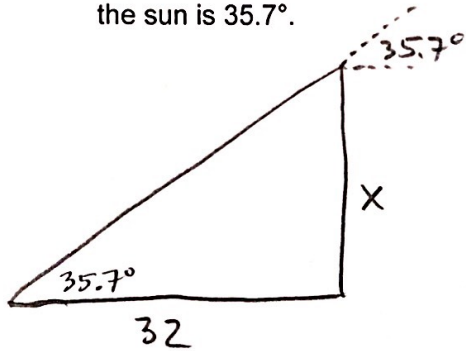


Geometry 3313

12.2 Problem Solving with Right Triangles Practice - Day 2

Answer each question.

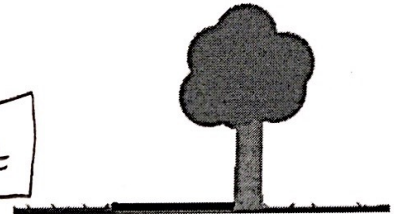
- 1.) A tree casts a shadow that is 32ft long. Find the height of the tree if the angle of elevation of the sun is 35.7° .



$$\tan 35.7 = \frac{X}{32}$$

$$32 \tan 35.7 = X$$

$$X = 23.0 \text{ ft}$$



- 2.) A blimp hovers above the ground at an altitude of 560ft. Two points, A and B, located on the ground are shown below with angles of elevation to the blimp of 36° and 52° respectively. Determine the distance between the two points, A and B, to the nearest foot.

$$\tan 36 = \frac{560}{X}$$

$$X \tan 36 = 560$$

$$X = \frac{560}{\tan 36}$$

$$X = 770.8$$

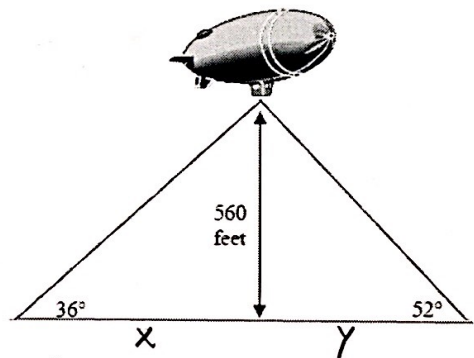
$$\tan 52 = \frac{560}{Y}$$

$$Y \tan 52 = 560$$

$$Y = \frac{560}{\tan 52}$$

$$Y = 473.5$$

$$X + Y = 770.8 + 473.5 = 1208 \text{ ft}$$

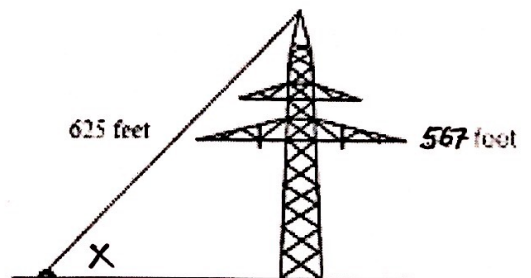


- 3.) A 625 foot long wire is attached to the top of the tower. If the height of the tower is 567ft, what is the angle that the wire makes with the floor?

$$\sin X = \frac{567}{625}$$

$$X = \sin^{-1} \left(\frac{567}{625} \right)$$

$$X = 64.7^\circ$$



4.) A tower is located 275 feet from a building in the figure shown below. A person from the second story measures an angle of elevation to the top of the tower as 42° and an angle of depression to the bottom of the tower as 26° . Find the height of the tower to the nearest tenth of a foot.

$$\tan 42^\circ = \frac{y}{275}$$

$$\tan 26^\circ = \frac{x}{275}$$

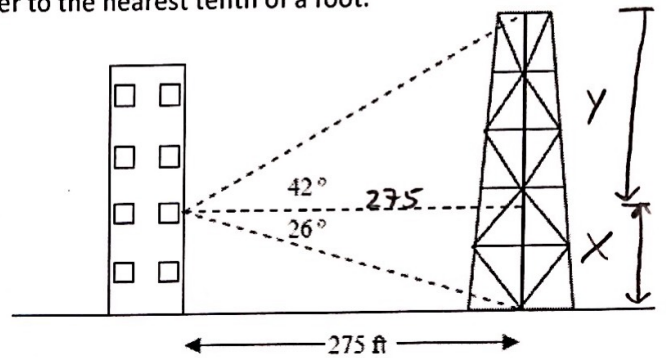
$$275 \tan 42 = y$$

$$275 \tan 26 = x$$

$$y = 247.6$$

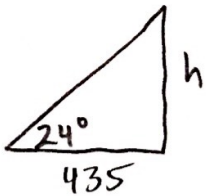
$$x = 134.1$$

$$\boxed{381.1 \text{ ft}}$$



5.) From a point 435ft from the base of a building it is observed that the angle of elevation to the top of the building is 24° and the angle of elevation to the top of the flagpole atop the building is 27° .

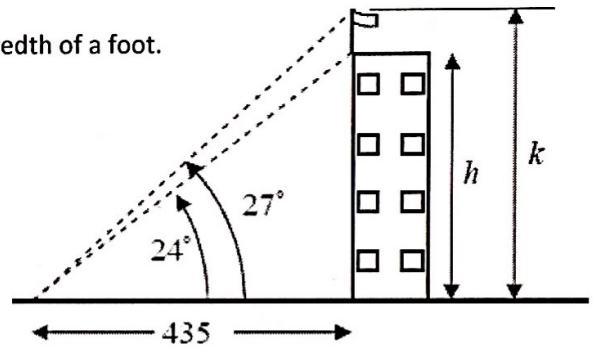
(a) Find the height of the building, h , to the nearest hundredth of a foot.



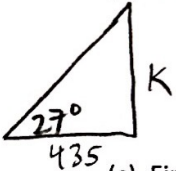
$$\tan 24^\circ = \frac{h}{435}$$

$$435 \tan 24 = h$$

$$\boxed{h = 193.67 \text{ ft}}$$



(b) Find the height to the top of the flagpole, k , to the nearest hundredth of a foot.



$$\tan 27^\circ = \frac{k}{435}$$

$$435 \tan 27^\circ = k = 221.64$$

(c) Find the length of the flagpole the nearest hundredth of a foot.

$$k - h = 221.64 - 193.67 = \boxed{27.97 \text{ ft}}$$

6.) You are standing on top of a building, looking at park in the distance. The angle of depression is 53° . If the building you are standing on is 100 feet tall, how far away is the park?

$$\tan 53^\circ = \frac{100}{d}$$

$$d \tan 53^\circ = 100$$

$$d = \frac{100}{\tan 53^\circ} = \boxed{75.4 \text{ ft}}$$

