PC **REVIEW** Solving Oblique Triangles Name: Key

#1-6: Denote in the margin to the left of the problem number how many triangles can be formed with the given information. Then solve the triangles, if possible. Show all work on a separate sheet of paper.

	a	b	c	A	B	C
1.	75	58	34.9	105°	48.3°	26.7°
2.	10	40.3	34	12°	123°	45°
3.	6	10.9	13.7	25°	50°	105°
4.	68	22	No	Δ	29°	—
5.	18	71.5	74	14.1°	75°	90.9°
6.	64	15	75	38.8°	8.4°	132.8°

7.	8.	9.	10.	11.
132.3 sq. inches	699.4 sq. cm	A. 1355 B. 1682.2	92.8°	331.2 ft.

For #7-11, put answers in appropriate box above. Show all work on a separate sheet of paper.

#7-8: Find the area of the following triangles.

7. a = 15 in, b = 18 in, c = 21 in.

8. b = 40 cm, c = 45 cm, $A = 51°$

#9-11: Find the requested information.

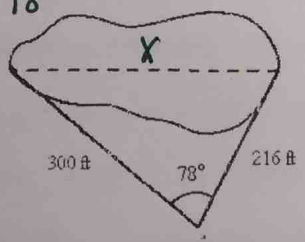
9. A used car lot has a large balloon tied down with wires to stakes 1500 feet apart. The angle of elevation from the stake at the west end of the lot to the balloon is 50°, and the angle of elevation from the stake at the east end of the lot to the balloon is 72°. How long is each wire?

10. The airline distance from Curtis City to Clearfield is 350 miles. It is 620 miles from Curtis City to Spinville and 495 miles from Clearfield to Spinville. Find the angle between the routes from Clearfield.

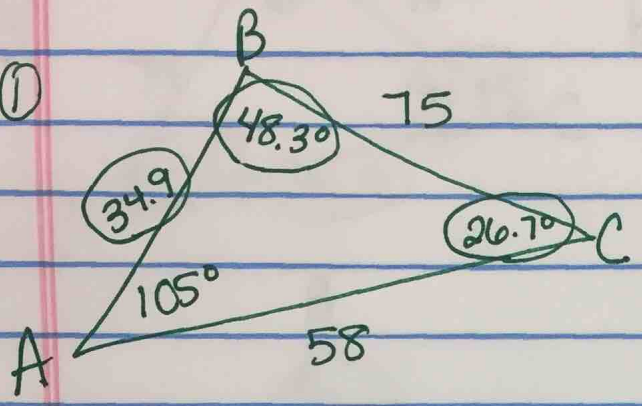
11. A trigonometry class wants to determine the length of a pond near the school. From a point, A, they measure the distance to each end of the pond and the angle between these two sides. What is the approximate length of the pond? (See figure.)

$X^2 = 300^2 + 216^2 - 2(300)(216)\cos 78°$

$X = 331.2$ ft.



Review

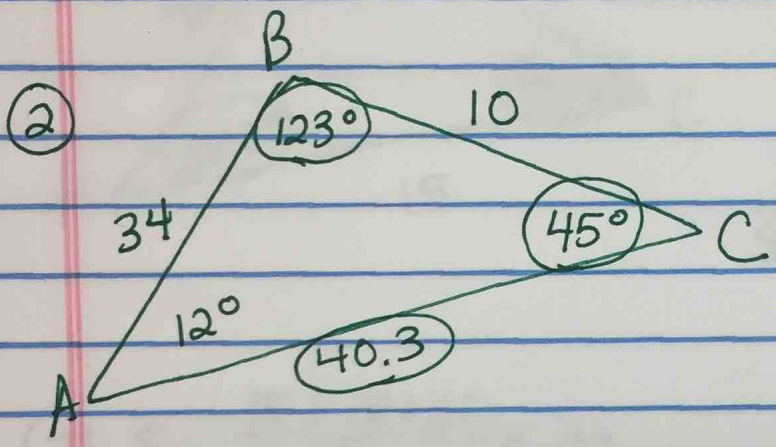
① 

$$\frac{75}{\sin 105^\circ} = \frac{58}{\sin B}$$

$$\angle B = 48.3^\circ$$

$$\frac{c}{\sin 26.7^\circ} = \frac{58}{\sin 48.3^\circ}$$

$$c = 34.9$$

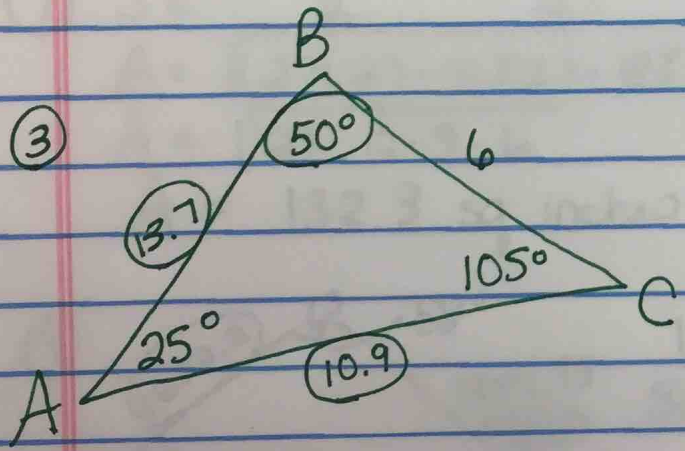
② 

$$\frac{34}{\sin C} = \frac{10}{\sin 12^\circ}$$

$$\angle C = 45^\circ$$

$$\frac{b}{\sin 123^\circ} = \frac{10}{\sin 12^\circ}$$

$$b = 40.3$$

③ 

$$\frac{6}{\sin 25^\circ} = \frac{b}{\sin 50^\circ}$$

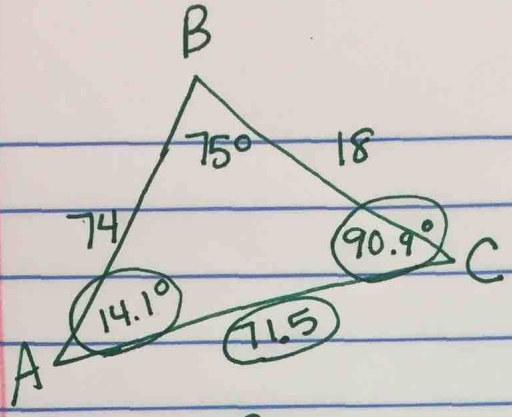
$$b = 10.9$$

$$\frac{c}{\sin 105^\circ} = \frac{10.9}{\sin 50^\circ}$$

$$c = 13.7$$

④ No Δ

(5)



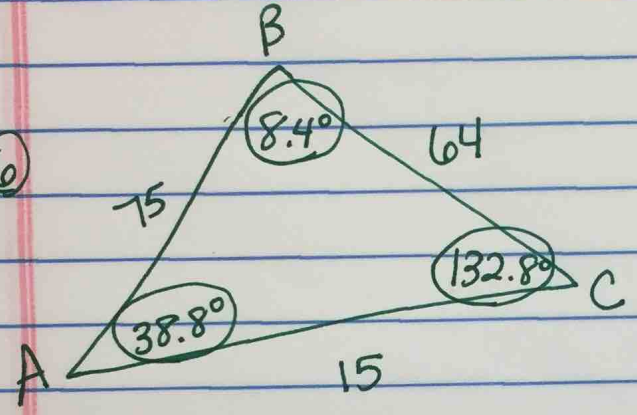
$b^2 = 18^2 + 74^2 - 2(18)(74)\cos 75°$

$b = 71.5$

$\frac{71.5}{\sin 75°} = \frac{18}{\sin A}$

$\angle A = 14.1°$

(6)



$75^2 = 64^2 + 15^2 - 2(64)(15)\cos C$

$1304 = -1920\cos C$

$\angle C = 132.8°$

$\frac{64}{\sin A} = \frac{75}{\sin 132.8°}$

$\angle A = 38.8°$

(7) $S = \frac{15+18+21}{2} = 27$

$A = \sqrt{27(27-15)(27-18)(27-21)}$

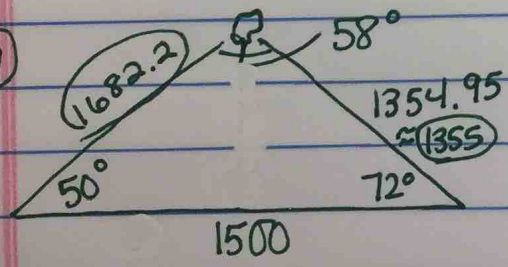
$A = \sqrt{27 \cdot 12 \cdot 9 \cdot 6}$

$A = 132.3$ sq. inches

(8) $\frac{1}{2}(40)(45)\sin 51°$

$A = 699.4$ sq cm

(9)

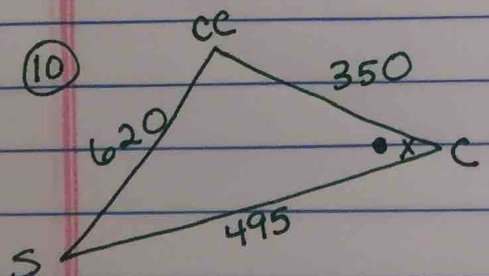


$\frac{1500}{\sin 58°} = \frac{X}{\sin 50°}$

$\frac{X}{\sin 72°} = \frac{1500}{\sin 58°}$

$X = 1682.2$

(10)



$620^2 = 350^2 + 495^2 - 2(350)(495)\cos X$

$X = 92.8°$