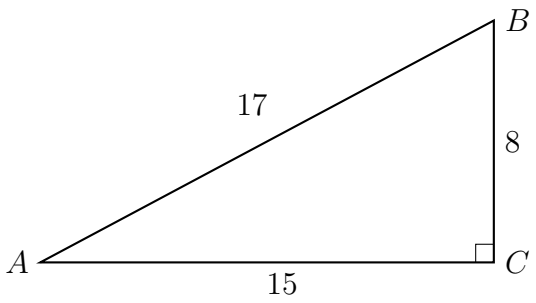
10.7 Do Now: Volume, density, trig review

1. $\triangle ABC$ is shown with $m\angle C = 90°$ 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) $\tan 23° =$ (c) $\sin^{-1} 0.5 =$

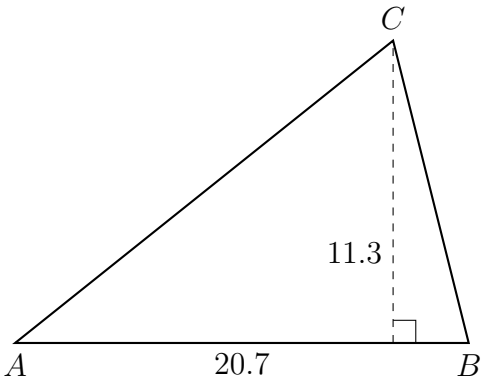
(b) $\cos 79° =$ (d) $\cos^{-1} 0.707 =$

3. In right triangle ABC with $m\angle C = 90°$ and $AC \neq BC$. Circle True or False for each statement of trigonometric equivalence.

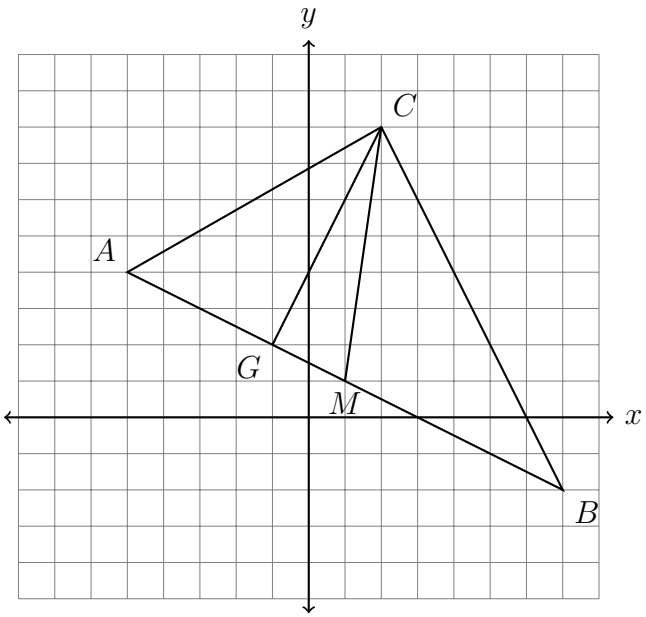
(a) T F $\sin A = \cos B$ (c) T F $\sin B = \cos A$

(b) T F $\tan A = \tan B$ (d) T F $\sin B = \cos B$

4. Find the area of $\triangle ABC$, $Area = \frac{1}{2}bh$. The altitude h of the triangle is 11.3 inches and the base $AB = 20.7$ in.



5. On the set of axes below, $\triangle ABC$, altitude $\overline{GC}$, and median $\overline{MC}$ are drawn.



Determine which equations represent the area of the triangle, circling True or False.

(a) T F $Area_{\triangle} = \dfrac{(AC)(AB)}{2}$

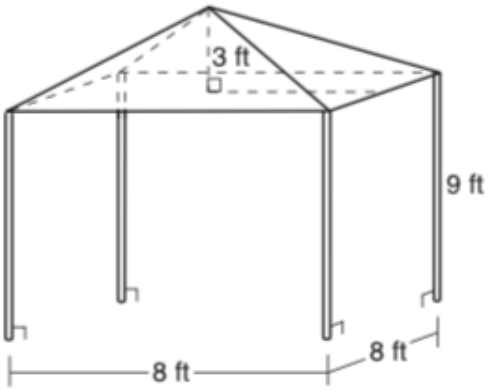
(b) T F $Area_{\triangle} = \dfrac{(CG)(BC)}{2}$

(c) T F $Area_{\triangle} = \dfrac{(CM)(AB)}{2}$

(d) T F $Area_{\triangle} = \dfrac{(CG)(AB)}{2}$

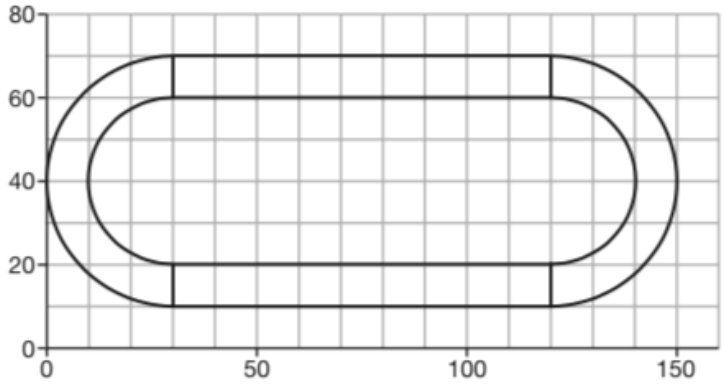
10.8 Classwork: Compound volumes & angle of elevation

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.



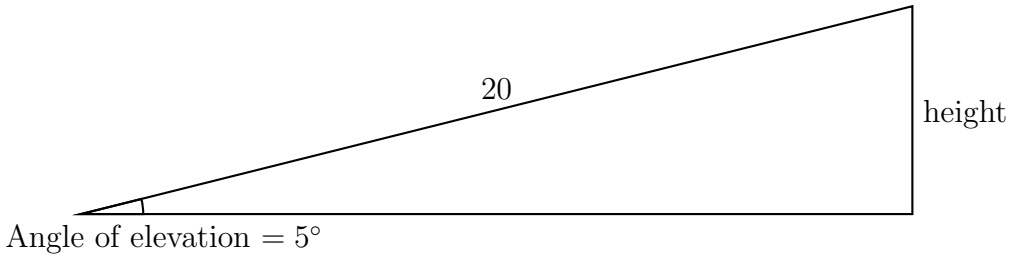
3. Lawrence has a rectangular pool 22 ft long, 15 ft wide, and 5 ft deep.

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

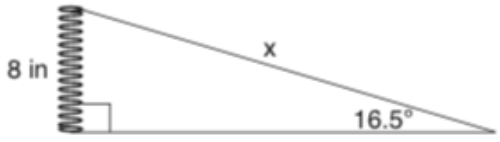
   (b) Find the volume of the pool in gallons, where 1ft^3 water $= 1.48$ gallons.

   (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°. Determine and state the vertical height of the ramp, to the *nearest tenth of a foot*.

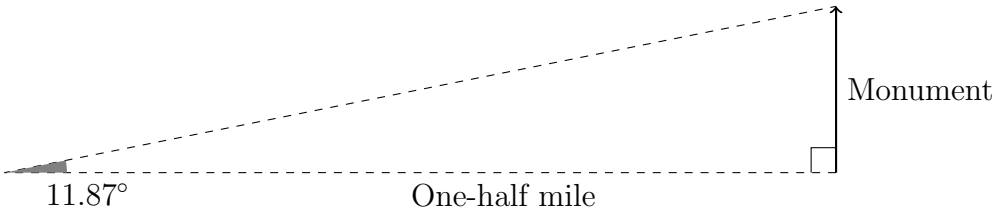


5. Yolanda is making a springboard to use for gymnastics. She has 8-inch-tall springs and wants to form a 16.5° angle with the base, as modeled in the diagram below.



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

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°. To the nearest foot, what is the height of the monument?



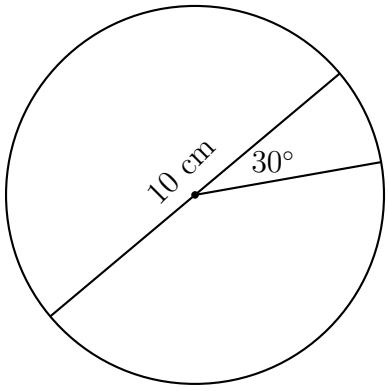
7. How many cubic inches are in the volume of a cube one foot on each side?

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 π (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° is drawn below.



What is the area, to the *nearest tenth of a square centimeter*, of the sector formed by the 30° angle?