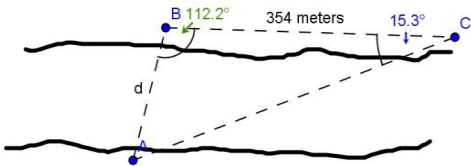


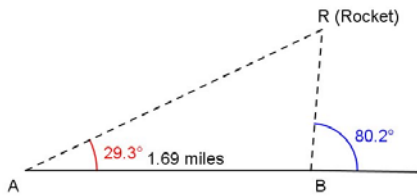
LAW OF SINES/COSINES PROBLEM SOLVING WORKSHEET

<p>Formulas:</p> $a^2 = b^2 + c^2 - 2bc \cos A$ $\text{Area} = \frac{1}{2} ab \sin C$	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$ $\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}, \quad s = \frac{a+b+c}{2}$
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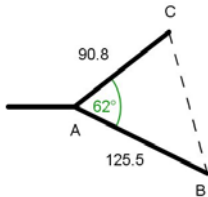
- 1) To find the distance AB across a river, two points (B and C) 354 meters apart were laid off on one side of the river. It is found that $B = 112.2^\circ$ and $C = 15.3^\circ$. Find the distance across the river.



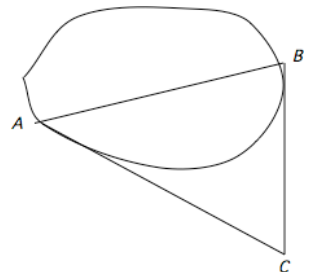
- 2) A rocket tracking facility has two radar stations A and B, placed 1.69 miles apart, which lock onto a rocket and constantly transmit the angles of elevation to a computer. Find the distance to the rocket from A at the moment when the angles of elevation from the tracking stations are 29.3° and 80.2° , as shown in the figure.



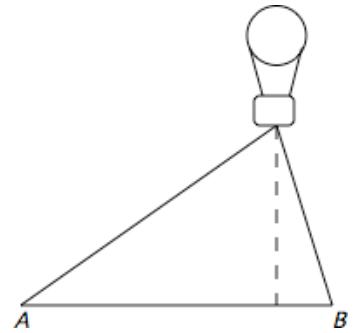
- 3) A civic group plans to landscape a lot that is located where a road forks and forms an angle of 62° . If the frontages on the road of the lot are 125.5 feet and 90.8 feet, find the area to the nearest whole square foot.



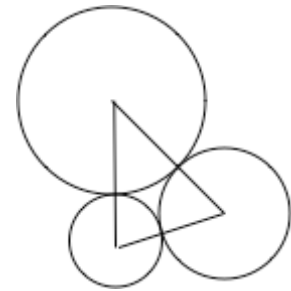
- 4) To determine the distance across a lake AB, a surveyor goes to point C where he can measure the distance from C to A and from C to B as well as the angle ACB. If AC is 265 feet and BC is 188 feet and $m\angle ACB = 42^\circ 18'$, find the distance AB across the lake.



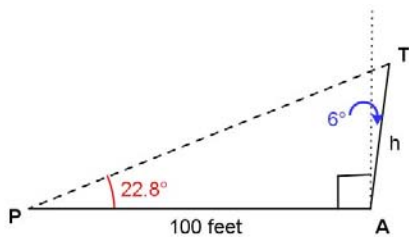
- 5) A hot air balloon is hovering over Valley Forge. Person A views the balloon at an angle of elevation of 25° while person B views the balloon at an angle of elevation of 40° . If A and B are 4000 feet apart, find the height of the balloon.



- 6) Circular tracts of land with diameters 900 meters, 700 meters and 600 meters are tangent to each other externally. There are houses directly in the center of each circle. What are the angles of the triangle connecting the houses and what is the area of that triangle?



- 7) Because of prevailing winds, a tree grew so that it was leaning 6° from the vertical. At a point 100 feet from the tree, the angle of elevation to the top of the tree is 22.8° . Find the height of the tree.



- 8) Two fire towers A and B are 18.5 miles apart. The bearing from A to B is $N65^\circ E$. A fire that has a bearing of $N28^\circ E$ from A is spotted by a ranger in tower A . The same fire is spotted by a ranger in tower B and has a bearing of $N16.5^\circ W$ from B . Find the distance of the fire from tower A .

