


Day 2

Tuesday, October 10, 2017
4:47 PM

 Copy for students
4-7 WP
Practice T...

10/11

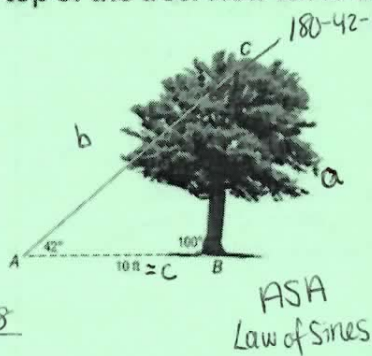
4.7 (cont.)

Assignment: Page 298 (7,9,18,25,35,56,57)

Warm-up:

TREE A tree is leaning 10° past vertical as shown in the figure. A wire that makes a 42° angle with the ground 10 feet from the base of the tree is attached to the top of the tree. How tall is the tree?

- A. 6.8 ft
- B. 7.8 ft
- C. 14.3 ft
- D. 10.9 ft**



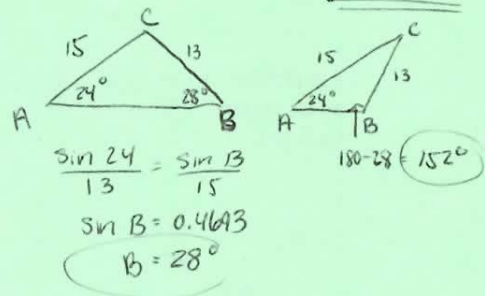
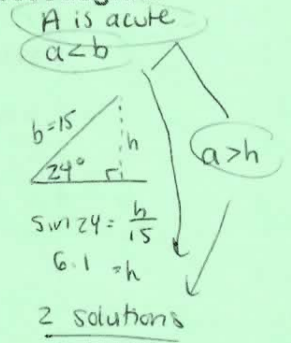
$$\frac{\sin 42}{a} = \frac{\sin 38}{10}$$

$$\frac{a \sin 38}{\sin 38} = \frac{10 \sin 42}{\sin 38}$$

$$a = 10.8$$

Find two triangles for which $A = 24^\circ$, $a = 13$, and $b = 15$. Round side lengths to the nearest tenth and angle measures to the nearest degree.

- ~~A.~~ $B \approx 128^\circ$, $C \approx 28^\circ$, $c \approx 15.0$,
 $B \approx 4^\circ$, $C \approx 152^\circ$, $c \approx 17.3$
- B.** $B \approx 28^\circ$, $C \approx 128^\circ$, $c \approx 25.2$,
 $B \approx 152^\circ$, $C \approx 4^\circ$, $c \approx 2.2$
- C. $B \approx 28^\circ$, $C \approx 128^\circ$, $c \approx 25.2$,
 $B \approx 62^\circ$, $C \approx 92^\circ$, $c \approx 31.9$
- ~~D.~~ $B \approx 21^\circ$, $C \approx 135^\circ$, $c \approx 22.6$,
 $B \approx 69^\circ$, $C \approx 87^\circ$, $c \approx 31.9$



Homework Questions: Page 298 (1-5,11-17,19-23,27-33 odds only)

More Practice!



4-7 WP
Practice T...

Inserted from: <file:///C:/Users/christy_simpson/Dropbox/RHS Math/Glencoe Precalculus Resources/Chapter 4 Shared Resources/4-7 WP Practice The Law of Sines and the Law of Cosines (1).docx>

4-7 Word Problem Practice

The Law of Sines and the Law of Cosines

Solve each triangle. Round to the nearest tenth if necessary.

ASA
Sines

1. $\frac{\sin 63}{P} = \frac{\sin 79}{15}$
 $P = 13.6$
 $\frac{\sin 38}{M} = \frac{\sin 79}{15}$
 $M = 9.4$

2. $\frac{\sin 29}{41} = \frac{\sin 118}{r}$ AAS
 $r = 74.7$ sines
 $\frac{\sin 29}{41} = \frac{\sin 33}{s}$
 $s = 46.1$

SAS
Cosines

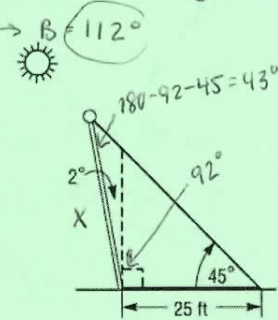
3. $180 - 53 - 52 = 75^\circ$
 $d^2 = e^2 + f^2 - 2ef \cos D$
 $d^2 = 49^2 + 40^2 - 2(49)(40) \cos(53)$
 $d^2 = 1641.88$
 $d = 40.5$
 $\frac{\sin 53}{40.5} = \frac{\sin F}{40}$
 $\sin F = 0.78877$
 $F = 52^\circ$

4. SSS
 $a^2 = b^2 + c^2 - 2bc \cos A$
 $7^2 = 10^2 + 5^2 - 2(10)(5) \cos A$
 $49 = 125 - 100 \cos A$
 $-76 = -100 \cos A$
 $0.76 = \cos A$
 $41^\circ = A$
 $b^2 = a^2 + c^2 - 2ac \cos B$
 $100 = 49 + 25 - 2(5)(7) \cos B$
 $100 = 74 - 70 \cos B$
 $26 = -70 \cos B$
 $-0.3714 = \cos B$
 $B = 112^\circ$
 $C = 180 - 112 - 41 = 27^\circ$

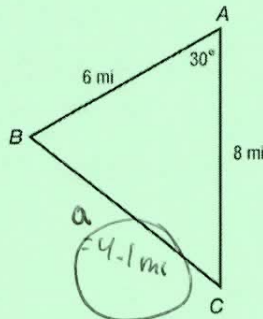
5. **STREET LIGHTING** A lamp post tilts toward the Sun at a 2° angle from the vertical and casts a 25-foot shadow. The angle from the tip of the shadow to the top of the lamp post is 45° . Find the length of the lamp post.

$$\frac{\sin 45}{x} = \frac{\sin 43}{25}$$

$$x = 26 \text{ ft.}$$



6. **ORIENTEERING** During an orienteering exercise, two hikers start at point A and head in a direction 30° west of south to point B . They hike 6 miles from point A to point B . From point B , they hike to point C and then from point C back to point A , which is 8 miles directly north of point C . How many miles did they hike from point B to point C ?



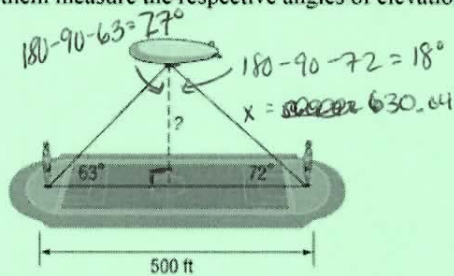
$$a^2 = 8^2 + 6^2 - 2(8)(6) \cos(30)$$

$$a^2 = 16.86$$

$$a = 4.1$$

~~6.8~~ 4.1 ~~10.1~~

7. BLIMP A blimp hovers over a soccer stadium. Players 500 feet apart at opposite ends of the stadium with the blimp between them measure the respective angles of elevation to the blimp to be 63° and 72° . How high is the blimp?



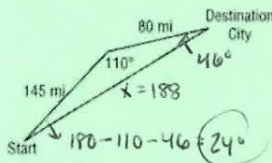
$$\frac{\sin 63}{x} = \frac{\sin(18+27)}{500}$$

$$x = \text{cancel } 630.04$$

$$\sin 72 = \frac{?}{\text{cancel } 630.04}$$

600 ft = ?
599.2

8. AVIATION Due to weather conditions, an airplane flies in different directions as shown in the diagram.



$$x^2 = 80^2 + 145^2 - 2(80)(145)\cos(110)$$

$$x^2 = 35359.86$$

$$x = 188$$

$$145^2 = 80^2 + 188^2 - 2(80)(188)\cos(DC)$$

$$21025 = 41744 - 30080 \cos(DC)$$

$$-20719 = -30080 \cos(DC)$$

$$0.68879 = \cos(DC)$$

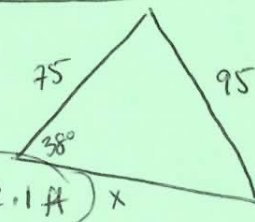
46° = DC

a. How far is the airport from the destination city if the direct route is taken? **188 mi**

b. What are the measures of the two other angles in the triangle?

24°, 46°

9. PROPERTY MAINTENANCE The McSweeneys plan to fence a triangular parcel of their land. One side of the property is 75 feet in length and forms a 38° angle with another side of the property, which has not yet been measured. The remaining side of the property is 95 feet in length. Approximate to the nearest tenth the length of fence needed to enclose this parcel of the McSweeneys' lot.



$$x = \frac{118.2 \pm \sqrt{(-118.2)^2 - 4(1)(-3400)}}{2(1)}$$

x = 142.12
x = -23.92

142.1 + 75 + 95
perimeter

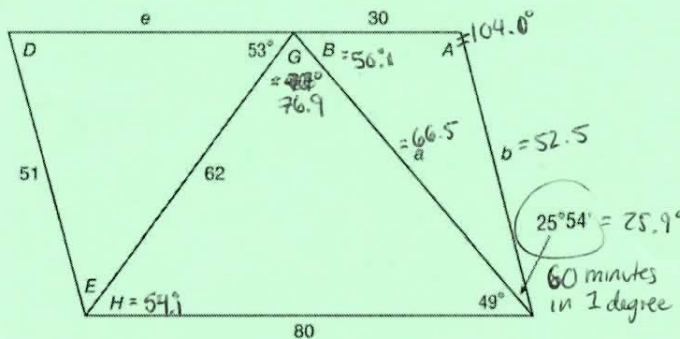
$$95^2 = x^2 + 75^2 - 2(x)(75)\cos(38^\circ)$$

$$9025 = x^2 + 5625 - 150x \cos(38^\circ)$$

$$9025 = x^2 + 5625 - 118.2x$$

$$3400 = x^2 - 118.2x \quad 0 = x^2 - 118.2x - 3400$$

Triangle Challenge A surveyor took the following measurements from two irregularly shaped pieces of land. Some of the lengths and angle measures are missing. Find all missing lengths and angle measures. Round lengths to the nearest tenth and angle measures to the nearest minute.



Assignment: Page 298 (7,9,18,25,35,56,57)