LESSON MAKER PRO

Line Match-Up

Write equations, then compare slopes.

GRADE 8 · 8.FGR.7.5

8.FGR.7.5 "Create and compare the equations of two lines that are either parallel to each other, perpendicular to each other, or neither parallel nor perpendicular."

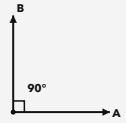
NAME _____ DATE _____

COMPARE THE SLOPES

In y = mx + b, m is the slope. Lines with equal slopes are parallel, and lines with slopes that are negative reciprocals are perpendicular. All other pairs are neither.

WORKED EXAMPLE

Use the right angle in the figure. Line A has equation y = 7/3x + 6. Write an equation for line B through (2, -8).



1. A right angle means the slopes are negative reciprocals.
2. mA = 7/3, so mB = -3/7.
3. Use point-slope form: y + 8 = -3/7(x - 2).

Answer: y + 8 = -3/7(x - 2)

PRACTICE 4 problems

1 Compare y = 5x + 1 and y = 5x - 4. Are the lines parallel, perpendicular, or neither?

ANSWER _____

2 Compare y = -9x + 4 and y = 1/9x - 5. Are the lines parallel, perpendicular, or neither?

ANSWER _____

3 Compare y = 11x - 1 and y = -1/11x + 10. Are the lines parallel, perpendicular, or neither?

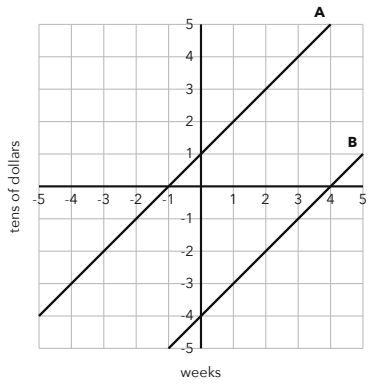
ANSWER _____

4 Write an equation for the line parallel to y = -12x + 13 that passes through (0, -14).

ANSWER _____

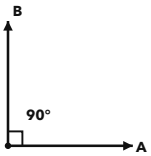
APPLY IT Show your work

1 A game club graphs two fundraiser totals. On the graph, x is weeks and y is tens of dollars. Write the equations of lines A and B. Then compare the lines.



ANSWER _____

2 At a skate park, path A has equation y = -5x + 4. The figure shows that path B meets path A at a right angle. Path B crosses the y-axis at -9. Write an equation for path B.



ANSWER _____

CHALLENGE One step up

Line C passes through (1, 5) and (4, 17). Line D passes through (-1, 0) and (4, 20). Write both equations. Then decide whether the lines are parallel, perpendicular, or neither. Explain using slopes and y-intercepts.

WORK SPACE AND ANSWER

ANSWER KEY

Line Match-Up

GRADE 8 · 8.FGR.7.5

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Compare y = 5x + 1 and y = 5x - 4. Are the lines parallel, perpendicular, or neither?	**parallel**
2	Compare y = -9x + 4 and y = 1/9x - 5. Are the lines parallel, perpendicular, or neither?	**perpendicular**
3	Compare y = 11x - 1 and y = -1/11x + 10. Are the lines parallel, perpendicular, or neither?	**perpendicular**
4	Write an equation for the line parallel to y = -12x + 13 that passes through (0, -14).	**y = -12x - 14**

PART 2 · APPLY IT

1. **A: y = x + 1. B: y = x - 4. The lines are parallel.** Both lines rise 1 unit for every 1 unit to the right. Their y-intercepts are different.
2. **y = 1/5x - 9** A perpendicular slope to -5 is 1/5. Use the given y-intercept of -9.

CHALLENGE

Line C: y = 4x + 1. Line D: y = 4x + 4. The lines are parallel because both slopes are 4, but their y-intercepts are different.

Accept equivalent forms, including point-slope form. For classifications, students should use equal slopes for parallel lines and negative reciprocal slopes for perpendicular lines.