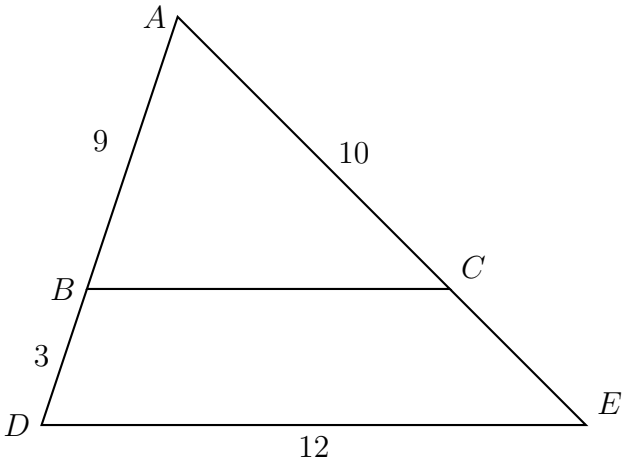
11.14 Triangle dilation

1. Triangle ABC is dilated with a scale factor of k centered at A, yielding $\triangle ADE$, as shown. Given $AB = 9$, $BD = 3$, $AC = 10$, and $DE = 12$. Find BC.



2. What is an equation of the line that passes through the point $(-2, 5)$ and is perpendicular to a line with equation $y = \frac{3}{4}x + 5$?

   (a) $y - 2 = \frac{4}{3}(x + 5)$
   (b) $y - 2 = -\frac{4}{3}(x + 5)$
   (c) $y + 2 = \frac{4}{3}(x - 5)$
   (d) $y + 2 = -\frac{4}{3}(x - 5)$

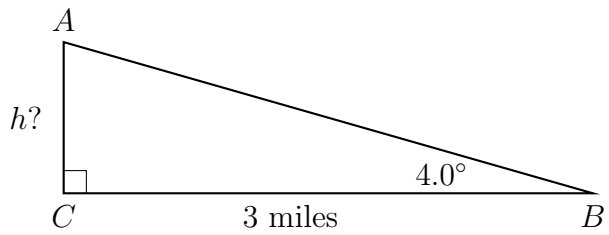
3. A beach tent can be modeled as a pyramid with a square base whose sides measure 72 inches and whose height measures 96 inches. What is the volume of the tent, to the *nearest cubic foot*?

4. The equation of a cirle is $x^2 + y^2 - 12x - 2y = 27$. What are the center and radius of the circle?

5. Point M divides $\overline{AB}$ so that $AM : MB = 1 : 4$. If A has coordinates $(1, -1)$ and B has coordinates $(6, 9)$, what are the coordinates of M?

6. From three miles away, the angle of elevation to the top of a radio tower is 4.0°. What is the height of the tower, to the *nearest ten feet*? (1 mile = 5280 feet)

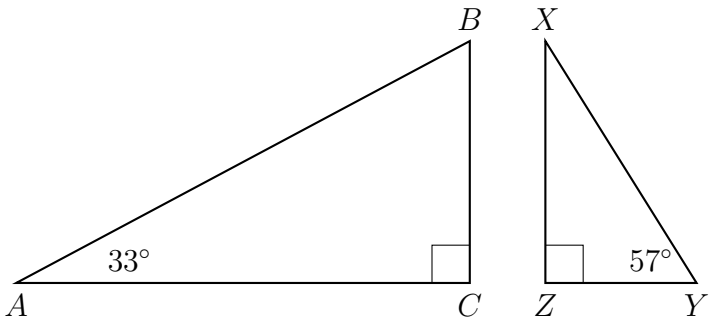
not to scale



7. If a circular disk is continuously rotated around its diameter, what is the three-dimensional figure formed?

(a) cone
(b) sphere
(c) cylinder
(d) rectangular prism

8. Given right triangle ABC with a right angle at C, $m\angle A = 33°$. Given right triangle XYZ with a right angle at Z, $m\angle Y = 57°$.



Which proportion in relation to $\triangle ABC$ and $\triangle XYZ$ is *not* correct?

(a) $\frac{AC}{AB} = \frac{XZ}{XY}$
(b) $\frac{BC}{AC} = \frac{YZ}{XZ}$
(c) $\frac{AC}{XZ} = \frac{BC}{YZ}$
(d) $\frac{BC}{XZ} = \frac{AB}{XY}$