**11.9 Linear equations**

1. The coordinates of the endpoints of directed line segment $PQR$ are $P(7, 3)$ and $R(-5, 7)$. If $PQ : QR = 1 : 3$, what are the coordinates of $Q$?

2. A spherical glass float has a volume of $15,600$ cubic centimeters. What is the radius of the float to the nearest tenth of a centimeter?

3. What is an equation of the image of the line $y = 2x + 6$ after a dilation with a scale factor of $\frac{3}{2}$ centered at the origin?

4. What are the coordinates of the center and the length of the radius of the circle whose equation is $(x + 8)^2 + (y - 1)^2 = 100$?

5. Which equation represents a line that is parallel to the line represented by $y = \frac{3}{5}x + 2$?

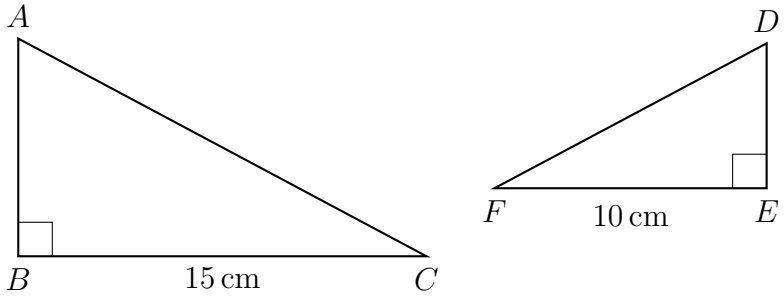
   (a) $3x + 5y = 10$

   (b) $3x - 5y = 15$

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

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

6. Two right triangles are shown below with $\angle A \cong \angle D$, $\angle C = 33°$, $BC = 15$ cm, and $EF = 10$ cm.




Find $DF$, to the *nearest tenth of a centimeter*.

7. A regular pentagon is rotated about its center. Which degree measure will carry the regular pentagon onto itself?

(a) 45° (c) 120°

(b) 78° (d) 144°

8. The equation of a cirle is $x^2 + y^2 - 2x + 6y = 54$. What are the center and radius of the circle?

9. Isosceles triangle $ABC$ is shown below with $AB = 24$ and altitude $\overline{CD}$. If the area of $\triangle ABC$ is 60, find $BC$.