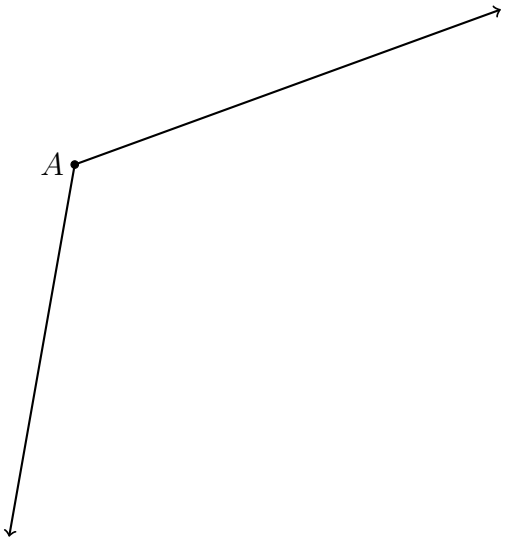
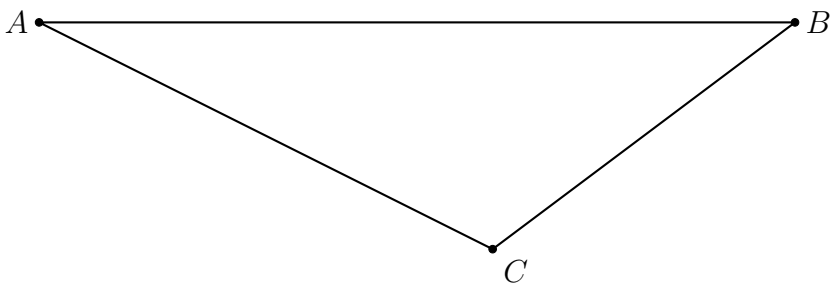
13.9 Do Now: Circle situations & trigonometry

Use only a compass and straightedge for these constructions. [show all compass marks]

1. Bisect the given angle.



2. Construct a median to $\overline{AB}$ from C.



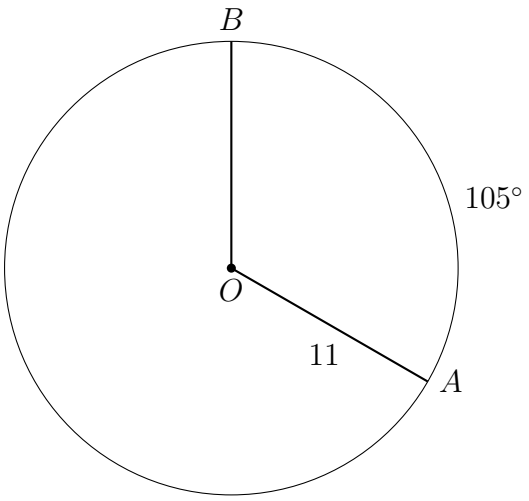
Show the calculation. When rounding, write down the full calculator display first.

3. What is the area of a circle with diameter 22, rounded to the *nearest tenth*?

4. What is the circumference of a circle with radius 7, rounded to the *nearest tenth*?

5. What is the radius of a circle with circumference 100.5, rounded to the *nearest hundredth*?

6. Circle O has a radius $AO = 11$ cm, as shown below, and arc measure $m\widehat{AB} = 105°$.



(a) Find the $m\angle AOB$.

(b) Find the length of the arc $\widehat{AB}$ to the *nearest tenth*.

(c) Find the area of the sector AOB to the *nearest tenth*.

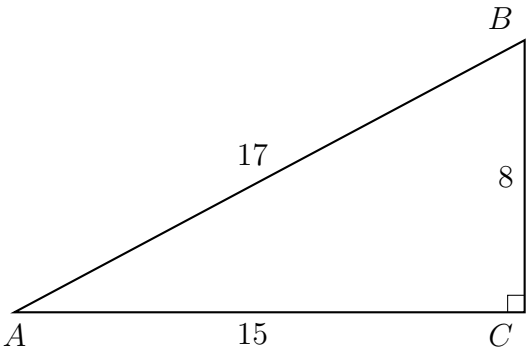
7. Right $\triangle ABC$ has sides of length $BC = 8$, $AC = 15$, and $AB = 17$ as shown.

   Find to the *nearest thousandth*.

   (a) $\sin A =$

   (b) $\tan A =$

   (c) $\tan B =$

   (d) Find $m\angle A$ to the *nearest degree*.

8. In a right triangle, the acute angles have the relationship $\sin(30) = \cos(x)$.

   What is the value of x?

9. If $\sin(x - 15)^\circ = \cos(55)^\circ$, what is the value of x?

10. Express each value to *the nearest tenth*.

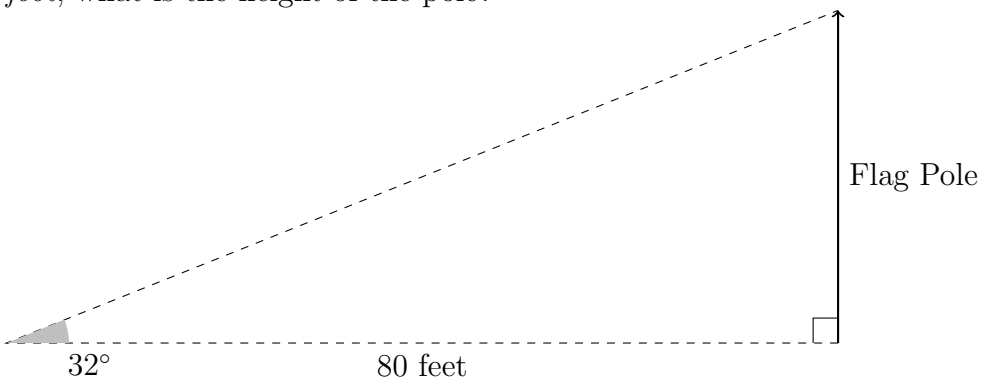
    (a) $\tan 45^\circ =$

    (b) $\cos 60^\circ =$

    (c) $\tan^{-1} 1 =$

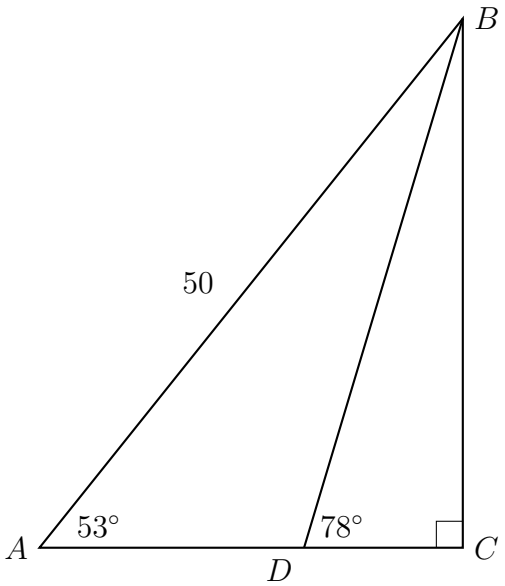
    (d) $\sin^{-1} 0.866 =$

11. A flag pole is 80 feet away, and the angle of elevation to its top is 32°. To the *nearest foot*, what is the height of the pole?

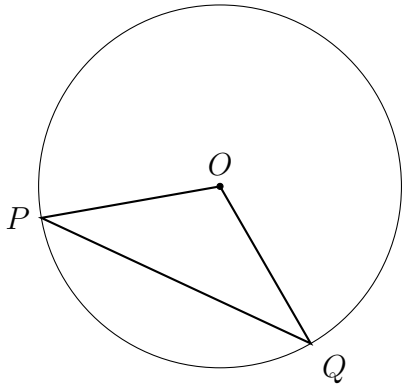


12. Right $\triangle ABC$ is drawn with point D on $\overline{AC}$. $m\angle BAC = 53°$, $m\angle BDC = 78°$, $m\angle C = 90°$, and $AC = 50$.

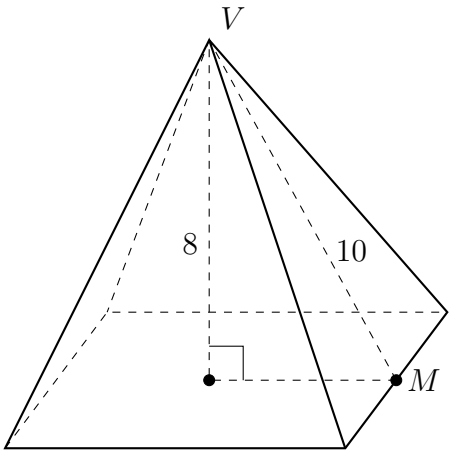
"Solve the triangle": Find BC, BD, CD, and AD.



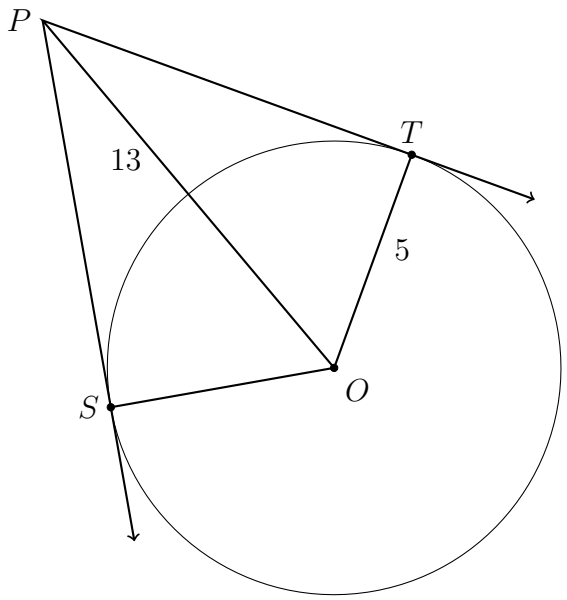
13. Given circle O with points P and Q on the circle. $m\angle POQ = 110$. Find $m\angle P$.



14. A pyramid with a square base is 8 cm tall, as shown. The slant length, $VM = 10$. Find the volume of the pyramid.



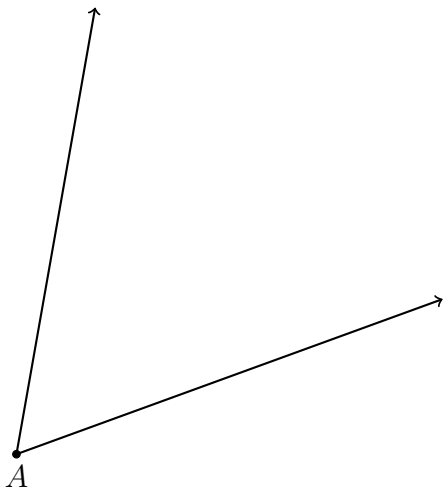
15. Circle O has a tangent lines $\overleftrightarrow{PT}$ with point of tangency T and $\overleftrightarrow{PS}$ with point of tangency S, as shown. If $OP = 13$ and the radius of circle O is 5, what is the perimeter of quadrilateral $PSOT$?



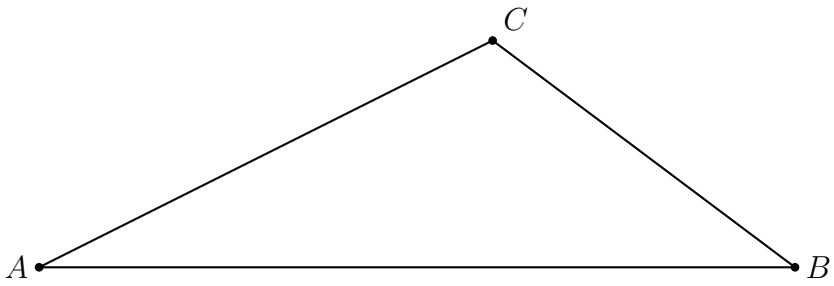
13.9 Exit Note: Circle situations & trigonometry

Use only a compass and straightedge for these constructions. [show all compass marks]

1. Bisect the given angle.



2. Construct a median to $\overline{AB}$ from C.



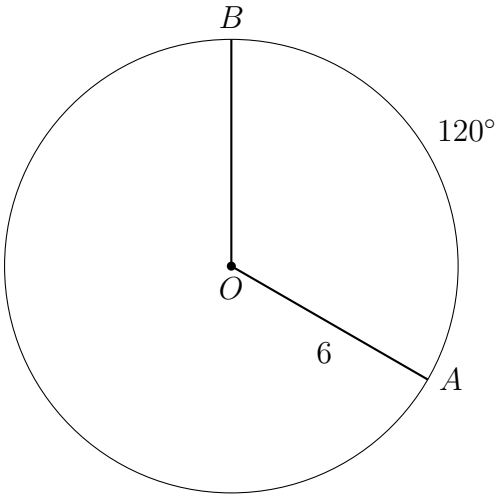
Show the calculation. When rounding, write down the full calculator display first.

3. What is the area of a circle with diameter 10, rounded to the *nearest tenth*?

4. What is the circumference of a circle with radius 12, rounded to the *nearest tenth*?

5. What is the radius of a circle with circumference 50.25, rounded to the *nearest hundredth*?

6. Circle O has a radius $AO = 6$ cm, as shown below, and arc measure $m\widehat{AB} = 120°$.



(a) Find the $m\angle AOB$.

(b) Find the length of the arc $\widehat{AB}$ to the *nearest tenth*.

(c) Find the area of the sector AOB to the *nearest tenth*.

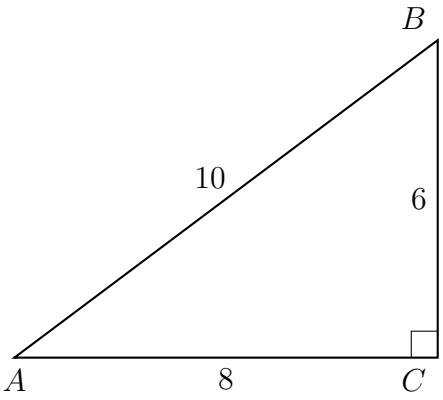
7. Right $\triangle ABC$ has sides of length $BC = 6$, $AC = 8$, and $AB = 10$ as shown.

   Find to the *nearest thousandth*.

   (a) $\sin A =$

   (b) $\tan A =$

   (c) $\tan B =$

   (d) Find $m\angle A$ to the *nearest degree*.

8. In a right triangle, the acute angles have the relationship $\sin(30) = \cos(x)$.

   What is the value of x?

9. If $\sin(x - 20)^\circ = \cos(60)^\circ$, what is the value of x?

10. Express each value to *the nearest tenth*.

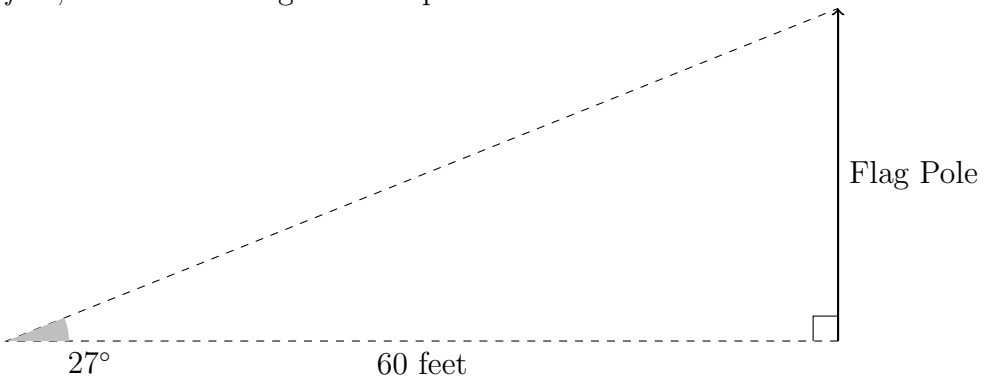
    (a) $\sin 30^\circ =$

    (b) $\cos 45^\circ =$

    (c) $\tan^{-1} 1.732 =$

    (d) $\cos^{-1} 0.866 =$

11. A flag pole is 60 feet away, and the angle of elevation to its top is 27°. To the *nearest foot*, what is the height of the pole?



12. Right $\triangle ABC$ is drawn with point D on $\overline{AC}$. $m\angle BAC = 50°$, $m\angle BDC = 75°$, $m\angle C = 90°$, and $AC = 20$.

"Solve the triangle": Find BC, BD, CD, and AD.