

NAME _____ Period _____ Date _____

PART 1: Recall these words??? Write the vocabulary term that best completes each statement.

perpendicular

$y=mx+b$

slope

parallel

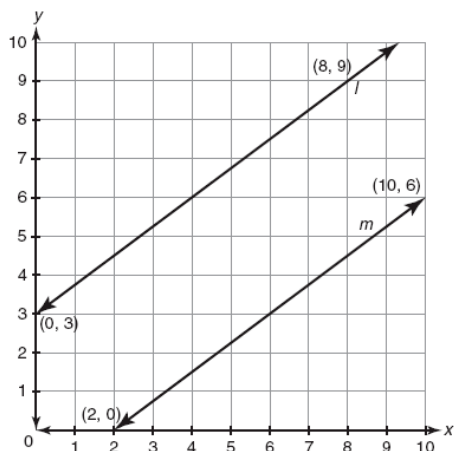
reciprocal

y-intercept

- 1) The _____ of a line is the ratio of the vertical change to the horizontal change.
- 2) Two lines in the same plane are _____ if they intersect at right angles.
- 3) The _____ is the point at which a line intersects the y-axis.
- 4) The slope-intercept form of a linear equation is _____.
- 5) Two lines in the same plane are _____ if they do not intersect.
- 6) The _____ of a number switches the position of the numerator and denominator.

PART 2: Answer the investigation questions below to draw conclusions about parallel and perpendicular slopes.

These two lines are parallel.



7) On line l , from **(0, 3)** to **(8, 9)**...

What is the vertical change? _____

What is the horizontal change? _____

So, what is the slope of line l ? _____

8) On line m , from **(2, 0)** to **(10, 6)**...

What is the vertical change? _____

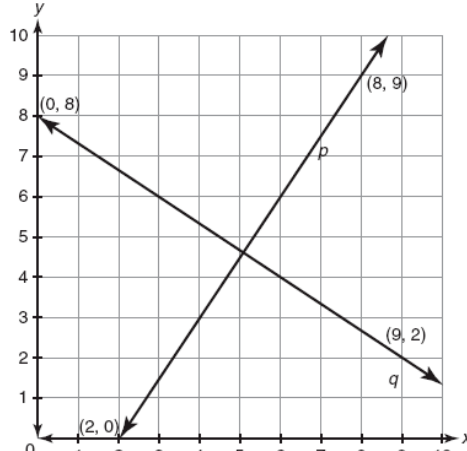
What is the horizontal change? _____

So, what is the slope of line m ? _____

9) a. Compare the slopes of lines l and m . What do you notice?

b. In the coordinate plane above, draw in line AB parallel to lines l and m , where point A is at $(6,1)$. What is another point on this line?

These two lines are perpendicular.



10) On line p , from **(2, 0)** to **(8, 9)**...

What is the vertical change? _____

What is the horizontal change? _____

So, what is the slope of line p ? _____

11) On line q , from **(0, 8)** to **(9, 2)**...

What is the vertical change? _____

What is the horizontal change? _____

So, what is the slope of line q ? _____

12) Compare the slopes of lines p and q . What do you notice?

b. In the coordinate plane above, draw in line XY perpendicular to line p , where point X is at $(5,2)$. What is another point on this line?

Conclusions!!! Based on your work from each of the examples on the reverse side, fill in the following conditional statements.

If given parallel lines, then they have _____ slope.

If given perpendicular lines, then they have _____ slope.

Practice!!!

For questions 13-17, determine whether the lines are parallel, perpendicular, or neither.

13) $y = 3x + 4$ $y = 3x - 9$	14) $y = 2/3x + 1$ $y = -2/3x + 9$	15) $y = 2x - 10$ $y = \frac{1}{2}x - 5$	16) $y = 9x + 2$ $y = -1/9x$	17) $y = 4$ $y = -2$
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For questions 18 – 22, given the equation, write an equation for a line that is appropriate as indicated.

(Hint: there are infinitely-many answers for each of these questions, but you only need one!)

18) $y = 2x + 3$ Perpendicular	19) $y = -3/2x$ Perpendicular	20) $y = 6/5x - 10$ Parallel	21) $y = -9$ Parallel	22) $x = 3$ Parallel
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For questions 23 – 26, determine whether the lines are parallel, perpendicular, or neither by calculating the slope of each given two collinear points.

23) $\overleftrightarrow{AB} = A(6,5); B(6,9)$ $\overleftrightarrow{CD} = C(2,-4); D(-7,-4)$	24) $\overleftrightarrow{AB} = A(8,4); B(5,1)$ $\overleftrightarrow{CD} = C(3,4); D(6,7)$	25) $\overleftrightarrow{AB} = A(-3,-1); B(-5,-7)$ $\overleftrightarrow{CD} = C(0,2); D(-2,-4)$	26) $\overleftrightarrow{AB} = A(0,-5); B(-4,-5)$ $\overleftrightarrow{CD} = C(3,8); D(-11,8)$
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