## Teorema del Seno y Teorema del Coseno

## MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

## Solve the triangle.

1) 


A) $\mathrm{C}=30^{\circ}, \mathrm{a}=7.9, \mathrm{c}=4.36$
B) $\mathrm{C}=30^{\circ}, \mathrm{a}=4.36, \mathrm{c}=7.9$
C) $\mathrm{C}=25^{\circ}, \mathrm{a}=4.36, \mathrm{c}=7.9$
D) $\mathrm{C}=35^{\circ}$, $\mathrm{a}=7.9, \mathrm{c}=4.36$
2)
2) $\qquad$
3) $\qquad$
A) $\mathrm{C}=20^{\circ}, \mathrm{b}=0.39, \mathrm{c}=0.14$
B) $\mathrm{C}=20^{\circ}, \mathrm{b}=2.14, \mathrm{c}=0.39$
C) $\mathrm{C}=20^{\circ}, \mathrm{b}=1.14, \mathrm{c}=0.39$
D) $\mathrm{C}=20^{\circ}, \mathrm{b}=0.39, \mathrm{c}=1.14$

Solve the problem.
4) An airplane is sighted at the same time by two ground observers who are 3 miles apart and both directly west of the airplane. They report the angles of elevation as $11^{\circ}$ and $23^{\circ}$. How high is the airplane?
A) 2.2 mi
B) 0.57 mi
C) 1.08 mi
D) 1.17 mi
5) A ship sailing parallel to shore sights a lighthouse at an angle of $10^{\circ}$ from its direction of travel. After traveling 5 miles farther, the angle is $23^{\circ}$. At that time, how far is the ship from the lighthouse?
A) 5 mi
B) 8.68 mi
C) 3.86 mi
D) 2.22 mi

## Solve the triangle.

6) $\mathrm{B}=20^{\circ}, \mathrm{C}=30^{\circ}, \mathrm{a}=2$
A) $\mathrm{B}=40^{\circ}, \mathrm{a}=8.49, \mathrm{c}=6$
B) $\mathrm{B}=45^{\circ}, \mathrm{a}=6, \mathrm{c}=8.49$
D) $B=45^{\circ}, a=8.49, c=6$
7) $\mathrm{A}=60^{\circ}, \mathrm{B}=100^{\circ}, \mathrm{a}=1$
8) $\qquad$
)
)
9) $\qquad$
10) $\qquad$
$\square$
.$\begin{array}{r}\text { B) } C=30^{\circ}, a=4.36, c=7.9 \\ \text { D) } C=35^{\circ}, a=7.9, c=4.36\end{array}$
$\begin{aligned} & \text { B) } B=45^{\circ}, a=6, c=8.49 \\ & \text { D) } B=45^{\circ}, a=8.49, c=6 \\ & \text { B) } C=20^{\circ}, b=2.14, c=0.39 \\ & \text { D) } C=20^{\circ}, b=0.39, c=1.14\end{aligned}$
$\begin{aligned} & \text { A) } \\ & \text { C) } 1.08 \text { mi }\end{aligned}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

## Solve the problem.

7) Two surveyors 180 meters apart on the same side of a river measure their respective angles $\qquad$ to a point between them on the other side of the river and obtain $54^{\circ}$ and $68^{\circ}$. How far from the point (line- of- sight distance) is each surveyor? Round your answer to the nearest 0.1 meter.

## MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

8) A flagpole is perpendicular to the horizontal but is on a slope that rises $10^{\circ}$ from the horizontal. The pole casts a 43 - foot shadow down the slope and angle of elevation of the sun measured from the slope is $36^{\circ}$. How tall is the pole? Round your answer to the nearest 0.1 foot.
A) 33.5 ft
B) 36.2 ft
C) 35.4 ft
D) 36.4 ft
9) It is 4.7 km from Lighthouse A to Port B. The bearing of the port from the lighthouse is $\mathrm{N} 73^{\circ} \mathrm{E}$. A ship has sailed due west from the port and its bearing from the lighthouse is $\mathrm{N} 31^{\circ} \mathrm{E}$. How far has the ship sailed from the port? Round your answer to the nearest 0.1 km .
A) 3.7 km
B) 3.1 km
C) 2.7 km
D) 3.5 km
10) To find the distance $A B$ across a river, a distance $B C$ of 1034 m is laid off on one side of the river. It is found that $B=104.0^{\circ}$ and $C=13.9^{\circ}$. Find $A B$. Round to the nearest meter.
A) 284 m
B) 281 m
C) 248 m
D) 245 m

## Solve the triangle.

11) 
12) 
13) $\qquad$
14) $\qquad$
)
15) $\qquad$



## Solve the problem.

15) In flying the 85 miles from Champaign to Peoria, a student pilot sets a heading that is $12^{\circ}$ off course and maintains an average speed of 140 miles per hour. After 15 minutes, the instructor notices the course error and tells the student to correct his heading. Through what angle will the plane move to correct the heading and how many miles away is Peoria when the plane turns?
А) $20.2^{\circ}$; 74.43 mi
B) $159.8^{\circ}$; 74.43 mi
C) $159.8^{\circ} ; 51.28 \mathrm{mi}$
D) $20.2^{\circ}$; 51.28 mi
16) A plane flying a straight course observes a mountain at a bearing of $33.9^{\circ}$ to the right of its course. At that time the plane is 7 kilometers from the mountain. A short time later, the bearing to the mountain becomes $43.9^{\circ}$. How far is the plane from the mountain when the second bearing is taken (to the nearest tenth of a km)?
A) 9.6 km
B) 8.7 km
C) 3.8 km
D) 5.6 km
17) The distance from home plate to dead center field in a certain baseball stadium is 403 feet. A baseball diamond is a square with a distance from home plate to first base of 90 feet. How far is it from first base to dead center field?
A) 380.6 ft
B) 345.3 ft
C) 328.2 ft
D) 471 ft
18) A ladder leans against a building that has a wall slanting away from the ladder at an angle of $96^{\circ}$ with the ground. If the bottom of the ladder is 23 feet from the base of the wall and it reaches a point 52 feet up the wall, how tall is the ladder to the nearest foot?
A) 58 ft
B) 60 ft
C) 59 ft
D) 61 ft
19) Two sailboats leave a harbor in the Bahamas at the same time. The first sails at 22 mph in a direction $350^{\circ}$. The second sails at 33 mph in a direction $220^{\circ}$. Assuming that both boats maintain speed and heading, after 3 hours, how far apart are the boats?
A) 150.2 mi
B) 131 mi
C) 114.5 mi
D) 99.9 mi
20) Two points $A$ and $B$ are on opposite sides of a building. A surveyor selects a third point $C$ to place a transit. Point $C$ is 52 feet from point A and 67 feet from point B. The angle $A C B$ is $60^{\circ}$. How far apart are points A and B ?
A) 60.9 ft
B) 103.3 ft
C) 94.5 ft
D) 73.8 ft
21) 
22) $\qquad$
23) $\qquad$
24) $\qquad$
,
$\qquad$
