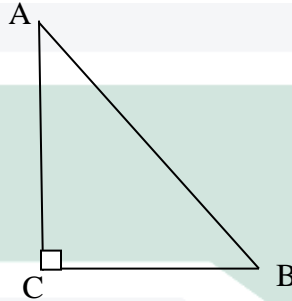


**** DO ALL WORK ON NOTEBOOK PAPER.**

I. Use Right Triangle Trig and the triangle to solve the following.

1. $A = 30^\circ$, $c = 35$; find a
2. $b = 12$, $A = 67^\circ$; find a
3. $a = 6$, $c = 12$, find B
4. $c = 16$, $b = 7$, find a



II. Law of Sines

A. Determine the number of triangles. Justify.

5. $A = 38^\circ 42'$, $a = 172$, $c = 203$
6. $a = 12$, $b = 19$, $A = 57^\circ$

B. Solve the following. Round sides to the nearest tenth and angles to the nearest minute.

7. $A = 25^\circ$, $a = 125$, $b = 150$
8. $a = 12$, $b = 15$, $A = 55^\circ$
9. $a = 48$, $A = 110^\circ 15'$, $b = 16$

III. Law of Cosines

A. Determine whether the Law of Sines or Law of Cosines should be used to solve each triangle.

10. $a = 14$, $b = 15$, $c = 16$
11. $a = 10$, $c = 8$, $A = 40^\circ$
12. $c = 14$, $A = 40^\circ$, $C = 70^\circ$
13. $b = 4$, $c = 2.9$, $A = 28^\circ 50'$

B. Solve the following triangles. Round angle measures and sides to the nearest tenth.

14. $b = 40$, $c = 49$, $A = 53^\circ$

15. $a = 12.5$, $b = 15.1$, $c = 10.3$

16. $a = 9$, $c = 5$, $B = 120^\circ$

IV. Area of Triangles and Circular Segments

A. Find the area of each triangle. Round to the nearest hundredth.

17. $a = 4$ cm, $b = 5$ cm, $C = 30^\circ$

18. $A = 20^\circ$, $a = 19$ m, $C = 64^\circ$

19. $a = 5$ in, $b = 7$ in, $c = 9$ in

B. Find the area of each circular segment to the nearest tenth.

20. $\theta = 108^\circ$, $r = 1.4$ cm

21. $\theta = \frac{\pi}{12}$, $r = 25.25$ in

V. Word problems.

22. A shot is tossed from A and lands at B. Using modern electronic equipment, the distance of the toss can be measured without the use of measuring tapes. When the shot lands at B, an electronic transmitter placed at B sends a signal to a device in the official's booth above the track. The device determines the angles at B and C. At the track meet, the distance from the official's booth to the shotput ring is 562 feet. If $B = 85.3^\circ$ and $C = 5.7^\circ$, determine the length of the toss to the nearest foot.

23. Two ships leave a port at 9 a.m. One travels at a bearing of $N 53^\circ W$ at 12 miles per hour, and the other travels at a bearing of $S 67^\circ W$ at 16 miles per hour. Approximate how far apart they are at noon that day.

24. A person is watching a boat from the top of a lighthouse. The boat is approaching the lighthouse directly. When first noticed the angle of depression to the boat is $18^{\circ}31'$. When the boat stops, the angle of depression is $50^{\circ}2'$. The lighthouse is 200 feet tall. How far did the boat travel from when it was first noticed until it stopped? Round to the nearest tenth.

25. Two motorists start at the same point and travel in two straight courses. The courses diverge at 95° . If one is traveling at 50 mph and the other at 65 mph, how far apart will they be after 4 hours?

26. Two sides of a triangular plot of land have lengths of 400 ft and 600 ft. The measure of the angle between those sides is 46.3° . Find the perimeter of the plot.

27. A diver leaps 2.5 feet off the board and jackknifes 10 feet into the water at an angle of 20° . How far from the edge of the board does she enter the water?

28. An isosceles triangle has a base of 22 cm and exactly one angle measuring 36° . Find its perimeter.

29. Forces with magnitudes of 85 pounds and 50 pounds act on a single point. The angle between the forces is 15° . Find the resultant force applied.

30. Radio direction finders are set up at points A and B, 4.12 miles apart on an east-west line. From A it is found that the bearing of a signal from a transmitter is $N 60.3^{\circ} E$, while from B it is $N 39.5^{\circ} W$. Find the distance of the transmitter from B, to the nearest hundredth of a mile.