

(5.5) --- Law of Sines & (5.6) --- Law of Cosines
and area

Find the area of each triangle to the nearest tenth

1) $a = 5, b = 12, c = 13$

30 units^2

2) $c = 3.58, b = 6.8, A = 39^\circ$

7.66 units^2

Solve each triangle (round to the nearest tenth)

3) $b = 40, c = 45, A = 51^\circ$

$A = 36.87$
 $B = 57.5^\circ$
 $C = 71.5^\circ$

4) $c = 125, b = 150, C = 25^\circ$

$B = 30.5^\circ$	$B = 149.5^\circ$
$C = 124.5^\circ$	$C = 5.5^\circ$
$a = 243.68$	$c = 28.21$

5) $a = 20, b = 28, A = 73^\circ$

no soln.

(no Δ is possible)

6) $a = 18, b = 21, A = 47^\circ$

$B = 58.6^\circ$	$B = 121.4^\circ$
$C = 74.4^\circ$	$C = 11.6^\circ$
$c = 23.7$	$c = 4.93$

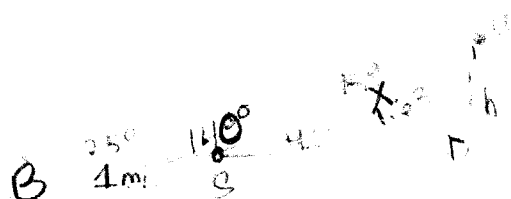
7) $a = 17, b = 12, c = 16$

$A = 73.2^\circ$
 $B = 42.5^\circ$
 $C = 64.3^\circ$

8) Aliens are on their way to earth to abduct Mr. Shahin and Ms. Borchert in order to study brilliant Earthlings. Mr. Shahin looks due East and sees the UFO with an angle of elevation of 40° . At the same time Ms. Borchert is 1 mile due West of Mr. Shahin. When Ms. Borchert looks due East she sees the same UFO at an angle of elevation of 25° . Find the distance between Mr. Shahin and the UFO. How far is the UFO above the ground?

1.63 mi

1.05 mi



$$\frac{\sin 15^\circ}{1} = \frac{\sin 25^\circ}{x}$$

$$\sin 40^\circ = \frac{h}{1.63}$$

$$h = 1.05$$

1.05

As Danielle stands on a bridge she notices that it is supported by triangular braces. The sides of each brace have lengths 63 ft, 46 ft, and 40 ft. In order to keep the bridge from collapsing she needs to find the angle measure opposite the 46 ft side. Help Danielle save the bridge!

$$46.8^\circ$$

10) Mr. Simpson and Mr. Baker walk from opposite ends of a city block to a point on the other side of the street where they are having a *Star Trek* convention. The angle formed by their paths is 25° . Mr. Baker walks 300 ft, while Mr. Simpson walks 320 ft. How long is the city block?

$$135.61 \text{ ft}$$

11) Eric's mom will be serving *Bagel Bites* to Eric's very productive study group when ~~she~~^{they} arrive. She will be serving them on a new triangular serving platter that Eric gave her for Mother's Day. If one side of the platter is 15 in long and the other two sides both measure 18 inches, find the area of the platter.

$$122.72 \text{ in}^2$$

12) Ms. Borchert's 3rd period class decided to make a poster to hang on the wall of the classroom in order to declare their superiority over 4th period. To honor their Pre-Calculus knowledge they made a triangular shaped poster. Ms. Borchert's 4th period class wants to make an even bigger poster that covers more wall space. To find the area of the 3rd period's poster they measure and find two of the sides are 8 ft and 9 ft, while the included angle measures 39° . How large will 4th period's poster have to be in order to cover more area than 3rd period's?

$$22.66 \text{ ft}^2$$

13) The measures of two sides of a parallelogram are 28 in and 42 in. If the longer diagonal has measure 58 in, find the measure of the angles at the vertices.

$$110.3^\circ$$
$$69.7^\circ$$

Area of Oblique Triangle Worksheet

Find the area of each triangle to the nearest thousandth.

1. $A = 60^\circ, B = 75^\circ, a = 2$

$$1.58 \text{ units}^2$$

2. $a = 174, b = 138, c = 188$

3. $B = 60^\circ, C = 75^\circ, a = 8$

4. $a = 11, c = 5, B = 50^\circ$

5. $a = 17, b = 13, c = 19$

$$107.81 \text{ units}^2$$

6. $A = 62^\circ, b = 146.2, c = 209.3$

7. $a = 19.42, c = 19.42, B = 31^\circ$

$$97.12 \text{ units}^2$$

8. $b = 14, C = 110^\circ, B = 25^\circ$

9. The adjacent sides of a parallelogram measure 8 cm and 12 cm, and one angle measures 60° . Find the area of the parallelogram.