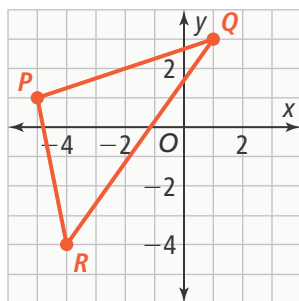




UNDERSTAND

9. **Error Analysis** What error did Kelley make in finding the area of $\triangle PQR$?

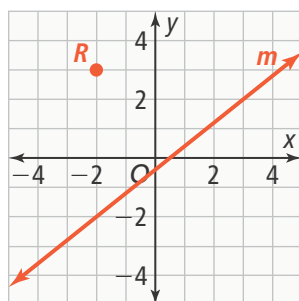


$$\text{Area} = \frac{1}{2}bh = \frac{1}{2}(PR)(PQ) = \frac{1}{2}\sqrt{26}\sqrt{40}$$

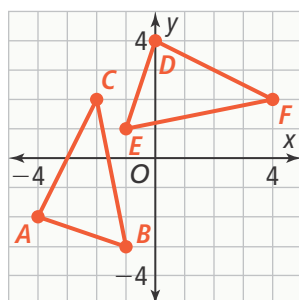
The area of $\triangle PQR$ is about 16.12 square units.

X

10. **Mathematical Connections** Find the equation of the line that passes through point R and is perpendicular to line m .



11. **Construct Arguments** Prove $\triangle ABC \cong \triangle DEF$.



12. **Communicate Precisely** Given the coordinates of the vertices, how can you show that a quadrilateral is a kite without using the Distance Formula?
13. **Higher Order Thinking** Let line p be the perpendicular bisector of $\overline{AB}$ that has endpoints $A(x_1, y_1)$ and $B(x_2, y_2)$. Describe the process for writing a general equation in slope-intercept form for line p .

PRACTICE

Use the figure shown for Exercises 14–17.

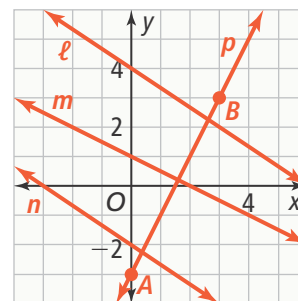
SEE EXAMPLE 1

14. Which lines are parallel?

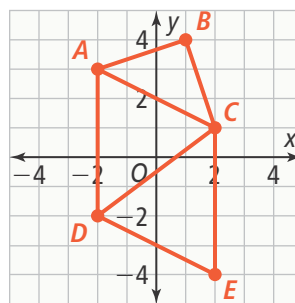
15. Which lines are perpendicular?

16. What is the length of $\overline{AB}$?

17. What is the midpoint of $\overline{AB}$?



Use the figure shown for Exercises 18–23.



18. Is $\triangle ABC$ a scalene, isosceles, or equilateral triangle? Is it a right triangle? Explain.

SEE EXAMPLE 2

19. Is $\triangle ADC$ a scalene, isosceles, or equilateral triangle? Is it a right triangle? Explain.

SEE EXAMPLE 2

20. What type of parallelogram is $ACED$? Explain. SEE EXAMPLE 3

21. What type of quadrilateral is $ABCD$? How do you know? SEE EXAMPLE 4

22. Find the area and perimeter of $\triangle ABC$.

SEE EXAMPLE 5

23. Find the area and perimeter of $ABCD$.

SEE EXAMPLE 6

Three vertices of a quadrilateral are $P(-2, 3)$, $Q(2, 4)$, and $R(1, 0)$. SEE EXAMPLE 3

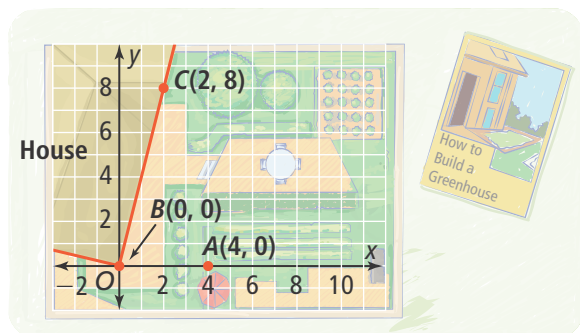
24. Suppose $PQRS$ is a parallelogram. What are the coordinates of vertex S ? What type of parallelogram is $PQRS$?

25. Suppose $PQSR$ is a parallelogram. What are the coordinates of vertex S ? What type of parallelogram is $PQSR$?

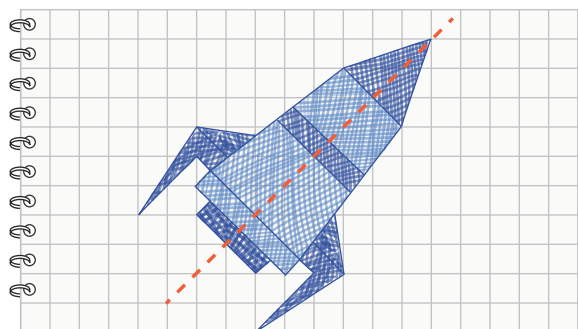


APPLY

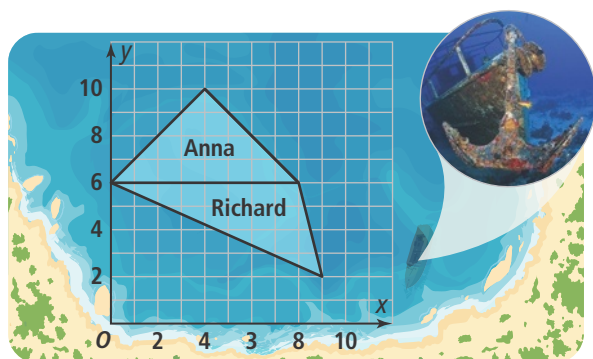
26. **Use Appropriate Tools** An architect overlays a coordinate grid on her plans for attaching a greenhouse to the side of a house. She wants to locate point D so that $ABCD$ is a trapezoid and $\overline{CD}$ is perpendicular to the house. What are the coordinates for point D ?



27. **Model With Mathematics** Yuson thinks the design she made is symmetric across the dashed line she drew. How can she use coordinates to show that her design is symmetric?



28. **Construct Arguments** The map shows the regions that Anna and Richard have explored. Each claims to have explored the greater area. Who is correct? Explain.



ASSESSMENT PRACTICE

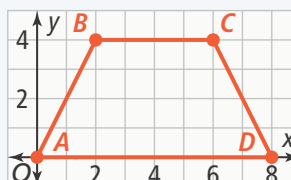
29. Triangle ABC has vertices $A(2, 5)$, $B(6, 8)$, and $C(5, 1)$. Determine whether each statement about $\triangle ABC$ is true. Select Yes or No.

	Yes	No
$\overline{AB} \cong \overline{AC}$	☐	☐
$BC = AB \sqrt{2}$	☐	☐
The midpoint of BC is $(5.5, 4)$.	☐	☐
The perimeter is 12.5 units.	☐	☐

30. **SAT/ACT** Quadrilateral $JKLM$ has vertices $J(1, -2)$, $K(7, 1)$, $L(8, -1)$, and $M(2, -4)$. Which is the most precise classification of $JKLM$?

- Ⓐ rectangle
 Ⓑ rhombus
 Ⓒ trapezoid
 Ⓓ kite

31. **Performance Task** Dana draws the side view of a TV stand that has slanted legs. Each unit in his plan equals half of a foot.



Part A Dana thinks his TV stand is in the shape of isosceles trapezoid. Is he correct? Explain.

Part B Dana adds an additional support by connecting the midpoints of the legs. How long is the support?

Part C Dana decides he wants to make the TV stand a half foot higher by placing B at $(2, 5)$ and C at $(6, 5)$. How much longer will the legs and support connecting the midpoints be?