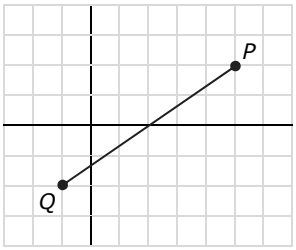
LESSON 170 Review: Coordinate Geometry

1. What is the length of $\overline{PQ}$ in simplest radical form?



2. A circle has a diameter with endpoints (8, 0) and (−2, 4). Where is the center?

3. On a number line, A is at 3 and B is at 13. What are the coordinates of the point that partitions direct line segment $\overline{AB}$ in the ratio 2:3?

4. On a coordinate plane, A is at (3, 1) and B is at (15, −3). What are the coordinates of the point that partitions direct line segment $\overline{AB}$ in the ratio 1:3?

5. Identify all pairs of parallel lines and all pairs of perpendicular lines given their equations.

A) $x = 1$

B) $x = 5$

C) $y = -4$

D) $y = 2x - 5$

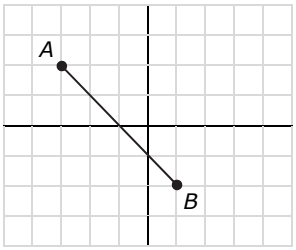
E) $x - 2y = 1$

F) $2x - y = 3$

G) $2x + y = 7$

6. A line is parallel to $y = 3x - 2$ and passes through (0, 2). What is an equation of the line in slope-intercept form?

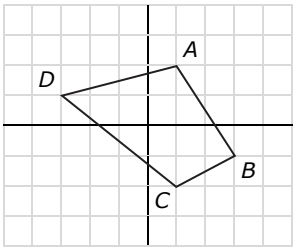
7. What is an equation of the perpendicular bisector of $\overline{AB}$? Write your answer in slope-intercept form.



8. What is the point of intersection between lines $x - y = 5$ and $x - 4y = 2$?

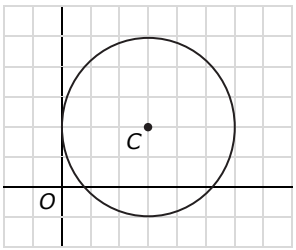
9. What is the distance from point (2, −2) to line $x + 3y = 6$?

10. Find the area of the quadrilateral.



11. Quadrilateral $EFGH$ has vertices $E(-2, 2)$, $F(2, 0)$, $G(1, -2)$, and $H(-3, 0)$. Classify $EFGH$ as precisely as possible.

12. Write the standard equation of circle C.



13. Write the standard equation of a circle with center $(2, -6)$ and area 25π.

14. Write the standard equation of a circle with center (5, 1) and passing through (3, 7).

15. Find the center and radius of a circle with equation $x^2 + y^2 + 4x - 5 = 0$.

16. A circle with equation $x^2 + (y + 5)^2 = 4$ is reflected across the x-axis. What is the standard equation of the resulting circle?

17. Which can be used to prove that a quadrilateral is a parallelogram? Select all that apply.

A) The diagonals bisect each other.

B) The diagonals are perpendicular.

C) The diagonals are congruent.

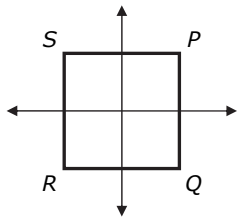
D) Both pairs of opposite sides are parallel.

E) Both pairs of opposite sides are congruent.

F) One pair of opposites sides are parallel and congruent.

18. A circle has center $C(1, 3)$ and passes through $P(2, 0)$. Prove that $Q(-1, 5)$ is inside the circle.

19. A square with side length $2x$ is placed on a coordinate plane such that the axes bisect each side. What are the coordinates of the vertices of the square?



20. Prove that the diagonals of a square are congruent. Use square $PQRS$ above to write a coordinate proof.

21. (HONORS) A right triangle is formed by three lines $x = 1$, $y = 4$, and $y = x - 1$. What are the coordinates of the circumcenter of the triangle?

22. (HONORS) $\triangle PQR$ has vertices $P(2, 3)$, $Q(2, -3)$, and $R(-4, -3)$. What are the coordinates of the centroid of the triangle?

23. (HONORS) A circle circumscribes a square whose vertices are at (0, 0), (4, 0), (4, 4), and (0, 4). What is the standard equation of the circle? (*Hint*: The diagonals of the square are diameters of the circumcircle.)