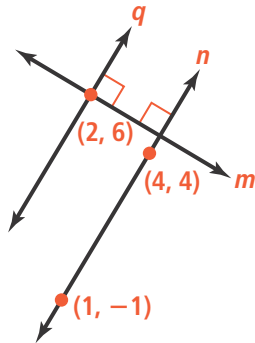


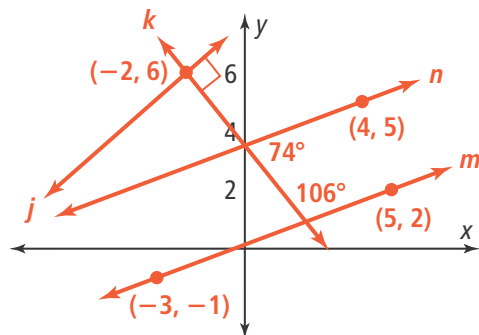


UNDERSTAND

13. **Look for Relationships** What are the equations of lines m and q ?



14. **Reason** Why can you not say that two vertical lines have equal slope? Why can you not say that the product of the slopes of a vertical and horizontal line is -1 ?
15. **Higher Order Thinking** Lines k and n intersect on the y -axis.



- a. What is the equation of line k in slope-intercept form?
- b. What is the equation of line j in slope-intercept form?
16. **Construct Arguments** Line m passes through points X and Y . Line n passes through points X and Z . If m and n have equal slope, what can you conclude about points X , Y , and Z ? Explain.
17. **Error Analysis** Shannon says that the lines $y = -3x - 4$, $y = -\frac{1}{3}x + 6$, $y = -4x - 5$, and $y = \frac{1}{4}x - 5$ could represent the sides of a rectangle. Explain Shannon's error.

PRACTICE

Compare the slopes of the lines for $y = f(x)$ and $y = g(x)$ to determine if each pair of lines is parallel.

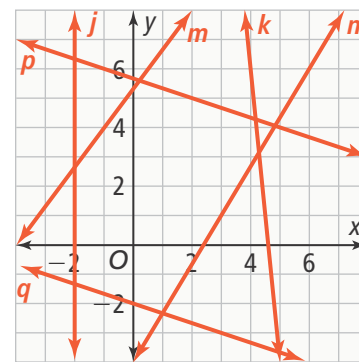
SEE EXAMPLE 1

18.	x	$f(x)$	$g(x)$
	0	20	22
	1	35	37
	2	50	52
	3	65	67

19.	x	$f(x)$	$g(x)$
	0	5	10
	1	7	15
	2	9	20
	3	11	25

Determine if each pair of lines is parallel.

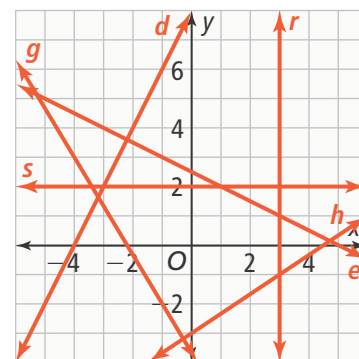
SEE EXAMPLE 2



20. j and k 21. m and n 22. p and q

Determine if each pair of lines is perpendicular.

SEE EXAMPLE 3



23. d and e 24. g and h 25. r and s

Write the equations for the lines parallel and perpendicular to the given line j that passes through Q . SEE EXAMPLE 4

26. $y = -4x + 1$; $Q(6, -1)$

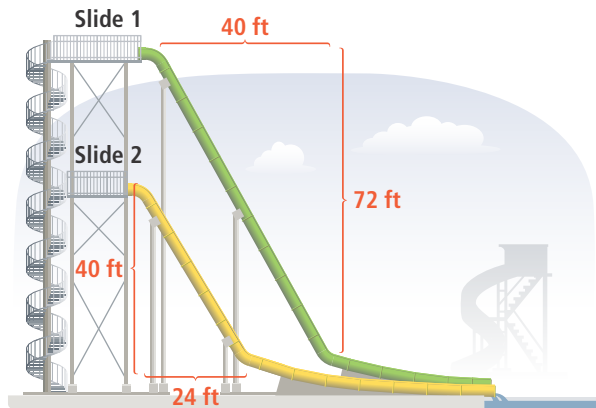
27. $y = \frac{3}{2}x + 4$; $Q(-1, 1)$

APPLY

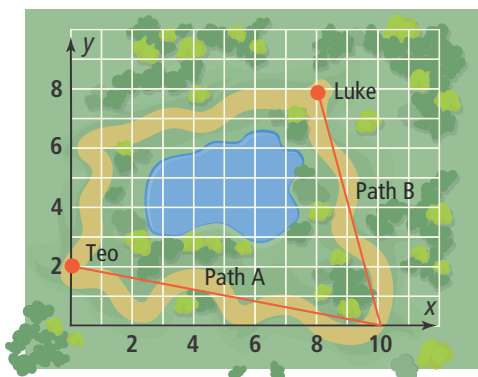
- 28. Model With Mathematics** The table shows locations of several sites at a high school campus. A landscaper wants to connect two sites with a path perpendicular to the path connecting the cafeteria and the library. Which two sites should he connect?

Locations	
Cafeteria (5, 5)	Library (11, 14)
Office (4, 12)	Gym (15, 8)
Woodshop (11, 6)	Art Studio (3, 16)

- 29. Make Sense and Persevere** Are the steepest parts of the two water slides parallel? Explain.

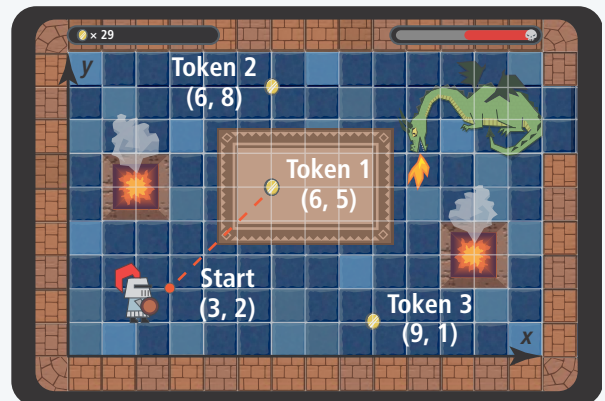


- 30. Mathematical Connections** Teo rides his bike in a straight line from his location, perpendicular to path A, and Luke rides his bike in a straight line from his location, perpendicular to path B. What are the coordinates of the point where they meet?



ASSESSMENT PRACTICE

- 31.** $\overrightarrow{AB} \perp \overrightarrow{BC}$ for $A(-3, 2)$ and $C(2, 7)$. Which of the following could be the coordinates of B ? Select all that apply.
- Ⓐ (8, 0) Ⓓ (1, 3)
Ⓑ (-2, 2) Ⓔ (-1, -1)
Ⓒ (-4, 5) Ⓕ (-3, 7)
- 32. SAT/ACT** Line k passes through $(2, -3)$ and $(8, 1)$. Which equation represents a line that is parallel to k ?
- Ⓐ $y = -\frac{2}{3}x - \frac{5}{3}$ Ⓒ $y = \frac{3}{2}x - 6$
Ⓑ $y = \frac{2}{3}x - \frac{13}{3}$ Ⓓ $y = -\frac{3}{2}x$
- 33. Performance Task** A knight travels in a straight line from the starting point to Token 1. The knight can only make right-angle turns to get to Tokens 2 and 3.



Part A Since the knight can only make right-angle turns, what are the slopes of the straight line paths the knight can travel?

Part B What equations describe a path that the knight can follow from the starting point to reach the tokens for the arrangement shown?

Part C What is the fewest number of turns that the knight can take in order to get all three tokens?