Unit 7- Geometry in the Coordinate Plane Review

1. Write an equation of the line parallel to the given that passes through the given point.
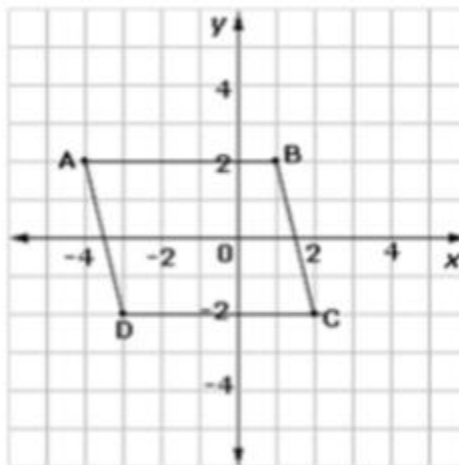   a. $y = -x - 1$ Thru point (-2, 3)   b. $4y = -12 + x$ thru point (8 ,5)

2. Write an equation of the line perpendicular to the following that passes through the given point.
   a. $y = \frac{2}{3}x + 1$ Thru point (2,-4)   b. $-2 - y = x$ thru point (2,4)
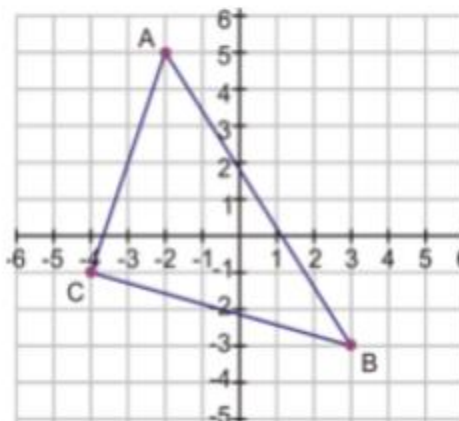
3. Prove that ABCD is a parallelogram.

   (Hint: What are the properties of a parallelogram?)

Prove that the triangle shown is a right triangle.

(Hint: What are the properties of a right triangle?)

4. Find the coordinates of Point A along a directed line segment from $C(2, 8)$ to $D(12, 2)$ so that A partitions CD in a ratio of 1:4.

Line segment AB is divided into a ratio of 5:3. The point that divides it is $(3,4)$. If Point A is $(-2, 4)$, what is Point B?.

5. If figure EFGH a Parallelogram, Square, Rectangle, or none of these? Use slope and/or distance formula to justify your answer.
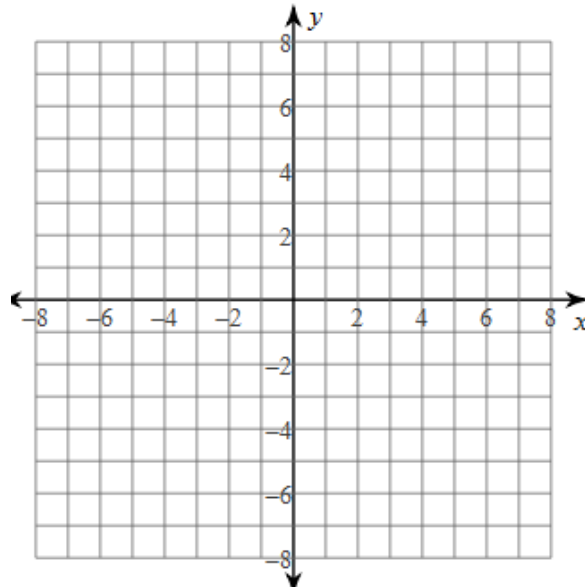
$$E = (1, 2), F = (2, 5), G = (5, 6) \text{ and } H = (4, 3).$$

6. Write equation for circle
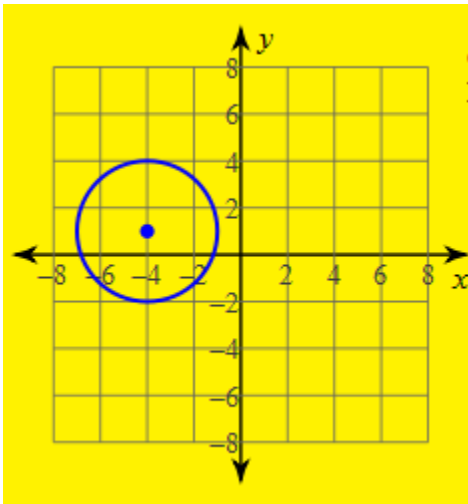
7. Sketch Circle

$$12 - 8x = -y^2 - x^2$$

Answers:

1a. y = −x +1   b. y= x/4 +3

2a. $y = \frac{-3x}{2}$ - 1 b. y= -x +6

3. A

$\overline{AD}$ and $\overline{BC}$ have the same slope and $\overline{AB}$ and $\overline{DC}$ have the same slope. This means that opp. sides are parallel, thus proving that ABCD is a parallelogram.

b.
The slopes of each side of the triangle are not opp. reciprocals of each other. Therefore there are no perp. sides in the triangle. Thus ABC is not a right triangle.

4. a. (3.6 ,6.8)

   b. (6,4)

5. $\overline{EF}$ and $\overline{GH}$ have the same slope of $m = 3$ and $\overline{FG}$ and $\overline{HE}$ have the same slope of $m = 1/3$, so $\overline{EF}||\overline{GH}$ and $\overline{FG}||\overline{HE}$. Both pairs of opposite sides are parallel so EFGH must be a parallelogram. Consecutive sides of the parallelogram are not perpendicular because their slopes are not opposite reciprocals so EFGH cannot be a square or a rectangle.

6. (x +4)² + (y -1)² = 9   7.