College Algebra

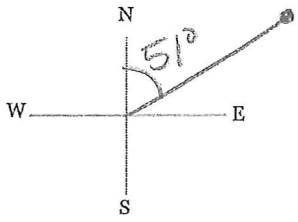
Name: _____

4.4 – Bearings Applications Day 2

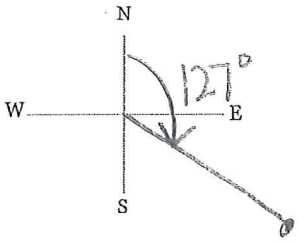
Date: _____ Period: _____

Draw the following bearings.

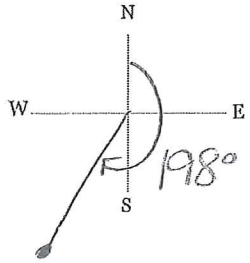
1.) 51°



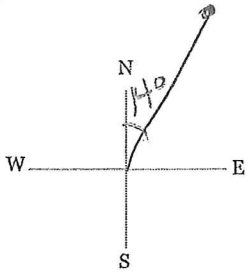
2.) 127°



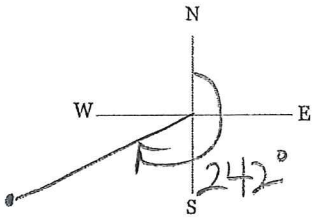
3.) 198°



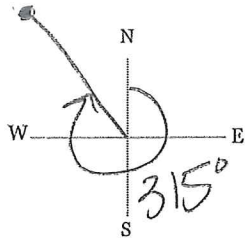
4.) 14°



5.) 242°

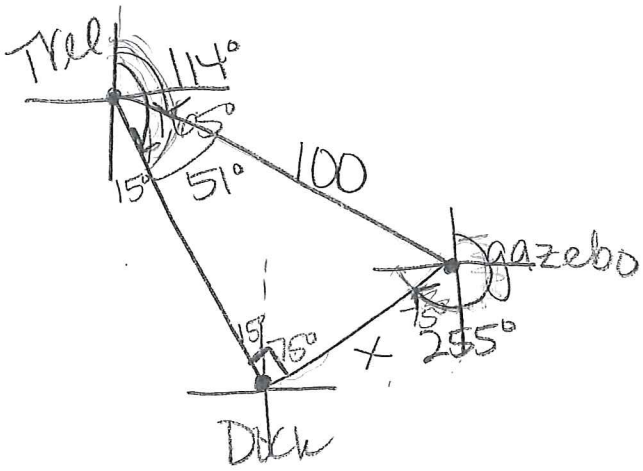


6.) 315°



Solve.

7.) You are building a bridge across a small lake from a gazebo to a dock and don't know how long to make it. You find the bearing from a tree to the gazebo to be 114° and the bearing from the tree to the dock to be 165°. If the bearing from the gazebo to the dock is 255° and the tree is 100 yards away from the gazebo, how long does the bridge have to be?

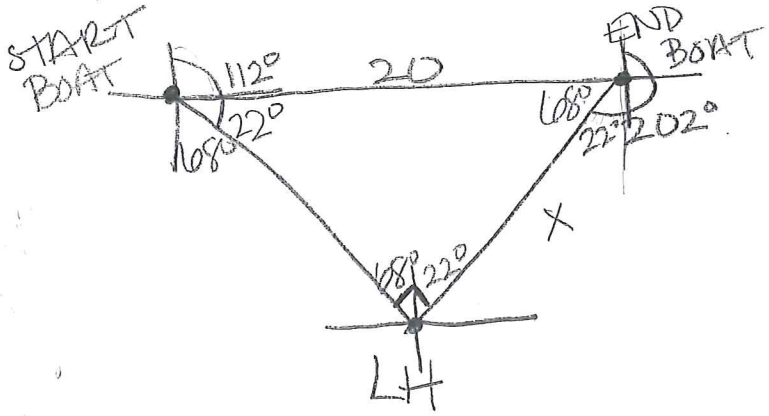


$\sin 51° = \frac{x}{100}$

$x = 77.71$ yds

Reword

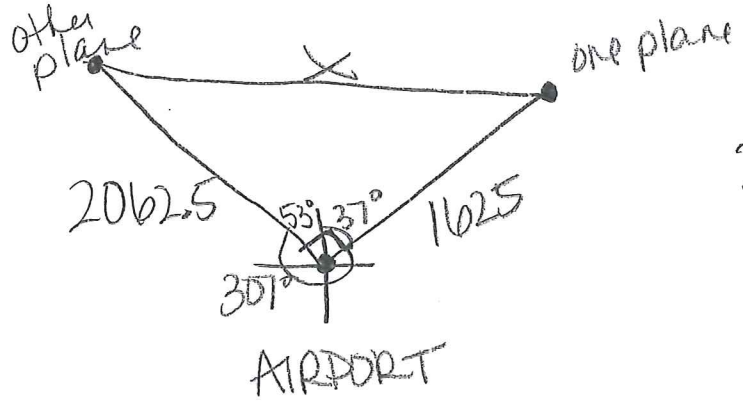
8.) A boat is sailing due east to the shoreline at a speed of 20 miles per hour. At a given time, the bearing to a lighthouse is 112°. An hour later, the bearing is 202°. Find the distance from the boat to the lighthouse at the boat's second position.



$\sin 22° = \frac{X}{20}$

$X = 7.49$ mi

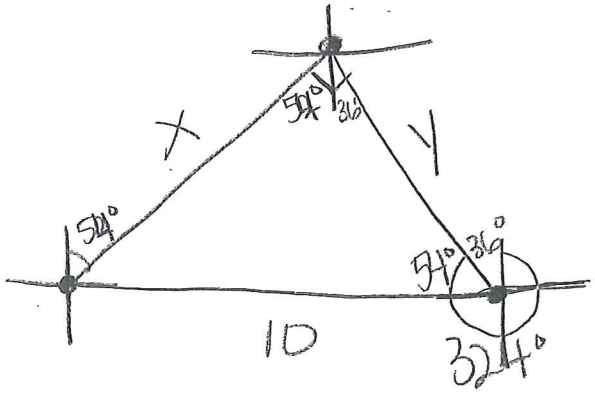
9.) Two planes leave an airport at the same time. One plane is flying 650 mph at a bearing of 37° and the other plane is flying at 825 mph at a bearing of 307°. How far apart are the planes after flying 2.5 hours?



$2062.5^2 + 1625^2 = x^2$

$X = 2625.74$ mi

10.) A fire is spotted from two lookout stations that are 10 miles apart that are due east/west of each other. The bearing from the first lookout station to the fire is 54°. The bearing from the second lookout station to the fire is 324°. Find the distance from each lookout station to the fire.



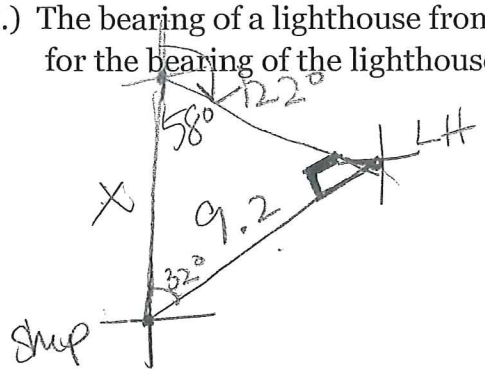
$\sin 54° = \frac{X}{10}$

$X = 8.09$ mi

$\cos 54° = \frac{Y}{10}$

$Y = 5.88$ mi

11.) The bearing of a lighthouse from a ship 9.2 km away is 32°. How far must the ship sail due North for the bearing of the lighthouse to be 122°?



$\cos 32° = \frac{9.2}{x}$

$x = 10.85$ km

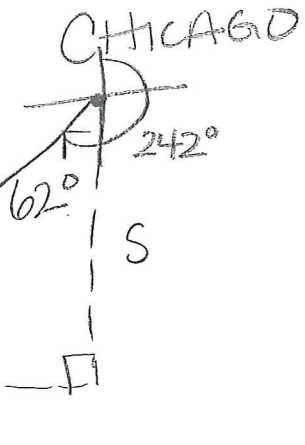
12.) An airplane travels at 165 mph for 2 hours in a direction of 242° from Chicago. How far south and west is the plane from Chicago?

$\sin 62° = \frac{W}{330}$

$W = 291.37$ mi

$\cos 62° = \frac{S}{330}$

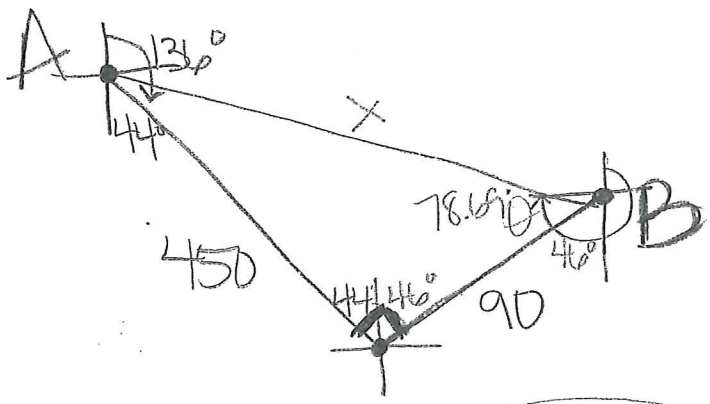
$S = 154.93$ mi



13.) A pilot flies a place from airport A at a bearing of 136°, traveling at an average speed of 180 mph for 2.5 hours. At the end of the 2.5 hours the pilot changes direction and continues to fly at the same speed for another .5 hours at a bearing of 46° to airport B. The pilot then flies directly back from airport B to airport A. What is the distance between the two airports and what is the bearing of the plane on the direct flight home?

$450^2 + 90^2 = x^2$

$x = 458.91$ mi



$\tan\theta = \frac{450}{90}$

$\theta = 78.69°$

$+46$

$+180$

304.69°