

Practice 20

For use with Section 3-2

For each pair of points in Exercises 1–6:

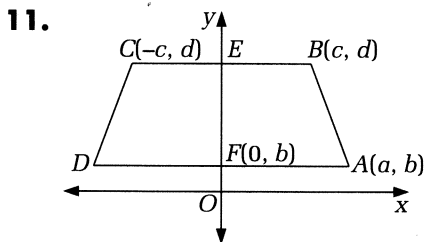
- a. Find the slope of the line segment joining the two points.
- b. Find the distance between the two points.

- | | | |
|-------------------------|---------------------------|--------------------------------|
| 1. $P(a, b), Q(0, 0)$ | 2. $A(d, e), B(-d, e)$ | 3. $R(a, b), S(c, 0)$ |
| 4. $M(2a, 2b), N(a, b)$ | 5. $P(a + b, c), Q(b, c)$ | 6. $J(a - b, c), K(a + b, -c)$ |

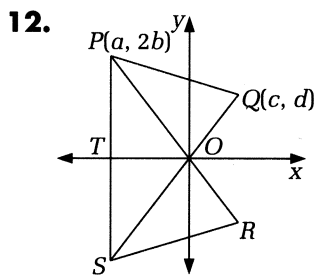
For each pair of points in Exercises 7–10, find the coordinates of the midpoint of the segment joining the two points.

- | | |
|----------------------------|---------------------------------|
| 7. $A(d, e), B(-d, e)$ | 8. $P(2a, 2b), Q(2c, 2d)$ |
| 9. $R(2b, c), S(a - b, c)$ | 10. $H(a + b, 2c), K(a - b, 0)$ |

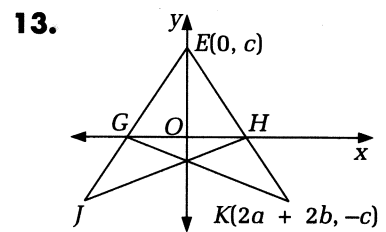
In each diagram, the x -axis or the y -axis is a line of symmetry for the figure. Write an ordered pair that gives the coordinates of each indicated point.



$D = ?; E = ?$



$R = ?; S = ?; T = ?$



H is the midpoint of \overline{EK} .
 $H = ?; G = ?; J = ?$

14. Use the diagram at the right and the steps listed below to prove that the diagonals of a rhombus are perpendicular.

- a. Explain how you know that $PQ = PS$.
- b. Using the distance formula together with the equation in part (a), show that $c^2 = a^2 - b^2$.
- c. Find the slopes of \overline{PR} and \overline{SQ} in terms of $a, b,$ and c .
- d. Multiply the two slopes you found in part (c) and use the result of part (b) to show that $\overline{PR} \perp \overline{SQ}$.

