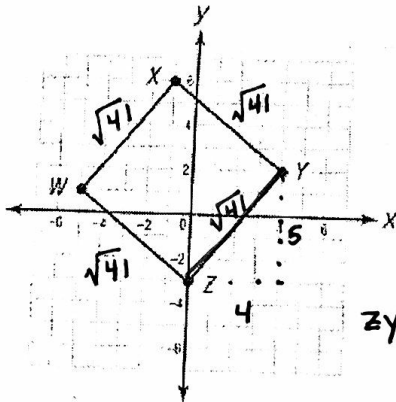


Figure WXYZ on the coordinate grid below is a square.



$$\begin{aligned} zy: 4^2 + 5^2 &= c^2 \\ 16 + 25 &= c^2 \\ 41 &= c^2 \\ c &= \sqrt{41} \end{aligned}$$

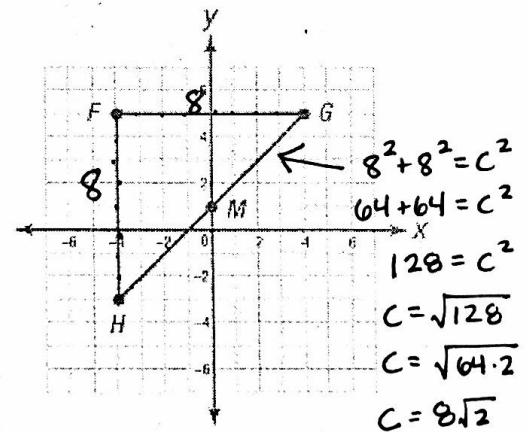
1. What is the perimeter of WXYZ? 2. What is the area of WXYZ?

- A. $2\sqrt{41}$ units
B. 20 units
C. $4\sqrt{39}$ units
D. $4\sqrt{41}$ units
 $\sqrt{41} + \sqrt{41} + \sqrt{41} + \sqrt{41}$
- A. 25 units²
B. 39 units²
C. 41 units² ← $\sqrt{41} \cdot \sqrt{41}$
D. 82 units²

3. Given $\triangle FGH$, find each of the following:

Perimeter = $8 + 8 + 8\sqrt{2} = \boxed{16 + 8\sqrt{2}}$

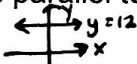
Area = $\frac{1}{2}(8)(8) = \boxed{32}$



4. A line that is parallel to $y = \frac{3}{4}x - 9$ has a slope of $\frac{3}{4}$.

5. A line that is perpendicular to $\frac{8}{3}y = \frac{11}{3} - \frac{8}{3}x$ has a slope of $\frac{3}{8}$.

6. A line that is parallel to $y = 12$ has a slope of zero.



7. Which describes the lines $x - 2y = -6$ and $4y + 4 = 2x$?

- A. parallel**
B. perpendicular
C. neither

$$\frac{-2y}{-2} = \frac{-x-6}{-2} = \frac{-2}{-2} \quad \frac{4y}{4} = \frac{2x-4}{4} = \frac{1}{2}$$

$$y = \frac{1}{2}x + 3 \quad y = \frac{1}{2}x - 1$$

same slope

8. Write the equation of the line that is parallel to $\frac{8}{3}y = \frac{x}{3} + \frac{12}{3}$ and passes through the point $(6, -8)$.

slope = $\frac{1}{3}$

through $(6, -8)$

$$y = \frac{1}{3}x + b$$

$$-8 = \frac{1}{3}(6) + b$$

$$-8 = 2 + b \quad \boxed{-10 = b}$$

$$y = \frac{1}{3}x + 4$$

$$\boxed{y = \frac{1}{3}x - 10}$$

9. Write the equation of the line that is perpendicular to $y - x = 7$ and passes through the point $(-2, -2)$.

slope = -1

$$y = -x + b$$

$$-2 = -(-2) + b$$

$$-2 = 2 + b$$

$$\boxed{-4 = b}$$

$$y = x + 7$$

$$\boxed{y = -x - 4}$$

10. The endpoints of line segment \overline{XY} are $X(-6, 2)$ and $Y(6, 10)$.



a) Find the point P that is $\frac{1}{3}$ of the distance from X to Y .

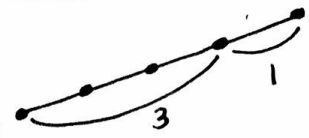
$$\left(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1)\right)$$

ratio 1:2

$$\boxed{\left(-2, \frac{14}{3}\right)}$$

$$\left(-6 + \frac{1}{3}(6 - (-6)), 2 + \frac{1}{3}(10 - 2)\right)$$

$$\left(-6 + 4, 2 + \frac{8}{3}\right)$$



b) Find the point Q that partitions \overline{XY} in a ratio of 3:1.

same as " $\frac{3}{4}$ of the distance from X to Y "

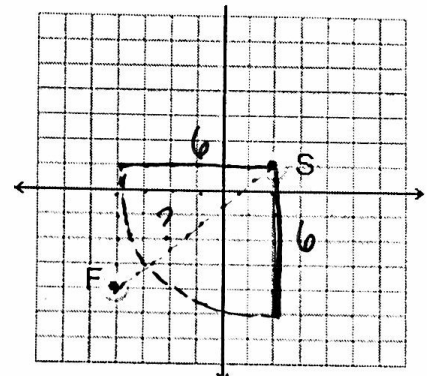
$$\left(-6 + \frac{3}{4}(6 - (-6)), 2 + \frac{3}{4}(10 - 2)\right)$$

$$\boxed{(3, 8)}$$

$$\left(-6 + \frac{3}{4}(12), 2 + \frac{3}{4}(8)\right)$$

$$(-6 + 9, 2 + 6)$$

11. The diagram on the right represents a park with a grid imposed on it. Each unit length on the grid represents 1 foot. The point S represents the planned placement for a sprinkler head that sprays water in a circle. The point F represents a flowerbed. If the sprinkler has a radius of 6 feet, will water from the sprinkler reach the flowerbed? Explain your answer.



Sprinkler $(2, 1)$ Flowerbed $(-4, -4)$

$$d = \sqrt{(-4 - 2)^2 + (-4 - 1)^2}$$

$$d = \sqrt{(-6)^2 + (-5)^2}$$

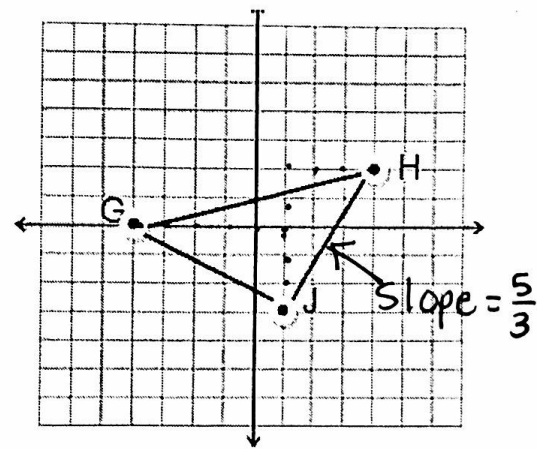
$$d = \sqrt{36 + 25}$$

$$d = \sqrt{61}$$

$$d \approx 7.8$$

No, the sprinkler can only spray a distance of 6 ft. away... and the flower bed is about 7.8 ft. away.

12. Triangle $\triangle GHJ$ is shown on the coordinate grid. Is $\triangle GHJ$ a right triangle? Explain your answer.



$$\text{Slope of } \overline{HJ} = \frac{5}{3}$$

$$\text{Slope of } \overline{GJ} = -\frac{3}{5}$$

opp. reciprocals
This means $\angle J$ is a right \angle .

$\triangle GHJ$ is a right \triangle because \overline{GJ} and \overline{HJ} have slopes that are opposite reciprocals, which means they form a right \angle .