LESSON MAKER PRO

Slope Matchup

Classify pairs of lines by comparing their slopes.

HIGH SCHOOL · GEO-G.GPE.5.b

GEO-G.GPE.5.b "Determine if lines are parallel, perpendicular, or neither, based on their slopes; and"

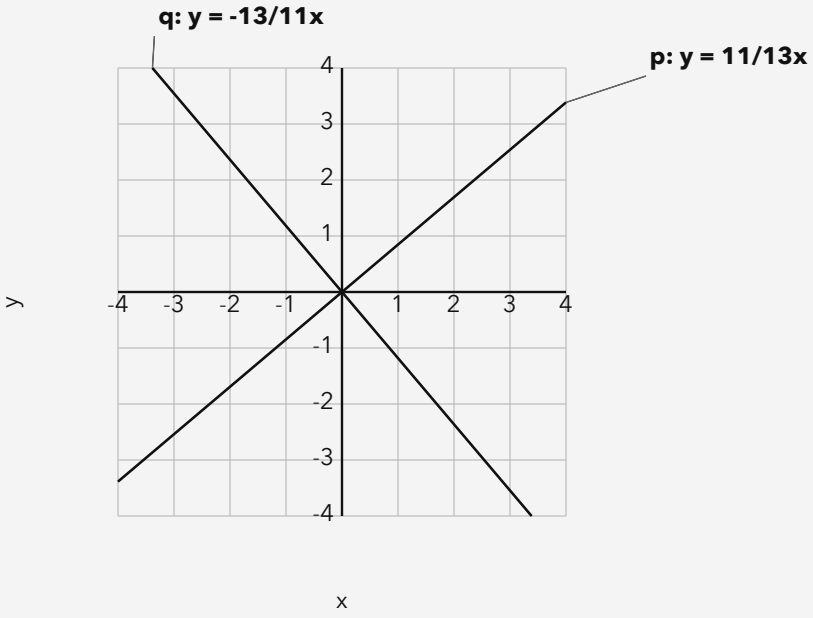
NAME _____ DATE _____

COMPARE THE SLOPES

For nonvertical lines, find slope with rise/run. Two distinct nonvertical lines are parallel exactly when their slopes are equal; equal slope and equal intercept describe the same line. Two distinct vertical lines are parallel. Nonvertical lines are perpendicular when their slopes multiply to -1. A vertical line and a horizontal line are perpendicular.

WORKED EXAMPLE

Use the graph to classify lines p and q as parallel, perpendicular, or neither.



1. The slope of p is 11/13.
2. The slope of q is -13/11.
3. (11/13)(-13/11) = -1.
4. The slopes are negative reciprocals.

Answer: perpendicular

PRACTICE 6 problems

1 Classify the lines y = 3x - 8 and y = 3x + 4.

ANSWER _____

2 Line a passes through (-3, 5) and (0, -1). Line b passes through (4, 7) and (6, 3). Classify the lines.

ANSWER _____

_____

3 Classify the lines y = 5/6x + 7 and y = -6/5x - 3.

ANSWER _____

4 Classify the lines y = -4x + 9 and (1/5)x - y = 3.

ANSWER _____

_____

5 Classify the lines x = 6 and y = -2.

ANSWER _____

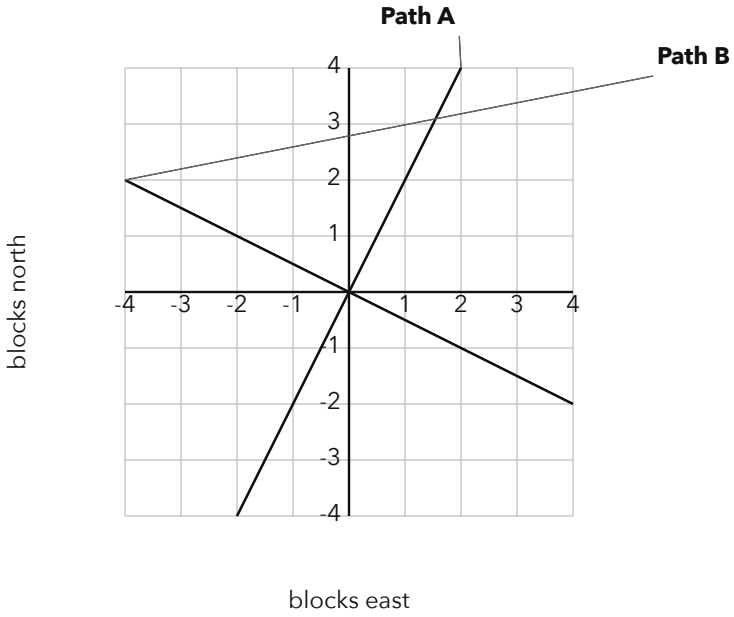
6 Line r passes through (-5, 4) and (3, 8). Line s has equation y = 2x - 7. Classify the lines.

ANSWER _____

_____

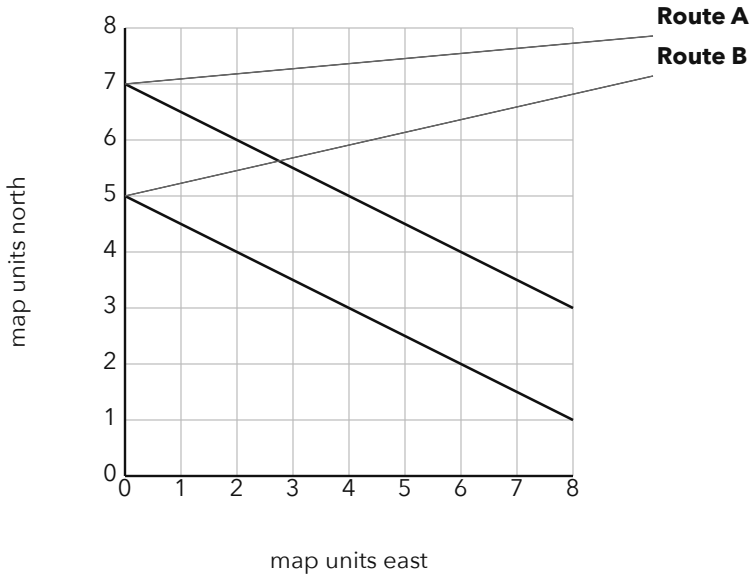
APPLY IT Show your work

1 A campus bike club is planning two practice routes. The grid shows the routes, where each unit is one city block. Are Path A and Path B parallel, perpendicular, or neither?



ANSWER

2 Two camera paths are shown on a coordinate map for an esports tournament. Are Route A and Route B parallel, perpendicular, or neither? State how you know.



ANSWER

CHALLENGE One step up

For what value of k are the lines y = (k + 1)/2x - 3 and 4x + y = 8 perpendicular? Explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Slope Matchup

HIGH SCHOOL · GEO-G.GPE.5.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Classify the lines y = 3x - 8 and y = 3x + 4.	**parallel**
2	Line a passes through (-3, 5) and (0, -1). Line b passes through (4, 7) and (6, 3). Classify the lines.	**parallel**
3	Classify the lines y = 5/6x + 7 and y = -6/5x - 3.	**perpendicular**
4	Classify the lines y = -4x + 9 and (1/5)x - y = 3.	**neither**
5	Classify the lines x = 6 and y = -2.	**perpendicular**
6	Line r passes through (-5, 4) and (3, 8). Line s has equation y = 2x - 7. Classify the lines.	**neither**

PART 2 · APPLY IT

1. **perpendicular** Path A has slope 2, and Path B has slope -1/2. Their slopes multiply to -1, so the paths are perpendicular.
2. **parallel; both routes have slope -1/2.** Each route goes down 1 unit for every 2 units to the right, so each has slope -1/2. Equal slopes mean the routes are parallel.

CHALLENGE

k = -1/2. The second line has slope -4, so a perpendicular line has slope 1/4. Setting (k + 1)/2 equal to 1/4 gives k = -1/2.

Accept equivalent slope work and classifications. For problem 4, accept neither only when the second equation is correctly rewritten as y = 1/5x - 3. Parallel-line claims require distinct supporting lines. Equal slope alone also permits coincident lines; check different intercepts or an off-line point. Handle vertical and horizontal lines separately.