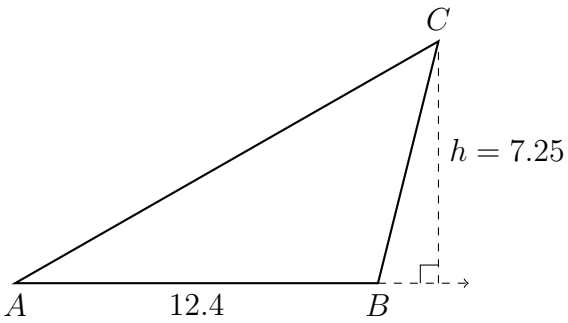
10.9 Do Now: Volume, density, trig review

1. Find the area of a semi-circle diameter of 10. Round your answer to the *nearest tenth*.

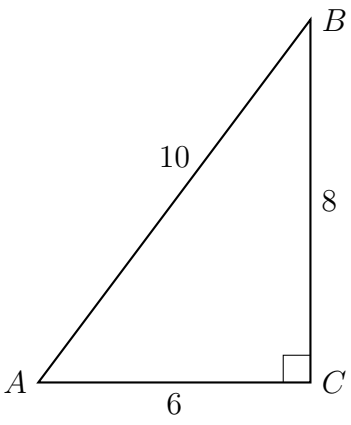
2. The side $\overline{AB}$ of triangle ABC is extended and an altitude to the vertex C is drawn, as shown below. The triangle's height is $h = 7.25$ and its base measures $AB = 12.4$. Find the area of the triangle.



3. A crate in the shape of a rectangular prism must have a volume of 30 cubic feet. It's length is 4 feet and width 3 feet. How tall must it be?

4. Randy's basketball is in the shape of a sphere with a maximum circumference of 29.5 inches. Determine and state the volume of the basketball, to the *nearest cubic inch*.

5. $\triangle ABC$ is shown with $m\angle C = 90°$ and the lengths of the triangle's sides are $BC = 8$, $AC = 6$, and $AB = 10$.



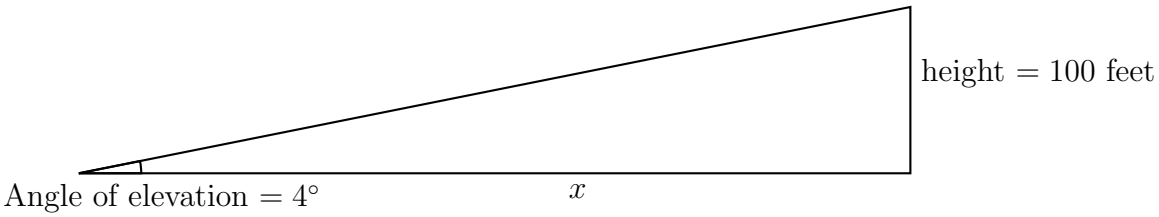
(a) State, as a decimal, the value of $\sin A$.

(b) Find the measure of $\angle A$, to the *nearest degree*.

(c) Find the degree measure of $\angle B$. Justify your answer.

6. In right triangle ABC, hypotenuse $\overline{AB}$ has a length of 26 cm, and side $\overline{BC}$ has a length of 17.6 cm. What is the measure of angle B, to the *nearest degree*?

7. A sailor observes the top of a lighthouse with an angle of elevation of 4°. She knows the lighthouse is 100 feet tall. Determine and state the distance x between the sailor and the lighthouse, to the *nearest foot*.



8. If $\sin 43° = \cos x$, what is the value of x?

10.9 Homework: Trig review, compound volumes & angle of elevation

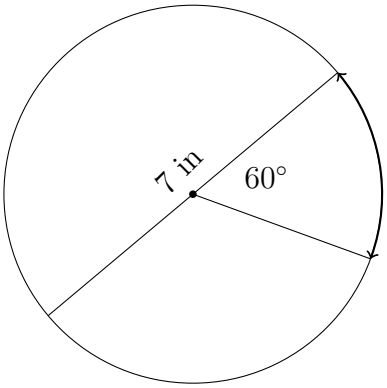
1. How many square inches are in an area one foot on each side?

2. A monument is in the shape of a pyramid with a square base whose sides measure 24 inches and whose height measures 20 feet. What is the volume of the monument, to the *nearest cubic foot*?

3. A cylindrical pipe with radius $r = 6$ inches has a volume of 15.7 cubic feet. Find the length of the pipe, to the *nearest foot*.

4. A weather balloon in the shape of a sphere has a volume of 7250 cubic feet. Find the *diameter* of the balloon, to the *nearest foot*.

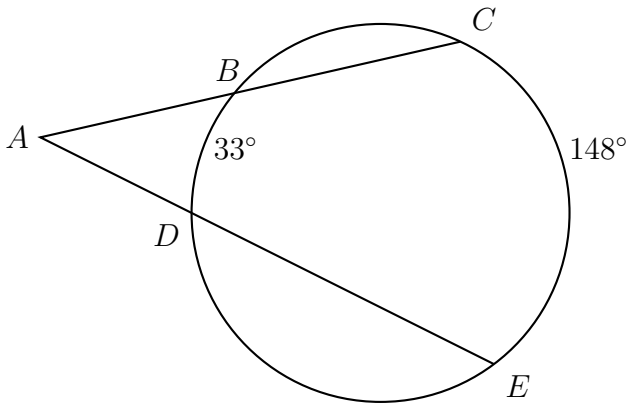
5. A circle with a diameter of 7 in and a central angle of 60° is drawn below.



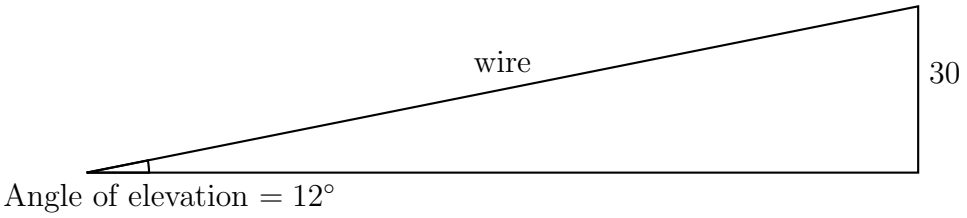
What is the length of the arc formed by the 60° angle, to the *nearest hundredth of an inch*?

What is the area of the sector formed by the 60° angle, to the *nearest hundredth of a square inch*?

6. The secants $\overline{ABC}$ and $\overline{ADE}$ intersect the circle O, as shown in the diagram. Given $m\widehat{BD} = 33°$ and $m\widehat{CE} = 148°$. Find the $m\angle A$.



7. A zipline wire is strung from a pole to the ground with an angle of elevation of 12°. If the pole is 30 feet tall, how long is the wire, to the *nearest foot*.



8. Express each trigonometric ratio to the nearest thousandth and each angle measure to the nearest degree.

   (a) $\tan 45° =$

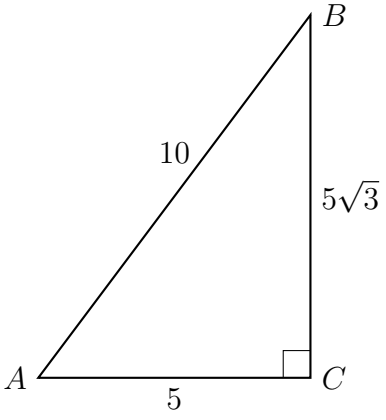
   (b) $\cos 60° =$

   (c) $\sin^{-1} 0.450 =$

   (d) $\cos^{-1} 0.950 =$

9. If $\sin 65° = \cos x$, what is the value of x?

10. $\triangle ABC$ is shown with $m\angle C = 90°$ and the lengths of the triangle's sides are $BC = 5\sqrt{3}$, $AC = 5$, and $AB = 10$.

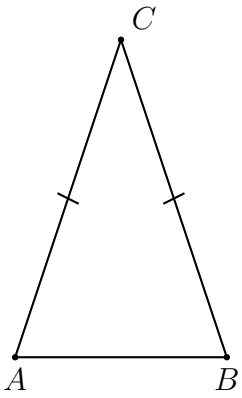


   (a) State, as a decimal, the value of $\sin A$.

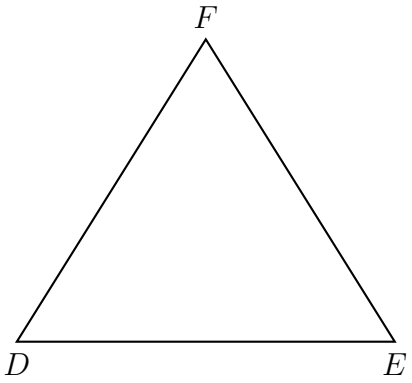
   (b) Find the measure of $\angle A$, to the *nearest degree*.

   (c) Find the degree measure of $\angle B$.

11. Given $\triangle ABC$. $\overline{AC} \cong \overline{BC}$, $m\angle A = 55$. Find $m\angle C$.



12. Given $\triangle DEF$. $\overline{DF} \cong \overline{EF}$, $m\angle F = 72$. Find $m\angle D$.



13. Given the triangle shown with congruent sides marked. $m\angle 1 = 110$.

    (a) Find $m\angle 2$.

    (b) Find the measure of the vertex angle, V.