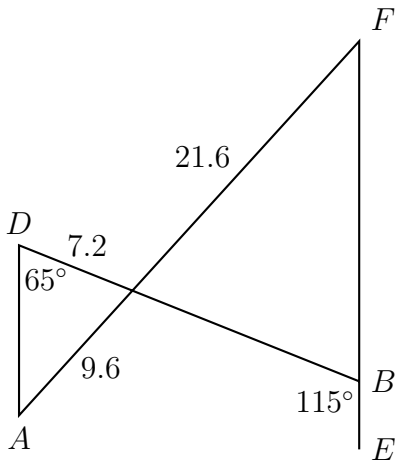
11.16

1. In the diagram below, $\overline{AF}$ and $\overline{DB}$ intersect at C, and $\overline{AD}$ and $\overline{FBE}$ are drawn such that $m\angle D = 65°$, $m\angle CBE = 115°$, $DC = 7.2$, $AC = 9.6$, and $FC = 21.6$.



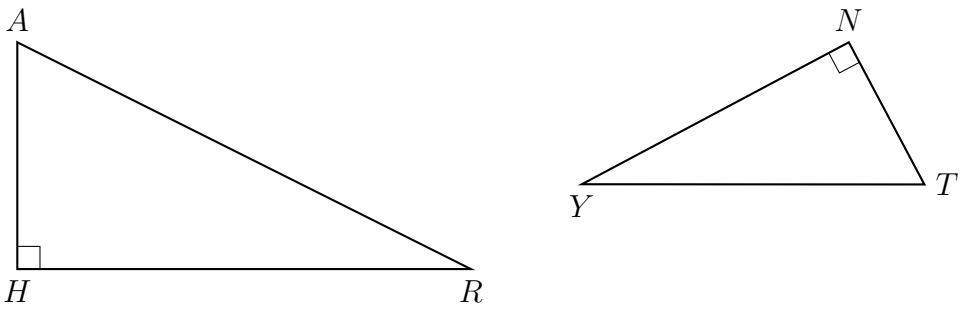
What is the length of $\overline{CB}$?

2. The line represented by $2y = x + 8$ is dilated by a scale factor of k centered at the origin, such that the image of the line has an equation of $y - \frac{1}{2}x = 2$. What is the scale factor?

3. A rectangular tabletop will be made of maple wood that weighs 43 pounds per cubic foot. The tabletop will have a length of eight feet, a width of three feet, and a thickness of one inch. Determine and state the weight of the tabletop, in pounds.

4. The equation of a cirle is $x^2 + y^2 - 2x - 14y = -14$. What are the center and radius of the circle?

5. In the diagram below of $\triangle HAR$ and $\triangle NTY$, angles H and N are right angles, and $\triangle HAR \sim \triangle NTY$



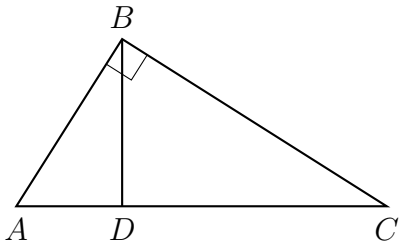
If $AR = 13$ and $HR = 12$, what is the measure of $\angle Y$, to the *nearest degree*?

6. Directed line segment DE has endpoints $D(-4, -2)$ and $E(1, 8)$. Point F divides such that $DF : FE$ is $2 : 3$. What are the coordinates of F?

7. If an equilateral triangle is continuously rotated around one of its medians, which 3-dimensional object is generated?

   (a) cone
   (b) sphere
   (c) pyramid
   (d) prism

8. In diagram below of right triangle ABC, altitude $\overline{BD}$ is drawn.



Which ratio is always equivalent to $\cos A$?

(a) $\frac{AB}{BC}$
(b) $\frac{BD}{BC}$
(c) $\frac{BD}{AB}$
(d) $\frac{BC}{AC}$