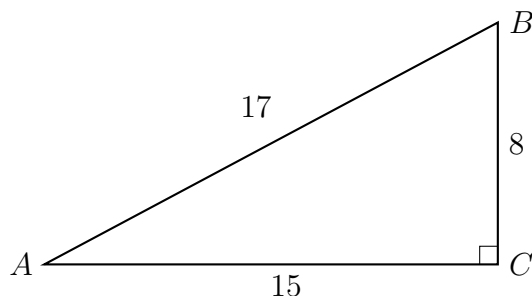


Name:

### 10.9 Do Now: Volume, density, trig review

1.  $\triangle ABC$  is shown with  $m\angle C = 90^\circ$  and the lengths of the triangle's sides are  $BC = 8$ ,  $AC = 15$ , and  $AB = 17$ .



For each item circle True or False.

(a)    T        F         $\sin A = \frac{8}{15}$

(c)    T        F         $\sin B = \frac{8}{17}$

(b)    T        F         $\cos A = \frac{15}{17}$

(d)    T        F         $\tan B = \frac{15}{8}$

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

(a)  $\tan 23^\circ =$

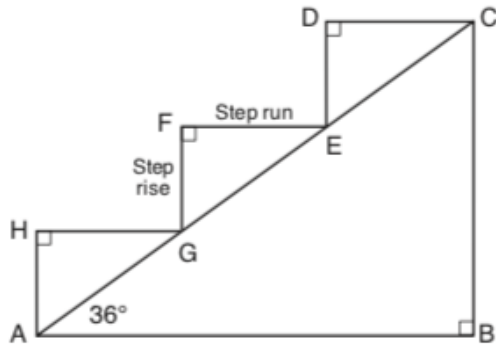
(c)  $\sin^{-1} 0.5 =$

(b)  $\cos 79^\circ =$

(d)  $\cos^{-1} 0.707 =$

3. 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*?

4. A homeowner is building three steps leading to a deck, as modeled by the diagram below. All three step rises,  $\overline{HA}$ ,  $\overline{FG}$ , and  $\overline{DE}$ , are congruent, and all three step runs,  $\overline{HG}$ ,  $\overline{FE}$ , and  $\overline{DC}$ , are congruent. Each step rise is perpendicular to the step run it joins. The measure of  $\angle CAB = 36^\circ$  and  $\angle CBA = 90^\circ$ .

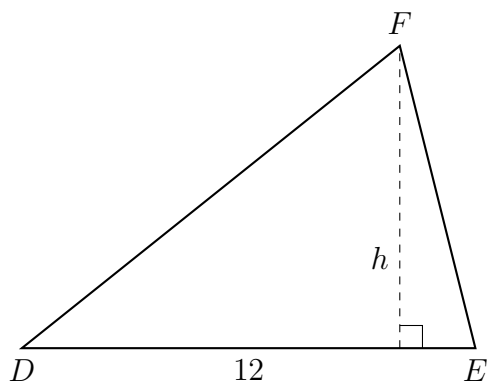


If each step run is parallel to  $\overline{AB}$  and has a length of 10 inches, determine and state the length of each step rise, to the *nearest tenth of an inch*.

Determine and state the length of  $\overline{AC}$ , to the *nearest inch*.

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5. The triangle  $DEF$  has base  $DE = 12$  and an area  $A_{\triangle DEF} = 48$ . Find the altitude of the triangle,  $h$ .

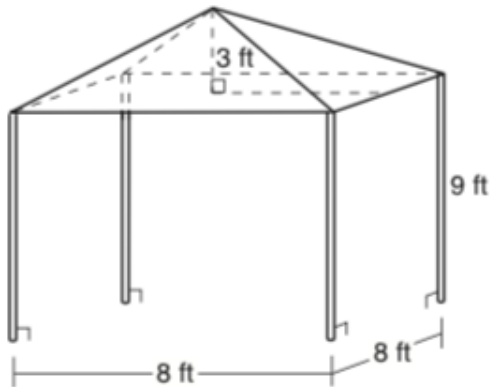


6. The base of a pyramid is a rectangle with a width of 4.6 cm and a length of 9 cm. What is the height, in centimeters, of the pyramid if its volume is  $82.8 \text{ cm}^3$ ?

Name:

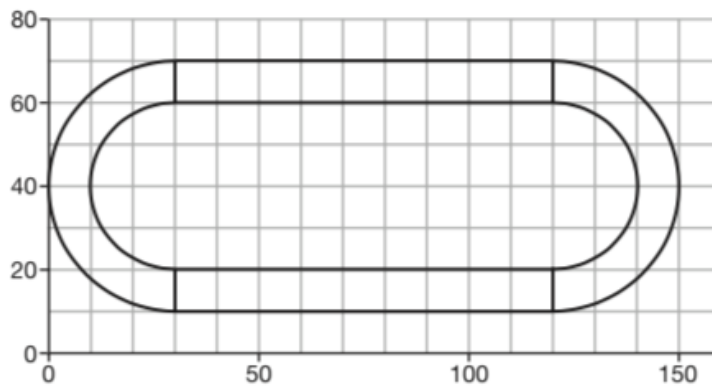
### 10.9 Classwork: Compound volumes & angle of elevation

1. A vendor is using an 8-ft by 8-ft tent for a craft fair. The legs of the tent are 9 ft tall and the top forms a square pyramid with a height of 3 ft.



What is the volume, in cubic feet, of space the tent occupies?

2. A walking path at a local park is modeled on the grid below, where the length of each grid square is 10 feet. The town needs to submit paperwork to pave the walking path. Determine and state, to the *nearest square foot*, the area of the walking path.



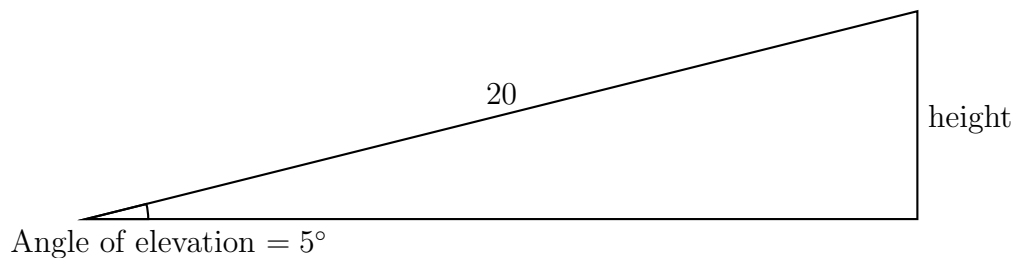
3. Lawrence has a rectangular pool 22 ft long, 15 ft wide, and 5 ft deep.

(a) Find the volume of the pool in cubic feet.

(b) Find the volume of the pool in gallons, where  $1\text{ft}^3$  water = 1.48 gallons.

(c) If Lawrence filled his pool using city water at a rate of \$3.95 per 100 gallons of water, find the total cost.

4. As modeled in the diagram below, an access ramp that is 20 feet long has an angle of elevation of  $5^\circ$ . Determine and state the vertical height of the ramp, to the *nearest tenth of a foot*.



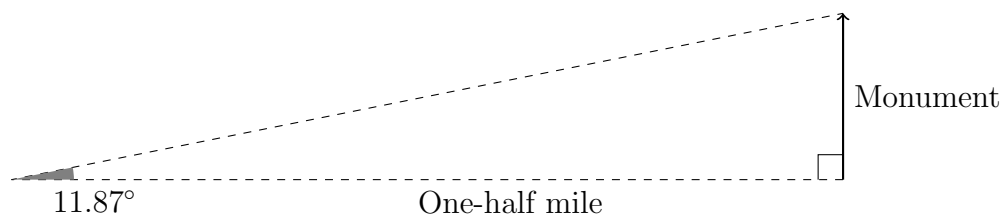
5. Yolanda is making a springboard to use for gymnastics. She has 8-inch-tall springs and wants to form a  $16.5^\circ$  angle with the base, as modeled in the diagram below.



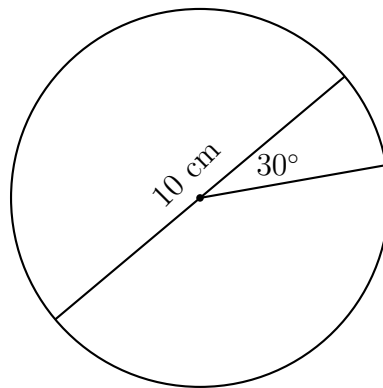
To the *nearest tenth of a inch*, what will be the length of the springboard,  $x$ ?

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6. From a point on the ground one-half mile from the base of a historic monument, the angle of elevation to its top is  $11.87^\circ$ . To the nearest foot, what is the height of the monument?



7. How many cubic inches are in the volume of a cube one foot on each side?
8. A child's tent can be modeled as a pyramid with a square base whose sides measure 60 inches and whose height measures 84 inches. What is the volume of the tent, to the *nearest cubic foot*?
9. Find the volume of a cylinder with radius  $r = 3$  and height  $h = 10$ . Leave your answer in terms of  $\pi$  (not a decimal).
10. Find the weight of 60 liters of gasoline, given that the density of gasoline is 0.73 kilograms per liter.
11. A circle with a diameter of 10 cm and a central angle of  $30^\circ$  is drawn below.



What is the area, to the *nearest tenth of a square centimeter*, of the sector formed by the  $30^\circ$  angle?