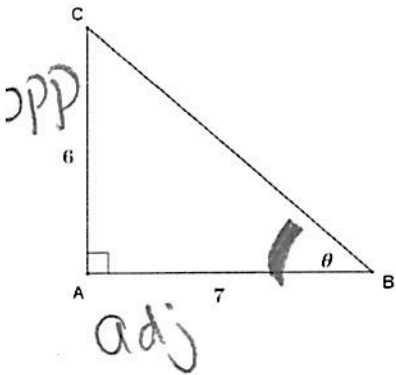


Homework #6

S O C A T O

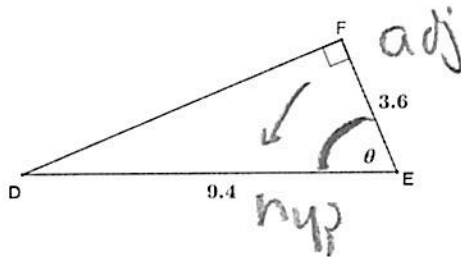
#

(1) Find each of the value of θ to the nearest tenth of a degree:



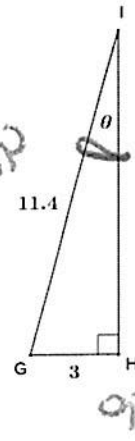
$$\tan \theta = \frac{6}{7}$$

$$\tan^{-1} \frac{6}{7} = \boxed{40.6^\circ}$$



$$\cos \theta = \frac{3.6}{9.4}$$

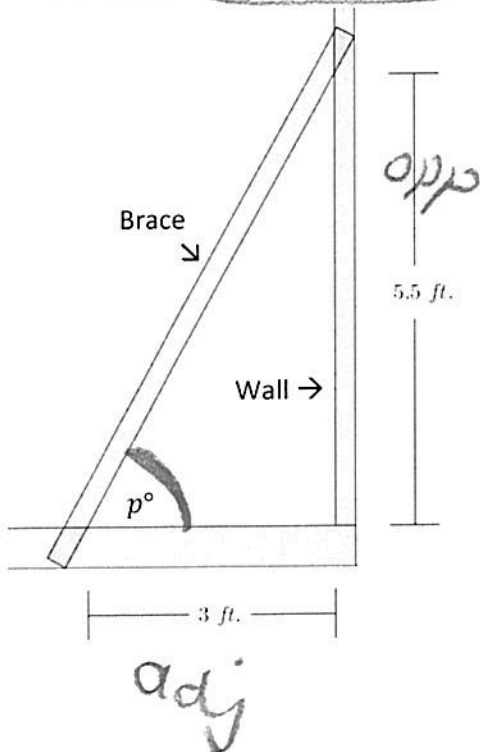
$$\cos^{-1} \frac{3.6}{9.4} = \boxed{67.5^\circ}$$



$$\sin \theta = \frac{3}{11.4}$$

$$\arcsin \left(\frac{3}{11.4} \right) = \boxed{15.3^\circ}$$

(2) Gwen has built and raised a wall of her new house. To keep the wall standing upright while she builds the next wall, she supports the wall with a brace, as shown in the diagram below. What is value of p , the measure of the angle formed by the brace and the wall to the nearest degree.



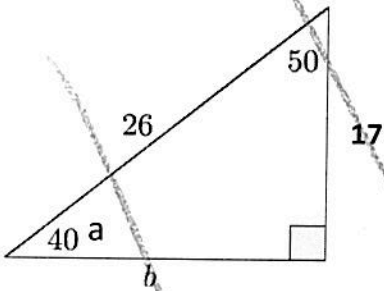
$$\tan p = \frac{5.5}{3}$$

$$\tan^{-1} \left(\frac{5.5}{3} \right) = 61.3$$

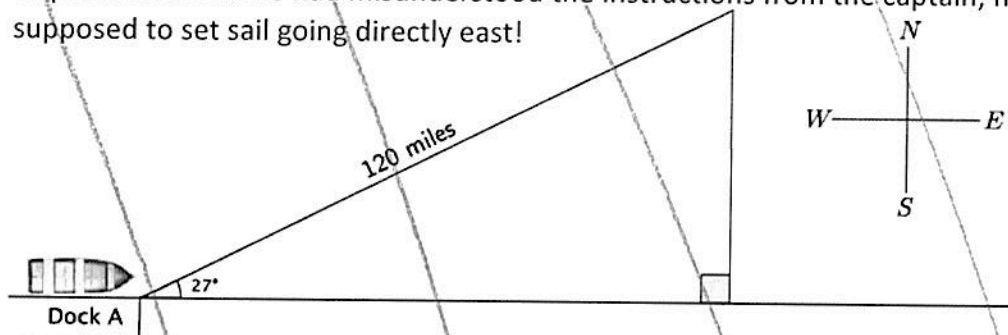
$$\boxed{61^\circ}$$

(3) Explain the meaning of the statement " $\arcsin\left(\frac{1}{2}\right) = 30^\circ$ "

(4) Find the value of a and b to the nearest integer.



(5) A shipmate set a boat to sail exactly 27° NE from the dock. After traveling 120 miles, the shipmate realized he had misunderstood the instructions from the captain; he was supposed to set sail going directly east!



a. How many miles will the shipmate have to travel directly south before he is directly east of the dock? Round your answer to the nearest mile.

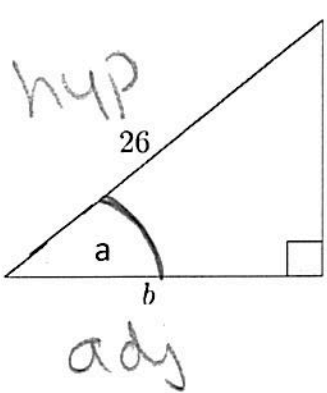
b. How many extra miles does the shipmate travel by going the wrong direction compared to going directly east? Round your answer to the nearest mile.

Inverse Sin

(3) Explain the meaning of the statement " $\arcsin\left(\frac{1}{2}\right) = 30^\circ$ "

This means the angle whose sin is $\frac{1}{2}$.
 This means that the sin of 30° is equal to $\frac{1}{2}$.

(4) Find the value of a and b to the nearest integer.



$$\sin a = \frac{17}{26}$$

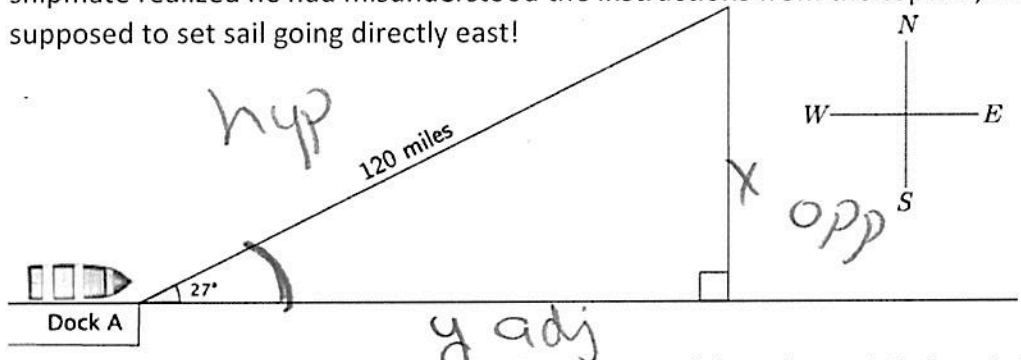
$$\cos 41 = \frac{b}{26}$$

$$\sin^{-1}\left(\frac{17}{26}\right) = 41^\circ$$

$$b = 26 \cos 41$$

$$b = 20$$

(5) A shipmate set a boat to sail exactly 27° NE from the dock. After traveling 120 miles, the shipmate realized he had misunderstood the instructions from the captain; he was supposed to set sail going directly east!



a. How many miles will the shipmate have to travel directly south before he is directly east of the dock? Round your answer to the nearest mile.

$$\frac{\sin 27}{1} = \frac{x}{120}$$

$$x = 54.47$$

$$x = 120 \sin 27$$

$$x = 54 \text{ miles}$$

b. How many extra miles does the shipmate travel by going the wrong direction compared to going directly east? Round your answer to the nearest mile.

$$\frac{\cos 27}{1} = \frac{y}{120}$$

$$y = 106.92$$

$$y = 107 \text{ mi}$$

$$y = 120 \cos 27$$

Extra Miles

$$120 + 54 = 174 \text{ mi travel}$$

$$174 - 107 = 67 \text{ extra miles}$$

