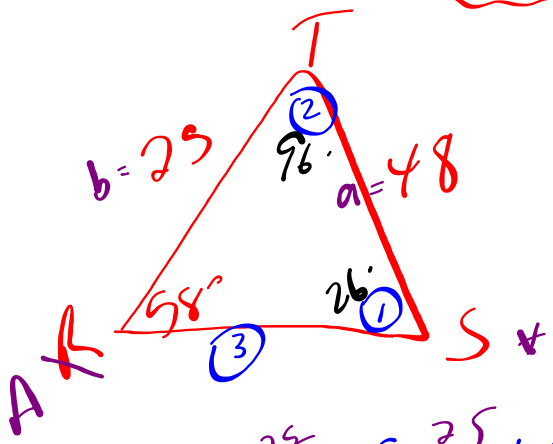
Warm Up

Given ΔRST has angle R = 58° , $r = 48$ and $s = 25$.
Solve the triangle, if there is more than one possible, solve both!!



✓ * SSA
✓ - acute angle
X - a < b
1 solution

① $\frac{25}{\sin S} = \frac{25}{\sin 58°} = \frac{48}{\sin 58°}$

$\sin^{-1} \sin S = \sin^{-1}(0.4417)$

$\angle S = 26°$

② $\angle T = 180 - 58 - 26$

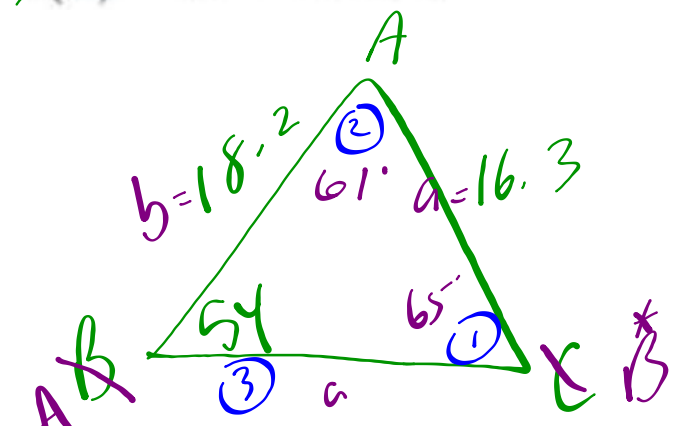
$\angle T = 96°$

③ $\frac{t}{\sin 96°} = \frac{48}{\sin 58°}$

$t = 56.3$

Solve

5(c) $b = 16.3, c = 18.2, \angle B = 54°$



✓ - SSA
✓ - acute
✓ - a < b

$h = 18.2 \sin 54°$
$h = 14.7$

a vs h
16.3 > 14.7
*ambiguous

$\frac{\sin C}{18.2} = \frac{\sin 54°}{16.3}$

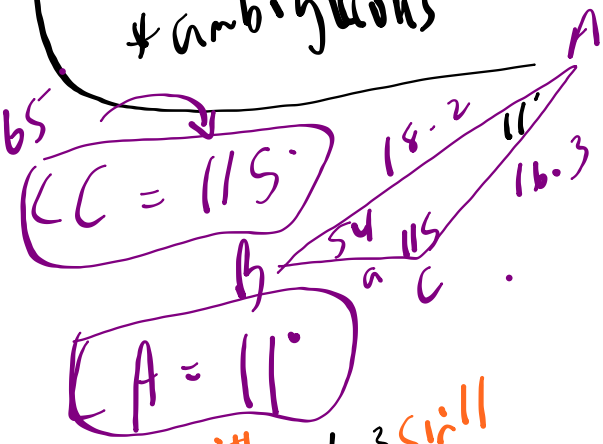
$\sin C =$ 18.2sin(54)/16.3 = .9033195888
$\sin^{-1}(Ans) = 64.59790238$

$\angle C = 65°$
$\angle A = 61°$

$\frac{a}{\sin 61°} = \frac{16.3}{\sin 54°}$

$a = 17.6$

$\angle C = 115°$



$\angle A = 11°$

$\frac{a}{\sin 11°} = \frac{16.3}{\sin 54°}$

$a = 3.8$

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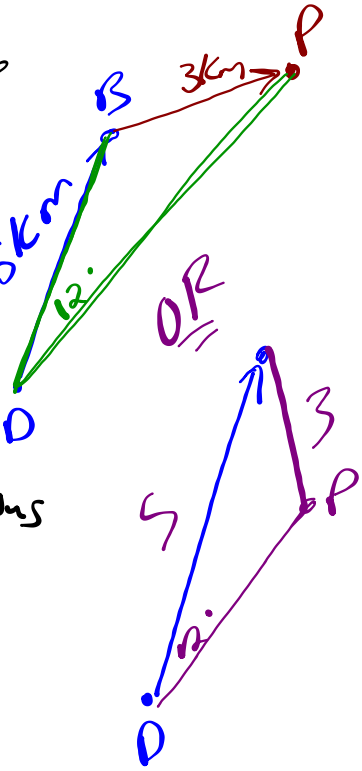
7. The *Raven's Song*, a traditional Tsimshian cedar canoe, is paddled away from a dock, directly toward a navigational buoy that is 5 km away. After reaching the buoy, the direction of the canoe is altered and it is paddled another 3 km. From the dock, the angle between the buoy and the canoe's current position measures 12°.
   a) How far is the *Raven's Song* from the dock?
   b) Is this the only possible solution? Explain.

Bill Helin carved the *Raven's Song* from a 600-year-old cedar taken from the Nimpkish Valley. The canoe was created to carry a message of goodwill from the First Nations Peoples of the West Coast of British Columbia to the 1994 Commonwealth Games in Victoria.

✓*SSA
✓acute
✓alt
$h = 5\sin 12°$
$h = 1.0$
a vs h
3 > 1
*ambiguous



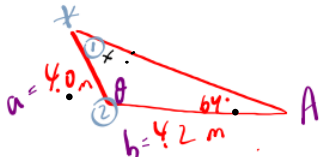
8. An obtuse triangle has two known side lengths: 4.0 m and 4.2 m. The angle that is opposite the shorter side measures 64.0°.

a) Calculate the obtuse angle in the triangle, to the nearest tenth of a degree.

b) Is there only one possible answer? Explain.

✓* SSA
✓ acute
✓ a < b
$h = 4.2 \sin 64°$
$h = 3.7$

a vs h
4.0 > 3.7
∴ Ambiguous



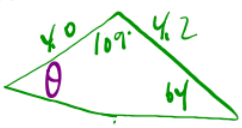
① $\frac{\sin x}{4.2} = \frac{\sin 64°}{4}$

$\sin x =$ 4.2sin(64)/4 = 0.9437337486; sin⁻¹(Ans) = 70.68835352

$\angle x =$
$\therefore \angle x = 71°$ OR

$\angle x = 180 - 71°$.
$\angle x = 109°$.

$\theta = 180 - 71 - 64$
$\theta = 45°$



$\theta = 180 - 109 - 64$
$\theta = 7°$

Homework...

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