

6.6 Applications Day 1

Name

Key

Draw a picture. Set up the problem using the Law of Sines, and solve. Show all work. Round all answers to the nearest hundredth.

1. A surveyor marks points A and B 200 meters apart on one bank of a river. She sights a point C on the opposite bank and determines $\angle A = 57^\circ$ and $\angle B = 42^\circ$. What is the distance from A to C?

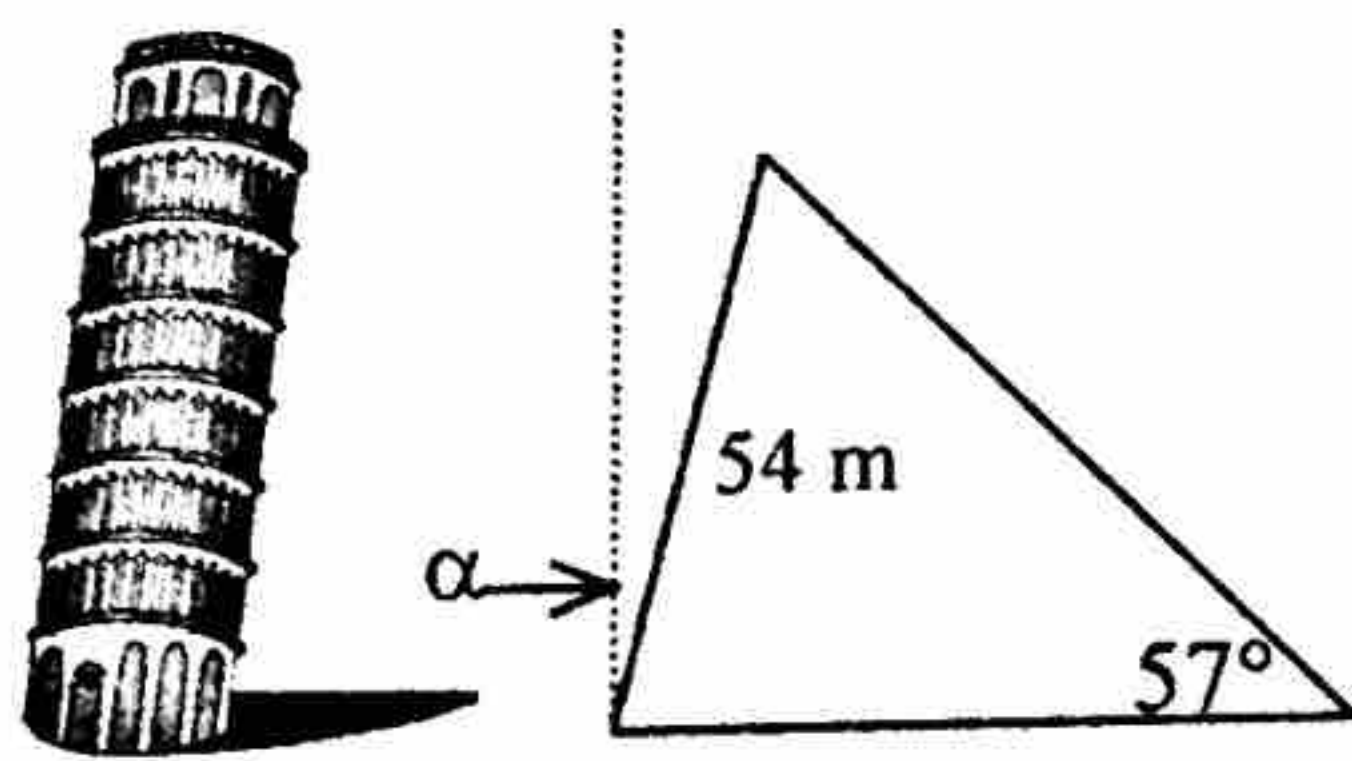
135.49m

2. A forest fire is spotted from two fire towers. The triangle determined by the two towers and the fire has angles of 28° and 37° at the tower vertices. If the towers are 3000 meters apart, which one is closer to the fire?

TOWER 1

3. A visitor to the Leaning Tower of Pisa observed that the tower's shadow was 40 meters long and the angle of elevation from the tip of the shadow to the top of the tower was 57° . The tower is now 54 meters tall (measured from the ground to the top along the center line of the tower). Approximate the angle α that the center line of the tower makes with the vertical line.

5.41°



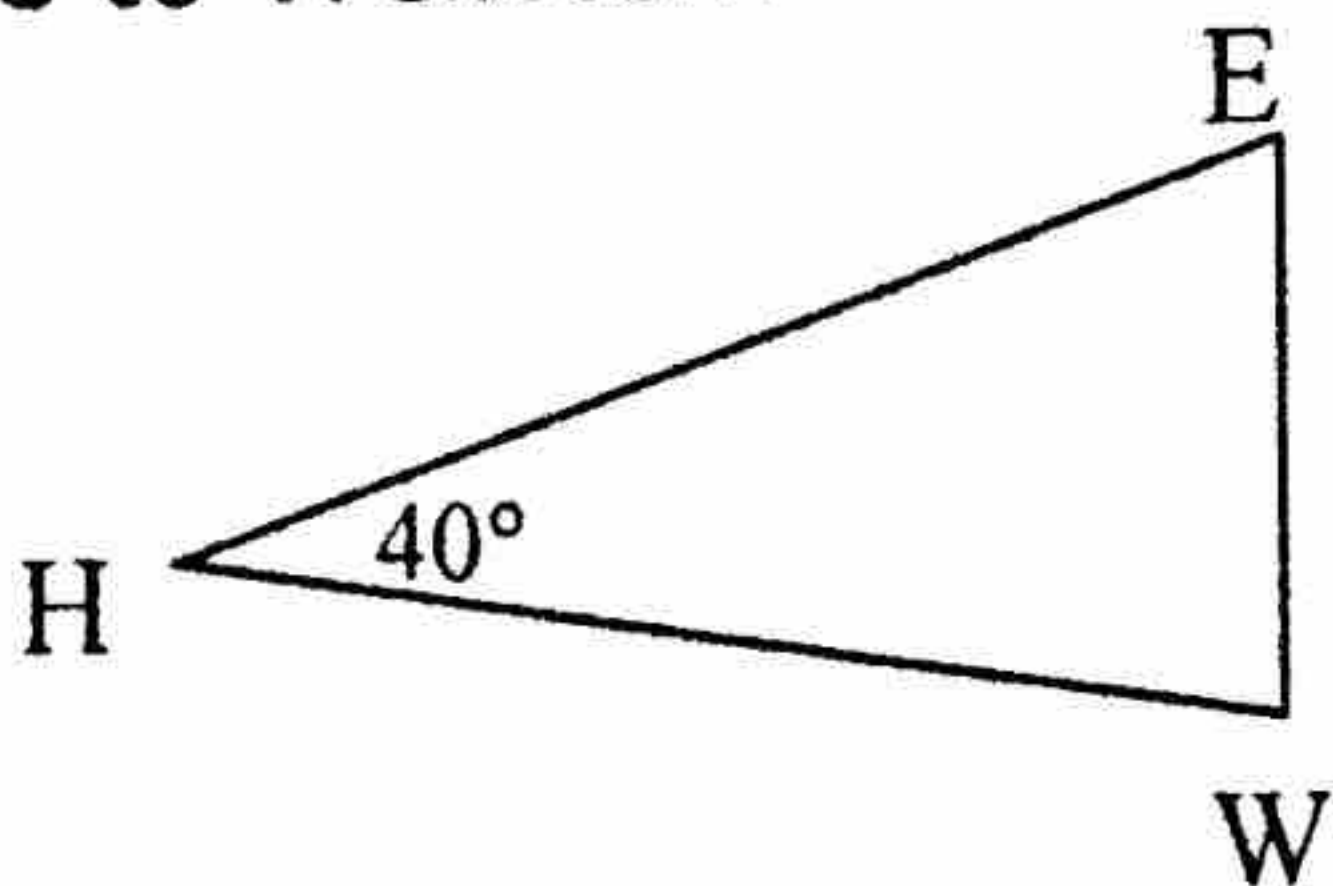
4. An airplane (A) takes off from a carrier (C) and flies in a straight line for 12 kilometers. At that instant, an observer on destroyer D, located 5 kilometers from the carrier, notes that the angle determined by the carrier, destroyer and the plane ($\angle CDA$) is 37° . How far is the plane from the destroyer?

15.71 km

5. A plane flying in a straight line passes directly over point A on the ground and later directly over point B, which is 3 miles from A. A few minutes after the plane passes over B, the angle of elevation from A to the plane is 43° and the angle of elevation from B to the plane is 67° . How high is the plane at that moment?

4.63 mi

6. Two straight roads meet an angle of 40° in Harville, one leading to Eastview and the other to Wellston. Eastview is 18 miles from Harville and 20 miles from Wellston. What is the distance from Harville to Wellston?



30.09 mi