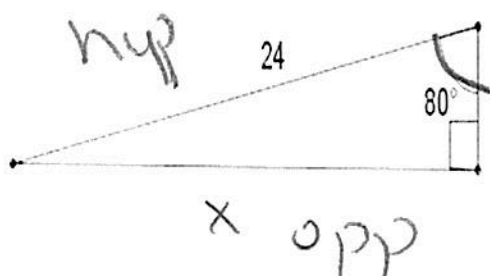


SOH CA TOA

Homework #4

For each problem, approximate the unknown lengths to the nearest hundredth.

(1) Find the approximate length of the leg opposite the 80° angle.

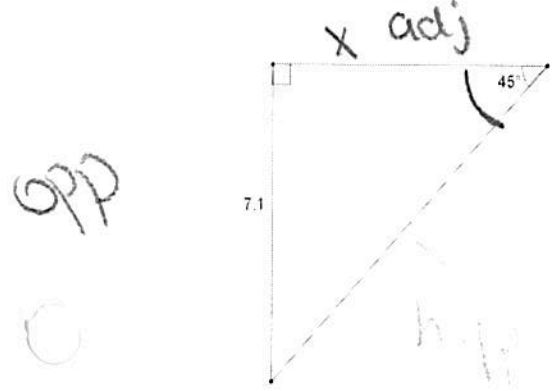


$$\frac{\sin 80}{1} = \frac{x}{24}$$

$$x = 24 \sin 80$$

$$x = 23.635 = \boxed{23.64}$$

(2) Find the approximate length of the side adjacent to the 45 degree angle.



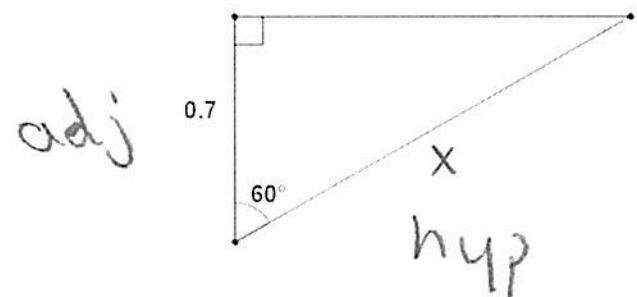
$$\frac{\tan 45}{1} = \frac{7.1}{x}$$

$$x \tan 45 = 7.1$$

$$\frac{x \tan 45}{\tan 45} = \frac{7.1}{\tan 45}$$

$$x = 7.1$$

(3) Find the approximate length of the hypotenuse.



$$\frac{\cos 60}{1} = \frac{.7}{x}$$

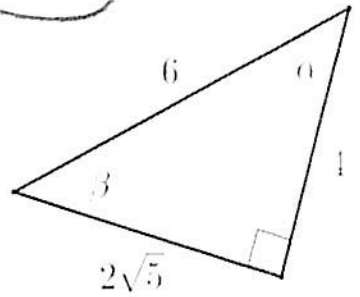
$$x \cos 60 = .7$$

$$\frac{x \cos 60}{\cos 60} = \frac{.7}{\cos 60}$$

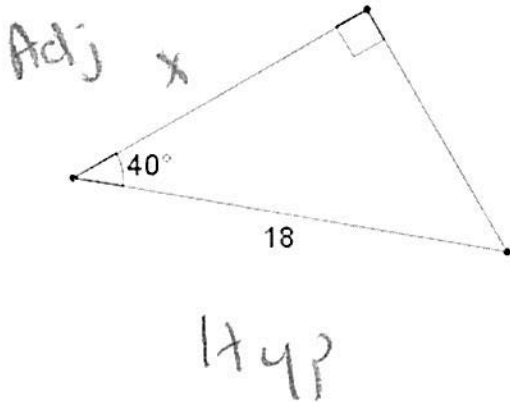
$$x = 1.40$$

(4) Given the triangle in the diagram, complete the following table with ratios.

| Angle Measure | O/H sin | A/H cos | O/A tan |
|---------------|---------------|---------------|---------------|
| α | $2\sqrt{5}/6$ | $4/6$ | $2\sqrt{5}/4$ |
| β | $4/6$ | $2\sqrt{5}/6$ | $4/2\sqrt{5}$ |



(5) Find the length of the leg adjacent to the 40° angle to the nearest hundredth.

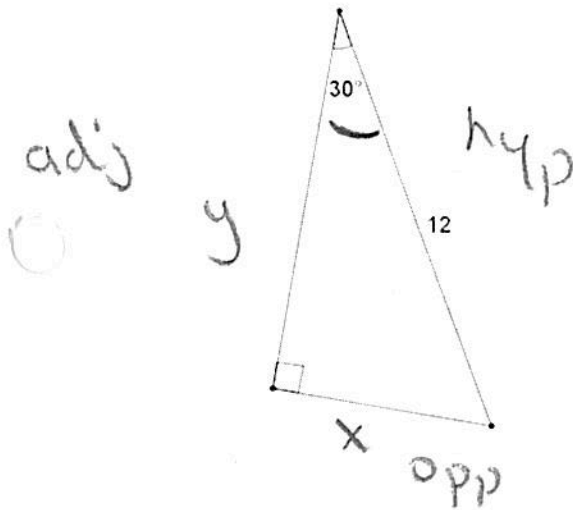


$$\frac{\cos 40}{1} = \frac{x}{18}$$

$$x = 18 \cos 40$$

$$x = 13.788 = \boxed{13.79}$$

(6) Find the length of both legs of the right triangle below. Indicate which leg is adjacent and which is opposite the given angle of 30°



$$\frac{\sin 30}{1} = \frac{x}{12}$$

$$x = 12 \sin 30$$

$$\boxed{x = 6}$$

opposite side

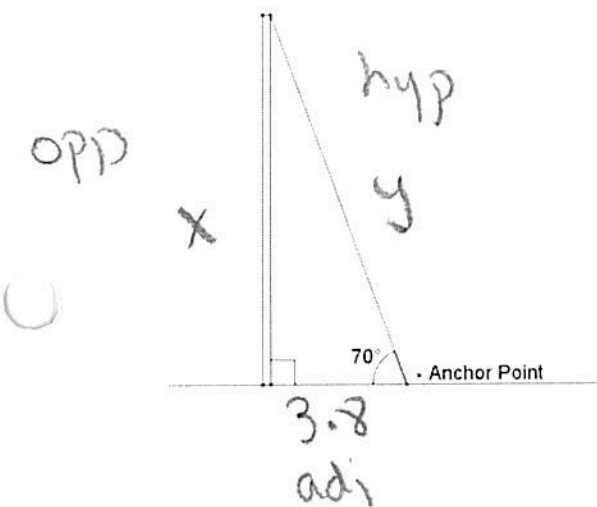
$$\frac{\cos 30}{1} = \frac{y}{12}$$

$$y = 12 \cos 30$$

$$\boxed{y = 10.39}$$

adjacent side

(7) A cable anchors a utility pole to the ground as shown in the picture. The cable forms an angle of 70° with the ground. The distance from the base of the utility pole to the anchor point on the ground is 3.8 meters. Approximately how long is the pole and the support cable?



$$\frac{\tan 70}{1} = \frac{x}{3.8}$$

$$x = 10.4404$$

$$\boxed{x = 10.4 \text{ m}}$$

height of pole

$$\frac{\cos 70}{1} = \frac{3.8}{y}$$

$$3.8 = y \cos 70$$

$$\frac{3.8}{\cos 70} = \frac{y \cos 70}{\cos 70}$$

$$\boxed{11.11 \text{ m} = y}$$