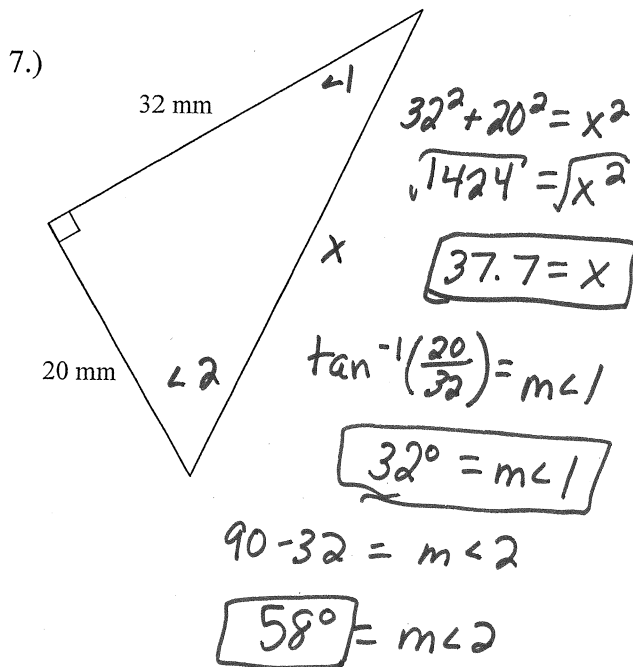
$$\cos \angle 1 = \frac{50}{70}$$

$$\cos^{-1}\left(\frac{50}{70}\right) = 44.4^\circ = m\angle 1$$

$$\sin^{-1}\left(\frac{50}{70}\right) = 45.6^\circ = m\angle 2$$

or

$$90 - 44.4 = \uparrow$$



$$\tan \angle 2 = \frac{15}{28} = \tan^{-1}\left(\frac{15}{28}\right) = m\angle 2$$

$$28.2^\circ = m\angle 2$$

$$\tan^{-1}\left(\frac{28}{15}\right) = m\angle 1$$

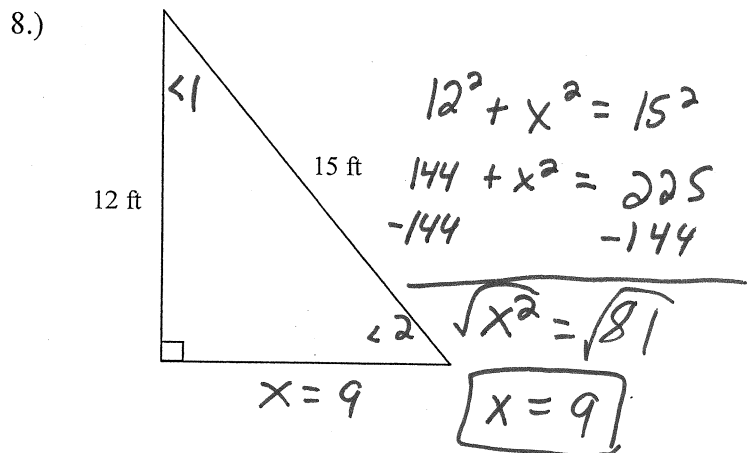
$$61.8^\circ = m\angle 1$$

$$15^2 + 28^2 = x^2$$

$$225 + 784 = x^2$$

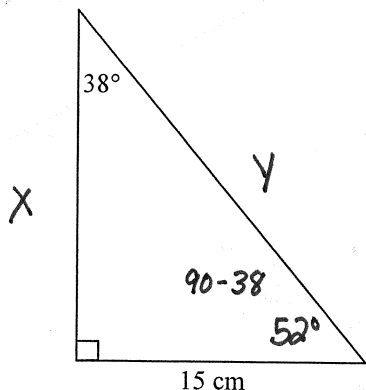
$$\sqrt{1009} = \sqrt{x^2}$$

$$31.8 \text{ in} = x$$



Solve the following triangles.

1.)



$$\frac{\sin 38^\circ}{1} = \frac{15}{y}$$

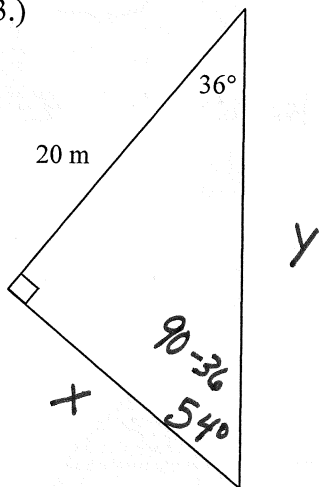
$$y = \frac{15}{\sin 38^\circ} = \boxed{24.4\text{ cm}}$$

~~ans~~
$$\frac{\tan 52^\circ}{1} = \frac{x}{15}$$

$$x = 15 \tan 52^\circ$$

$$\boxed{x = 19.2\text{ cm}}$$

3.)



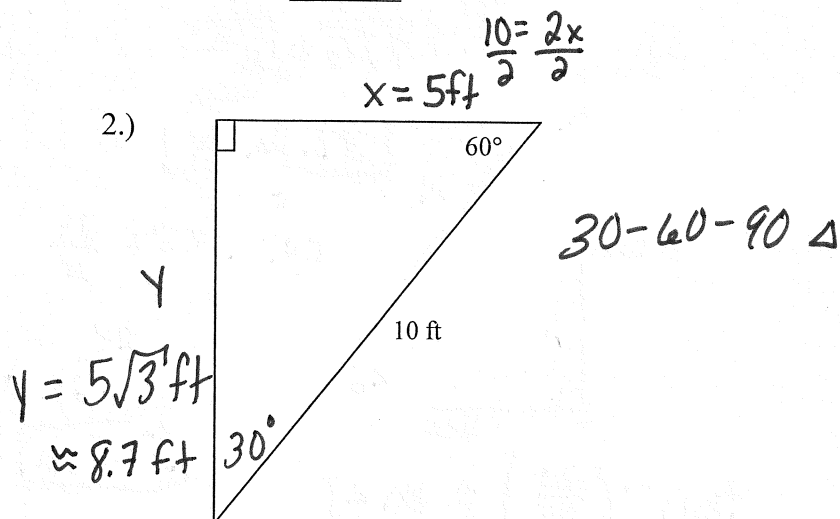
$$\frac{\sin 54^\circ}{1} = \frac{20}{y}$$

$$y = \frac{20}{\sin 54^\circ} = \boxed{24.7\text{ m}}$$

$$\frac{\tan 36^\circ}{1} = \frac{x}{20}$$

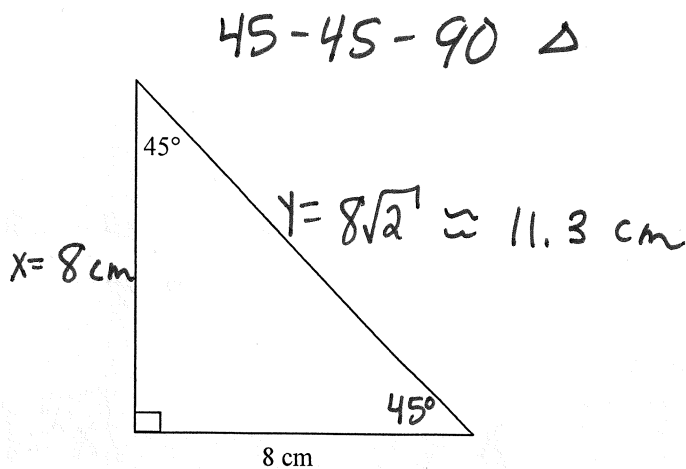
$$x = 20 \tan 36^\circ \approx \boxed{15.5\text{ m}}$$

2.)

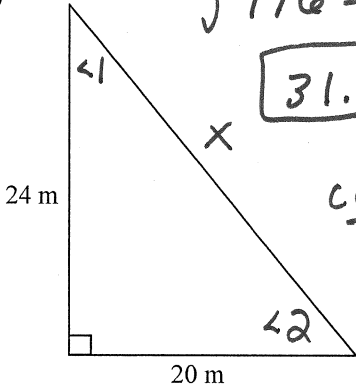


$$y = 5\sqrt{3}\text{ ft} \approx 8.7\text{ ft}$$

4.)



5.)



$$20^2 + 24^2 = x^2$$

$$\sqrt{976} = \sqrt{x^2}$$

$$31.2m = x$$

$$\text{or } \cos 39.8 = \frac{24}{x}$$

$$x = \frac{24}{\cos 39.8}$$

$$31.2m$$

$$\tan^{-1}\left(\frac{20}{24}\right) = m\angle 1$$

$$39.8^\circ = m\angle 1$$

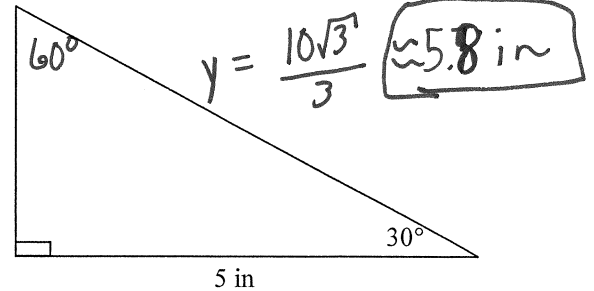
$$90 - 39.8 = m\angle 2$$

$$50.2^\circ = m\angle 2$$

Special Δ
30-60-90

$$\frac{5\sqrt{3}}{3} \cdot 2 = y$$

6.)



$$y = \frac{10\sqrt{3}}{3} \approx 5.8 \text{ in}$$

$$5 = \frac{x\sqrt{3}}{\sqrt{3}}$$

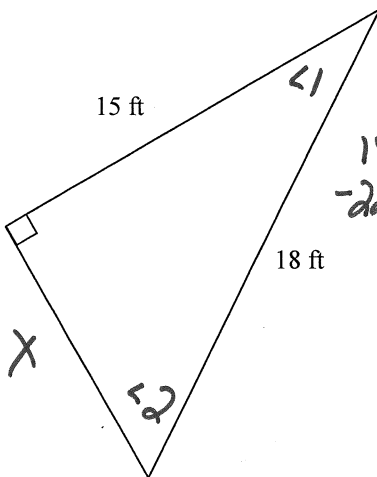
$$\left(\frac{\sqrt{3}}{\sqrt{3}}\right) \frac{5}{\sqrt{3}}$$

$$\frac{5\sqrt{3}}{3} = x \text{ or } \tan 30 = \frac{x}{5}$$

$$\tan 30 = \frac{\sqrt{3}}{3} \rightarrow \frac{5\sqrt{3}}{3} = x$$

$$2.9 \text{ in} = x$$

7.)



$$15^2 + x^2 = 18^2$$

$$-225$$

$$324$$

$$-225$$

$$\sqrt{x^2} = \sqrt{99}$$

$$x = 9.9 \text{ ft}$$

$$\cos^{-1}\left(\frac{15}{18}\right) = m\angle 1$$

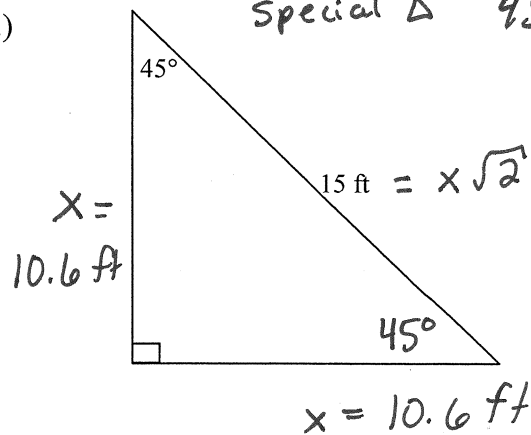
$$33.6^\circ = m\angle 1$$

$$90 - 33.6 = m\angle 2$$

$$56.4^\circ = m\angle 2$$

8.)

Special Δ 45-45-90



$$x = 10.6 \text{ ft}$$

$$x = 10.6 \text{ ft}$$

$$\cos 45 = \frac{x}{15} \quad 15 =$$

$$15 \cos 45 = x \rightarrow x = 10.6 \text{ ft}$$

$$15 \cdot \frac{\sqrt{2}}{2} \quad x = \frac{15\sqrt{2}}{2}$$