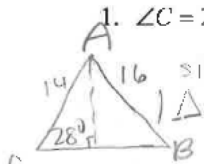


LSC Practice #2

Name Key 2017 Per. _____

Given $\triangle ABC$: Solve the following triangles. Find all solutions. Round sides to nearest tenths and angles to nearest minute. If it's not a triangle, explain why not.

1. $\angle C = 28^\circ$; $b = 14$; $c = 16$



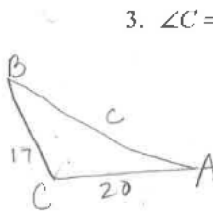
$\sin 28^\circ = \frac{h}{14}$ $h = 14 \sin 28^\circ \approx 6.6$
 $\frac{\sin B}{14} = \frac{\sin 28^\circ}{16}$
 $B = 24^\circ 15'$
 $A = 127^\circ 45'$ $a = 26.9$
 $B = 24^\circ 15'$ $b = 14$
 $C = 28^\circ$ $c = 16$
 $A = 180 - 24^\circ 15' - 28^\circ$
 $\frac{\sin 127^\circ 45'}{a} = \frac{\sin 28^\circ}{16}$

2. $\angle A = 36^\circ 20'$; $\angle C = 81^\circ 15'$; $c = 42.5$

$\angle B = 180 - 36^\circ 20' - 81^\circ 15'$
 $\frac{\sin 81^\circ 15'}{42.5} = \frac{\sin 36^\circ 20'}{a}$
 $\frac{\sin 81^\circ 15'}{42.5} = \frac{\sin 62^\circ 25'}{b}$

$A = 36^\circ 20'$	$a = 25.5$
$B = 62^\circ 25'$	$b = 39.1$
$C = 81^\circ 15'$	$c = 42.5$

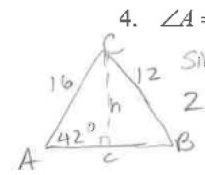
3. $\angle C = 120^\circ 15'$; $a = 17$; $b = 20$



$c^2 = 17^2 + 20^2 - 2(17)(20)\cos 120^\circ 15'$
 $c \approx 32.1$
 $\frac{\sin 120^\circ 15'}{32.1} = \frac{\sin A}{17}$
 $B = 180 - 120^\circ 15' - 27^\circ 12'$

$A = 27^\circ 12'$	$a = 17$
$B = 32^\circ 38'$	$b = 20$
$C = 120^\circ 15'$	$c = 32.1$

4. $\angle A = 42^\circ$; $a = 12$; $b = 16$



$\sin 42^\circ = \frac{h}{16}$ $h = 16 \sin 42^\circ \approx 10.7$
 $2\Delta S \frac{\sin B}{16} = \frac{\sin 42^\circ}{12}$ $\frac{\sin 74^\circ 51'}{c} = \frac{\sin 42^\circ}{12}$
 $C = 180 - 42 - 63^\circ 9'$
 $2\Delta: B = 180 - 63^\circ 9'$
 $C = 180 - 42 - 116^\circ 51'$
 $\frac{\sin 210^\circ 9'}{c} = \frac{\sin 42^\circ}{12}$

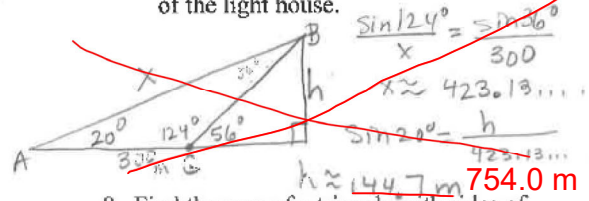
$A = 42^\circ$	$a = 12$	$A = 42^\circ$	$a = 12$
$B = 33^\circ 9'$	$b = 16$	$B = 116^\circ 51'$	$b = 16$
$C = 74^\circ 51'$	$c = 17.3$	$C = 210^\circ 9'$	$c = 6.5$

5. $a = 30$; $b = 42$; $c = 21$

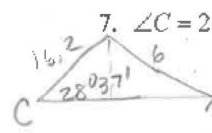
$\angle B$ is largest \angle
 $\cos B = \frac{30^2 + 21^2 - 42^2}{2(30)(21)}$ $B = 109^\circ 37'$
 $\frac{\sin C}{21} = \frac{\sin 109^\circ 37'}{42}$ $A = 180 - 109^\circ 37' - 28^\circ 6'$

$A = 42^\circ 17'$	$a = 30$
$B = 109^\circ 37'$	$b = 42$
$C = 28^\circ 6'$	$c = 21$

6. The angle of elevation from a ship at point A to the top of a light house, point B, is 43° . When the ship reaches point C, 300 meters closer to the light house, the angle of elevation is 56° . Find, to the nearest tenth of a meter, the height of the light house.



7. $\angle C = 28^\circ 37'$; $a = 16.2$; $c = 6$



$\sin 28^\circ 37' = \frac{h}{16.2}$
 $h \approx 7.76$
 No Δ , $a < h$

8. Find the area of a triangle with sides of 10 cm, 15 cm, 17 cm.

$S = \frac{10 + 15 + 17}{2} = \frac{42}{2} = 21$
 $A = \sqrt{21(21-10)(21-15)(21-17)} = \sqrt{5544} \approx 74.5 \text{ cm}^2$

9. Find the area of a triangle if $\angle C = 60^\circ 15'$; $a = 17$; $b = 20$

$A = \frac{1}{2} \cdot 17 \cdot 20 \cdot \sin 60^\circ 15'$
 $A \approx 147.6 \text{ cm}^2$