

# Day 11 HW KEY

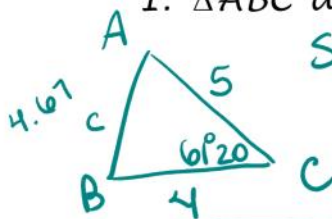
Sunday, November 9, 2014 1:38 PM

A series of horizontal blue lines for writing, with a vertical red margin line on the left side.

## Solve that Triangle!!!!

Use the procedures we learned in class to solve the following triangles and find the Area. Good Luck! ☺

1.  $\triangle ABC$   $a = 4$ ,  $b = 5$  and  $\angle C = 61^\circ 20'$



SAS-Cosines  $c^2 = 4^2 + 5^2 - 2(4)(5)\cos 61^\circ 20'$   
 $c = 4.67$

Area:  
 $A = \frac{1}{2}(4)(5)\sin 61^\circ 20'$   
 $A = 8.77$

$$\frac{\sin \angle A}{4} = \frac{\sin 61^\circ 20'}{4.67}$$

$$4.67 \sin \angle A = 4 \sin 61^\circ 20'$$

$$\sin \angle A = \frac{4 \sin 61^\circ 20'}{4.67}$$

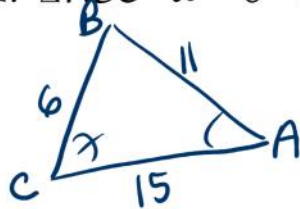
$$\angle A = \sin^{-1}(.7515)$$

$$\angle A = 48.72^\circ$$

$$\angle B = 180 - 48.72 - 61^\circ 20'$$

$$\angle B = 69.95^\circ$$

2.  $\triangle ABC$   $a = 6$   $b = 15$   $c = 11$



SSS-Cosines

$$6^2 = 15^2 + 11^2 - 2(15)(11)\cos \angle A$$

$$.9394 = \cos \angle A$$

$$\angle A = 20.05^\circ$$

$$11^2 = 6^2 + 15^2 - 2(6)(15)\cos \angle C$$

$$.7778 = \cos \angle C$$

$$\angle C = 38.94^\circ$$

$$\angle B = 121.01^\circ$$

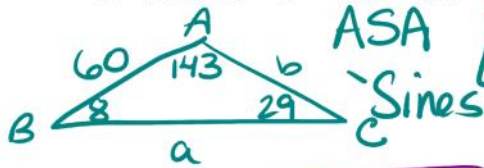
$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{15+11+6}{2} = 16$$

$$A = \sqrt{16(10)(1)(5)}$$

$$A = \sqrt{800} = 28.28$$

3.  $\triangle ABC$   $c = 60$   $\angle A = 143^\circ$   $\angle B = 8^\circ$



$\angle C = 29^\circ$

$$\frac{\sin 8}{b} = \frac{\sin 29}{60}$$

$$b = \frac{60 \sin 8}{\sin 29}$$

$b = 17.22$

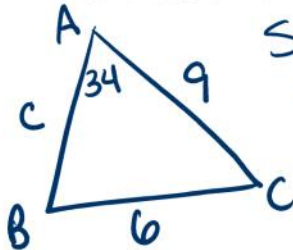
$$\frac{\sin 143}{a} = \frac{\sin 29}{60}$$

$$a = \frac{60 \sin 143}{\sin 29}$$

$a = 74.48$

Area =  $\frac{1}{2} (60)(74.48) \sin 8^\circ$   
 $= 310.97$

4.  $\triangle ABC$   $a = 6$   $b = 9$   $\angle A = 34^\circ$



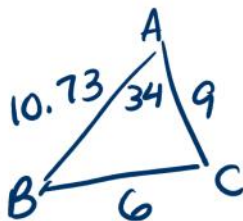
SSA - Cosines  
ambiguous case

$$b^2 = c^2 + a^2 - 2(a)(c) \cos 34^\circ$$

$$0 = c^2 - 18 \cos 34^\circ c + 45$$

$c = 10.73, 4.19$

2 Triangles



$\angle B$  is smaller than  $\angle C$

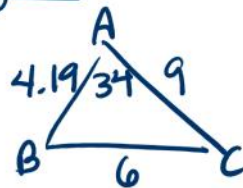
$$\frac{\sin 34}{6} = \frac{\sin B}{9}$$

$$\sin \angle B = \frac{9 \sin 34}{6}$$

$\angle B = 57.01^\circ$

$\angle C = 88.99^\circ$

Area =  $\frac{1}{2} (9)(10.73) \sin 34^\circ$   
 $= 27.00$



$\angle C$  is smaller than  $\angle B$

$$\frac{\sin 34}{6} = \frac{\sin \angle C}{4.19}$$

$$\sin \angle C = \frac{4.19 \sin 34}{6}$$

$\angle C = 22.99^\circ$

$\angle B = 123.01^\circ$

Area =  $\frac{1}{2} (4.19)(9) \sin 34^\circ$   
 $= 10.54$