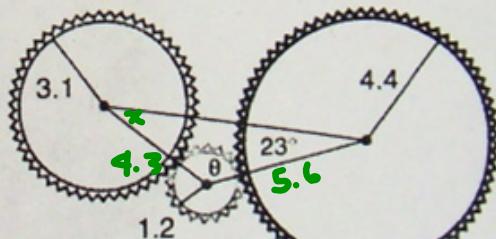


1. Three gears are arranged as shown. Determine the measure of angle θ correct to the nearest degree.



Warm up

$$\frac{\sin 23}{4.3} = \frac{\sin x}{5.6}$$

$$x = 30.6$$

$$\theta = 180 - 30.6 - 23$$

$$\theta = 126^\circ$$

For problems 2 and 3 round your answer to the nearest hundredth.

2. Solve the triangle given $B = 43^\circ$, $a = 22$, $b = 17$.

$\begin{array}{l} 22^\circ \quad 17 \\ \downarrow \quad \downarrow \\ 43^\circ \end{array}$

$A = 62.96 / 117.04$ $15.7 < 17 < 22$
 $C = 75.04 / 1994$ $c = 24.1 / 8.12$ $2 \Delta s$

3. Find the area of a triangle with sides $a = 6$, $b = 12$, $c = 7$.

$$K = 14.95 \text{ u}^2$$

Apr 10 5:56 AM

LOS Word Problem Worksheet answers

1. ship to post A = 4.06 miles and ship to shore = 2.47 miles

2. AF = 8.06 miles, BF = 4.82 miles

3. height = 354.4 ft

4. 14,498.01 ft

5. 5.77 and 3.12

6. 108.6 ft

7. 61.7 ft

8. 158.9 ft

9. 108.8 ft

10. 1.64 miles

11. $R = 7.76 \text{ mm}$, $s = 13.4 \text{ mm}$

12. 39.73 ft

More LOS Practice Worksheet

1. no triangle

2. $A = 38.6$, $B = 105.4$, $b = 26.2$

$$A = 141.4, B = 2.6, b = 1.2$$

3. no triangle

4. $A = 37.1$, $C = 60.9$, $a = 10.4$

5. $A = 99$, $a = 28.3$, $b = 19.1$

6. $A = 24.6$, $B = 80.4$, $a = 20.7$

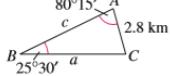
$$A = 5.4, B = 99.6, a = 4.7$$

Mar 20 8:19 AM

GO COUGARS!

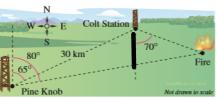
Homework Questions

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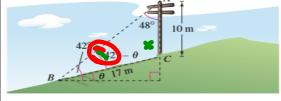
5. 

11. $A = 110^\circ 15'$, $a = 48$, $b = 16$
 12. $B = 2^\circ 45'$, $b = 6.2$, $c = 5.8$
 13. $A = 110^\circ$, $a = 125$, $b = 100$
 14. $A = 110^\circ$, $a = 125$, $b = 200$
 15. $A = 76^\circ$, $a = 18$, $b = 20$

31. **Locating a Fire** The bearing from the Pine Knob fire tower to the Colt Station fire tower is N 65° E, and the two towers are 30 kilometers apart. A fire spotted by rangers in each tower has a bearing of N 80° E from Pine Knob and S 70° E from Colt Station. Find the distance of the fire from each tower.



33. **Angle of Elevation** A 10-meter telephone pole casts a 17-meter shadow directly down a slope when the angle of elevation of the sun is 42° (see figure). Find θ , the angle of elevation of the ground.



In Exercises 43 and 44, use the given values to find (if possible) the values of the remaining four trigonometric functions of θ .

43. $\cos \theta = \frac{1}{15}$, $\sin \theta = -\frac{13}{15}$
 44. $\tan \theta = \frac{2}{9}$, $\csc \theta = -\frac{\sqrt{85}}{2}$

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GO COUGARS!

Homework Questions

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In Exercises 1–26, use the Law of Cosines to solve the triangle.

1.  2. 

3.  4. 

5.  6. 

7.  8. 

9.  10. 

11.  12. 

13.  14. 

15.  16. 

17.  18. 

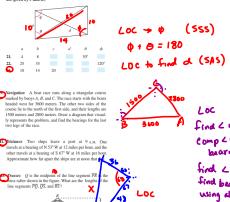
19.  20. 

21.  22. 

23.  24. 

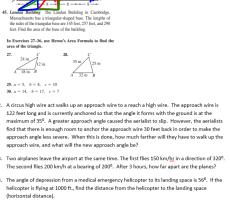
25.  26. 

27. **LOC** A car goes along a straight road for 100 m. It turns left at an angle of 10° and goes another 100 m. It turns left again at an angle of 10° and goes another 100 m. How far is the car from its starting point?



LOC $\rightarrow \phi$ (SSS)
 $\phi + \phi = 180$
LOC to find α (SAS)

28. **LOC** A car goes along a straight road for 100 m. One end of the road turns left at an angle of 10° . The other end turns right at an angle of 10° . After 100 m, how far is the car from its starting point?



LOC Find α first
 Comp $\angle A$ is bearing $B \rightarrow C$
 find $\angle C$
 find bearing $C \rightarrow A$
 using diff angle

29. **LOC** The ladder building is 20 feet high. One end of the ladder leans against the side of the building at an angle of 60° to the ground. The other end of the ladder rests on the ground 10 feet from the base of the building. How far is the ladder from the base of the building?

30. **LOC** Two planes leave the airport at the same time. The first flies 150 km/h in a direction of 20° . The second flies 200 km/h at a bearing of 20° . After 4 hours, how far apart are the planes?

The angle of depression from a medical emergency helicopter to its landing space is 50° . If the helicopter is flying at 1000 ft, find the distance from the helicopter to the landing space platform.

The longer diagonal of a parallelogram makes angles of 10° and 60° with the sides, and it is 10 cm long. Find the area of the parallelogram.

An isosceles triangle, one of the two sides is 25 inches and the included angle is 50° . Find the length of the third side.

A park ranger establishes an air-wave path from which to search for survivors. During his search, he sees two campers on a ridge opposite him. The distance between the campers and the ranger indicates that they are 500 ft from his position. They are headed toward big boulders. The campers are moving at a rate of 3 ft/s. The campers are at a bearing of 355° from the park ranger and the big boulders are at a bearing of 255° from the park ranger. The campers are moving at a rate of $3\sqrt{2}$ ft/s. What is the distance between the campers and the park ranger?

31. **LOC** A ranger in the tower A spots a fire at a direction of 20° in front of the tower. The ranger turns 90° in front of the tower. The angle of elevation from the first turn to the boulders is 75° , while the angle of elevation from the second turn to the boulders is 5° . If the boulders is travelled at a rate of 40° from tower A, spots the same fire at a direction of 255° . How far is the boulders from the tower?

32. **LOC** One of the neighbors of the family Womping decided to give away triangular plots of land. Edie, one of the recipients of the land grant, has given special permission by the state to Edie to travel 10 miles due west, then 10 miles due north, then 10 miles due east, then 10 miles due north again. Edie is driving 10 miles due west when he drives a second mile into the ground. He then turned to a bearing of 234° and traveled another 103 miles where he drove a third mile into the ground.

A. How far is the last mile from the third?

B. What is the area of the state from the third?

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GO COUGARS!

Homework Questions

Two lookout posts, A and D (20 miles apart), are situated along a coast watch for foreign ships coming from the west. Post A is at an elevation of 100 feet above sea level, and post D is at an elevation of 1000 feet above sea level. At 10:00 AM, a ship is sighted from post A at an angle of depression of 30° . At 10:15 AM, the angle of depression has increased to 45° . How far is the ship from post A? How far is the ship from shore assuming the shore is along the line joining the two observation posts?

A fire at C is spotted from two fire lookout stations, A and B, which are 20.0 miles apart. If station A reports the angle of elevation to the fire as 30° and station B reports the fire at an angle of 45° , how far is the fire from station A? From station B?

The taller trees in the forest give a horizontal range of 10 miles. They are taller than the buildings in the figure. The true height of one of the buildings is 100 feet. How tall is the building in the figure? (The distance measurement is accurate to three significant digits.)

A horizontal ladder, feet long at the foot of the mountain. Then the ladder leans against the mountain side. The angle between the ladder and the ground is 30° . If the base of the ladder is 100 feet above sea level, how high is M? Whitney above sea level?

A 4.4-metre passenger plane ascends to a 12° gradient (see the figure). How far is it in front of the point from the centre of the circle? The angle of elevation of the top of the plane from the point is 15° . Find the distance of the plane from the point. There are two answers to the problem.

Two observers are 800 m apart in the opposite side of a ridge. The angle of elevation from the observers to the top of the tree are 37° and 29° . Find the height of the tree.

A tree growing on a hillside casts a 15.0-m shadow straight down the hill as illustrated in the figure. Find the vertical height of the tree if, relative to the horizontal, the hill slopes 12° and the distance from the tree to the end of its shadow is 20.0 m.

Find the height of the tree in problem #4 if the shadow length is 15.7 feet and the angle of elevation from the base of the tree to the top of the tree is 20° .

Observers 12 m apart see a hot air balloon directly between them, but at the angles of elevation shown in the figure. Find the altitude of the balloon.

Construction of the corners of an acute angle $\angle A$ is shown in the figure. Find the ratio of the arc on $\angle A$ to the angle $\angle A$, given the chord length $C = 11.8$ millimeters and the central angle $\angle A = 65^\circ$.

A tire wheel has 30 evenly spaced ribs. The distance between adjacent ribs is 23.3 mm. Find the radius of the wheel to the nearest 0.1 mm.

Are the triangles, if no triangle can be formed, say no solution. Show your work on a separate piece of paper.

1. $A = 90^\circ$, $a = 2$, $b = 7$
2. $C = 30^\circ$, $a = 12$, $c = 10$
3. $A = 130^\circ$, $a = 15$, $b = 18$
4. $B = 85^\circ$, $b = 15$, $c = 10$
5. $B = 42^\circ$, $c = 18$, $C = 39^\circ$
6. $C = 35^\circ$, $b = 40$, $c = 40$

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6.1/6.2 Workday

LOS/LOC Word Problems

Mar 20-11:07 AM

HOMEWORK



WB p152 1, 2, 4, 6

WB p 153-154 #2, 3, 5, 6, 8-11

p421 #27, 29

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LOS and LOC Word Problem Answers

1. 57.2 ft
2. 25.6 ft longer, new angle 28.2 degrees
3. 912.4 km
4. 674.5 ft
5. 9.3 in
6. 22 in.
7. 367.25 ft.
8. 218.0 ft.
9. A - 35 mi., B - 65.8 mi.
10. 16 in. and 22 in.
11. about 97 miles, $K = 6946 \text{ mi}^2$
12. 852.1 ft.

Mar 20-9:47 AM