1. Solve \( \triangle XYZ \) if \( x = 52 \), \( y = 70 \) and \( z = 100 \).

2. Solve \( \triangle XYZ \) and find its area if \( \angle X = 52^\circ \), \( \angle Y = 70^\circ \), and \( z = 100 \).

3. Eli Cooley flew his plane 900 km north, turned \( 15^\circ \), and flew 1150 km. How far is Mr. Cooley from his starting point?

4. The angle of elevation to the peak of a mountain is \( 30^\circ \). A kilometer closer, the angle of elevation is \( 35^\circ \). Find the height of the mountain.

5. A lakefront plot of land is shown below. What is its area and lakefront footage (bolded sides are lakefront footage)?
6. The diagram shows the dimensions for a sail on a wooden model ship. Find the area of the sail to the nearest square inch. 

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12.5 in

18 in.

16.5 in

26 in

75°
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6.) _________________

7. A ship leaves port and travels 36 miles west, then 24 miles on a course bearing $213^\circ$. How far is it from its starting point? 

7.) _________________

8. A hiker walks 8000 m on a course of $S 81^\circ E$. She then changes direction and hikes 5000 m on a course of $N 32^\circ W$. How far is she from her starting point, and on what course must she travel to return to the starting point? 

8.) _________________

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**Answers:**

1. $\angle X = 29.4^\circ$, $\angle Y = 41.4^\circ$, $\angle Z = 109.2^\circ$  
2. $x = 92.9$, $y = 110.8$, $\angle Z = 58^\circ$, $\text{AREA} = 4364.9$

3. 2032.8 km  
4. 3.3 km  
5. Area = 55133.1 ft$^2$, lakefront footage = 401.1 ft  
6. 301 in$^2$  
7. 53.03 miles

8. 6043 m, bearing of $240^\circ$