Name:_____   Date:_____

Math 8/9H Section 7.5 Parallel and Perpendicular Lines

1. Given the slopes of the two lines, indicate whether if they are either 1) Parallel, 2) Perpendicular or 3) Neither

a) $m_1 = \dfrac{2}{3}$ & $m_2 = \dfrac{-2}{3}$	b) $m_1 = -4$ & $m_2 = 0.25$	c) $m_1 = 0.\overline{285714}$ $m_2 = 3.5$	d) $m_1 = 0.375$ & $m_2 = \dfrac{-8}{3}$
e) $m_1 = -2$ & $m_2 = -0.5$	f) $m_1 = 0.1\overline{8}$ & $m_2 = -5.5$	g) $m_1 = 0.01$ & $m_2 = \dfrac{1}{10}$	h) $m_1 = 1$ & $m_2 = -1$
i) $m_1 = 1.375$ & $m_2 = -0.\overline{72}$	j) $m_1 = -2$ & $m_2 = \dfrac{1}{2}$	k) $m_1 = 0.\overline{230769}$ $m_2 = \dfrac{-6}{26}$	l) $m_1 = \dfrac{4}{9}$ & $m_2 = \dfrac{-8}{18}$

2. Given the endpoints of two line segments, indicate whether if they are either 1) Parallel, 2) Perpendicular, or 3) Neither:

a) $A(4,1)B(2,4)$ & $C(4,5)D(-2,-4)$	b) $A(-3,11)B(-6,4)$ & $C(-4,2)D(-1,8)$
c) $A(-2,-6)B(8,-2)$ & $C(9,3)D(5,-7)$	d) $A(-2,-6)B(8,-2)$ & $C(3,-5)D(-1,5)$
e) $A(-1,5)B(-2,-6)$ & $C(10,7)D(-1,8)$	f) $A(-4,2)B(-1,8)$ & $C(10,2)D(8,-2)$

3. Given that the two slopes are a) Parallel (k_1) b) Perpendicular (k_2), what are the values of "k"?

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a) $m_1 = 4$ & $m_2 = k$	b) $m_1 = \dfrac{-3}{5}$ & $m_2 = \dfrac{k}{3}$	c) $m_1 = \dfrac{1}{4}$ & $m_2 = \dfrac{-k}{2}$	d) $m_1 = \dfrac{1}{7}$ & $m_2 = -k$
$k_1 =$ $k_2 =$	$k_1 =$ $k_2 =$	$k_1 =$ $k_2 =$	$k_1 =$ $k_2 =$
e) $m_1 = 4.5$ & $m_2 = \dfrac{-2k}{3}$	f) $m_1 = -0.175$ & $m_2 = \dfrac{k}{2}$	g) $m_1 = \dfrac{13}{3}$ & $m_2 = 2k$	h) $m_1 = 2k-1$ & $m_2 = k$
$k_1 =$ $k_2 =$	$k_1 =$ $k_2 =$	$k_1 =$ $k_2 =$	$k_1 =$ $k_2 =$

4. Given that the two lines are a) Parallel (x_1) b) Perpendicular (x_2), what are the values of "x"?

| a) $A(4,3)B(-2,9)\,\&\,C(7,4)D(-11,x)$	b) $A(-4,6)B(-9,9)\,\&\,C(2,7)D(8,x)$	c) $A(-3,12)B(-1,2)\,\&\,C(7,4)D(-11,x)$
$x_1 =$ $x_2 =$	$x_1 =$ $x_2 =$	$x_1 =$ $x_2 =$
e) $A(-4,12)B(6,2)\,\&\,C(7,4)D(-11,x)$	f) $A(-3,12)B(32,12)\,\&\,C(7,4)D(x,12)$	g) $A(5,x)B(13,2)\,\&\,C(7,4)D(-11,x)$
$x_1 =$ $x_2 =$	$x_1 =$ $x_2 =$	$x_1 =$ $x_2 =$

5. Given each line equation, find the slope of a line that is perpendicular to it

a) $2x+3y=10$	b) $y = \dfrac{-3}{2}x+7$	c) $8x-4y+12=0$
d) $8x+6y=24$	e) $9x+8y-32=0$	f) $3y = \dfrac{2(x-4)}{5}$

6. In the diagram, "D" is the point on BC so that AD is perpendicular to BC. What is the slope of AD?
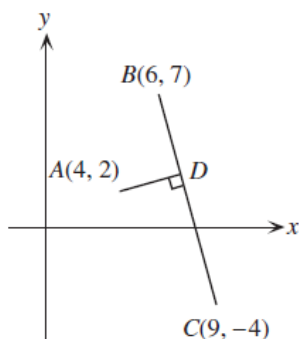
7. In the diagram, line A has equation $y=2x$. Line "B" is obtained by reflecting line "A" in the y-axis. Line "C" is perpendicular to the Line "B". What is the slope of line "C"?
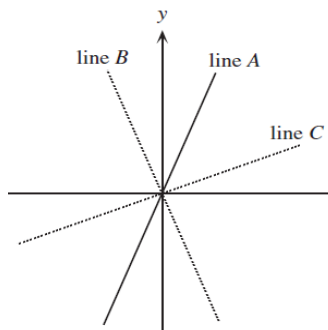
8. Points A, B, C, and D are the vertices of a parallelogram. Plot the points on a grid and determine the coordinates of point "D". $A(-4,7), B(-6,4), C(3,-2), D(?,?)$

9. If $px+2y=7$ and $3x+qy=5$ represents the same straight line, then what is the value of "p"?

10. A line has equation $6x+3y-21=0$, what is the slope of the line?

11. A line with a slope of 3 passes through the points (1,0) and (5,c). What is the value of "c"?

12. The point (k,k) lies on the line segment AB shown in the diagram. Determine the value of "k"?
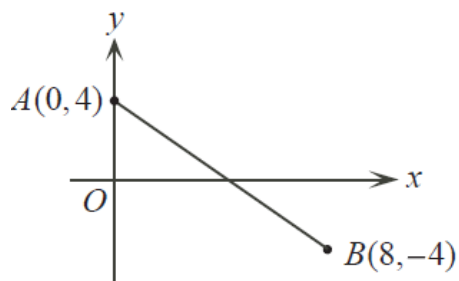
13. A line has a slope of 0.75 and intersect the y-axis at the same point with a line that is perpendicular to it. If the distance between the x-intercepts is 21 units apart, then what is the equation of both lines?

14. A line is parallel with $4x-3y-20=0$ and passes through the point (3,5). What is the equation of the line?

15. A line is perpendicular $2y=\dfrac{3x-4}{2}$ and passes through the point (-2,4). What is the equation of the line?

16. The point "P" is on the line $y=5x+3$. The coordinates of point "Q" are (3,-2). If "M" is the midpoint of PQ, then "M" must lie on which of the following lines?

(A) $y=\dfrac{5}{2}x-\dfrac{7}{2}$ (B) $y=5x+1$ (C) $y=-\dfrac{1}{5}x-\dfrac{7}{5}$ (D) $y=\dfrac{5}{2}x+\dfrac{1}{2}$ (E) $y=5x-7$

17. The line $y = -\dfrac{3}{4}x + 9$ crosses the x-axis at "P" and the y-axis at "Q". The point T(r,s) is on the line segment

PQ. If the area of triangle POQ is three times the area of triangle TOP, then what is the value of "r+s"?
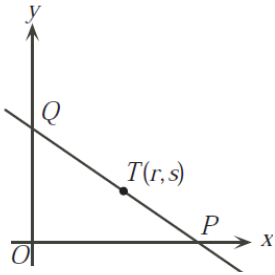
18. The lines $y = -2x + 8$ and $y = \dfrac{1}{2}x - 2$ meet at (4,0) as shown. What is the area of the triangle formed by

these two lines and the line $x = -2$?
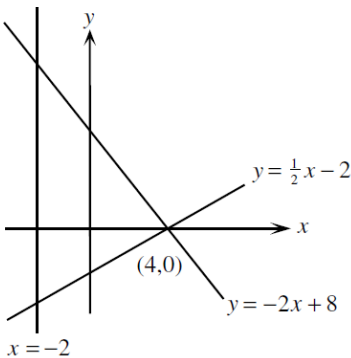
19. In the diagram, A(2,2) and C(8,4) are two of the vertices of an isosceles right-angled triangle ABC. If the vertex
"B" is located on the x-axis and $\angle ABC = 90°$, then what is the x-coordinate of "B"?
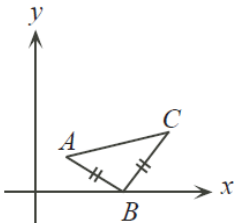
20. Square ABCD has vertices A(0,0), B(0,8), C(8,8) and D(8,0). The points P(0,5) and Q(0,3) are on side AB, and
the point F(8,1) is on side CD.

    a. What is the equation of the line through "Q" parallel to the line through "P" and "F"?

    b. If the line from part (a) intersects AD at the point "G", what is the equation of the line through "F" and
       "G"?

    c. The centre of the square is the point H(4,4). Determine the equation of the line through "H"
       perpendicular to FG.

    d. A circle is drawn with centre "H" that is tangent to the four sides of the square. Does this circle
       intersect the line through "F" and "G"? Justify your answer.