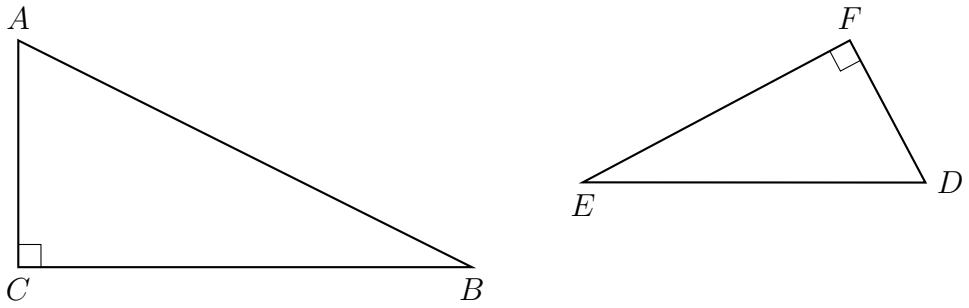
11.7 Similar triangles

1. What are the coordinates of the center and the length of the radius of the circle whose equation is $(x+2)^2 + (y-5)^2 = 81$?

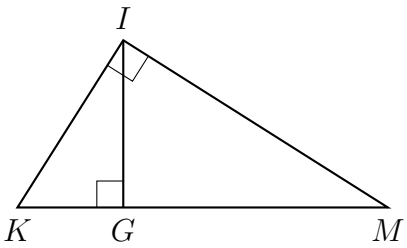
2. The equation of a cirle is $x^2 + y^2 - 4x + 10y = -20$. What are the center and radius of the circle?

3. In the diagram below of $\triangle ABC$ and $\triangle DEF$, angles C and F are right angles, and $\triangle ABC \sim \triangle DEF$



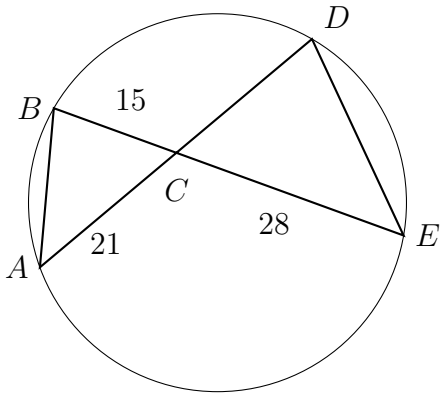
If $AC = 10$, $BC = 22$ and $DF = 6$, what is the measure of EF?

4. In the diagram below of right triangle KMI, altitude $\overline{IG}$ is drawn to hypotenuse $\overline{KM}$.



IF $KG = 4$ and $MG = 9$, what is the length of $\overline{IG}$?

5. Circle O has chords $\overline{AD}$ and $\overline{BE}$ intersecting at C, as shown. Find CD.



6. Determine and state an equation of the line perpendicular to the line $3x - 5y = 15$ and passing through the point $(1, 5)$.

7. The endpoints of directed line segment AB have coordinates of $A(-5, -12)$ and $B(5, 3)$. What are the coordinates of point M, on $\overline{AB}$, that divide $\overline{AB}$ into a ratio of 2:3?

8. At a distance of two miles, the angle of elevation to the top of a radio tower is 3.5°.

   What is the height of the tower, to the *nearest foot*? (1 mile = 5280 feet)

not to scale