

MPM2D0 **Review** **Co-ordinate Geometry** _____

Part A **Short answer and Explanations.**

- Answer in the spaces provided.
 - The point where the x-axis and y-axis meet is called the _____.
 - The x-axis has a slope value of _____ and for the y-axis it is _____.
 - The x co-ordinate at the y-intercept is always _____.
 - Parallel lines never meet because their slopes are _____.
 - Perpendicular lines have slopes that are _____ of each other.
- State the slope formula.
- Determine the slope between the points (5, 4) and (-3, 2) using the slope formula.
- Complete the chart.

Equation of line	Slope	Co-ordinates of the Y - intercept	Slope of a parallel line	Slope of a perpendicular line
$y = 2x - 5$				
$y = -3x$				
$y = \frac{2}{3}x - 1$				

Part B **Graphing Skills and Knowledge** **Use your own graph paper.**

- Graph the equation $y = 2x - 6$ using the table of values provided.

X	Y
0	
2	
5	
-1	
-3	

 - Graph line A, parallel to the one in a) that passes through the point (2, 5).
 - Graph a line B, perpendicular to the one in a) going through the same y-intercept.
- Graph the equation $y = -\frac{3}{4}x + 4$ using the y-intercept and a triangle for slope.
- Determine if the point (-2, 10) lies on the line $y = 5x - 7$ without use of a graph.

4) Determine the equation of a line in the form $y = mx + b$ in each problem.

- slope is -3 and y-intercept is (0, 5). _____
- the line has a slope of 2 and passes through the point (3, -5).
- the line passes through the points (2, 7) and (4, -1).

5) Determine the point of intersection between the lines $y = -3x + 5$ and $y = x - 3$ without use of a graph. Write a final statement as well.

6) Finding the Equation of a Line. Given the slope of the line and one point on the line.

- Point is (4, -3) and $m = 2$. _____
- Point is (-1, 6) and $m = 5$. _____
- Point is (-2, -5) and $m = -3$. _____
- Point is (-4, -1) and $m = \frac{1}{2}$. _____
- Point is (10, 2) and $m = -\frac{3}{5}$. _____

7) Finding the Equation of a Line. Given two points.

- Points are (2, 7) and (1, 4). _____
- Points are (-1, 5) and (1, 1). _____
- Points are (2, -4) and (3, -4). _____
- Points are $(\frac{1}{2}, 2)$ and $(\frac{3}{4}, \frac{2}{3})$. _____
- Points are $(\frac{2}{3}, \frac{5}{4})$ and $(-\frac{1}{6}, \frac{1}{4})$. _____

MPM2D0 Review Co-ordinate Geometry

Part A Short answer and Explanations.

1. Answer in the spaces provided.
 - a) The point where the x-axis and y-axis meet is called the ORIGIN.
 - b) The x-axis has a slope value of 0 and for the y-axis it is UNDEFINED.
 - c) The x co-ordinate at the y-intercept is always 0.
 - d) Parallel lines never meet because their slopes are EQUAL.
 - e) Perpendicular lines have slopes that are NEGATIVE RECIPROCALs of each other.
2. State the slope formula. $m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$
3. Determine the slope between the points (5, 4) and (-3, 2) using the slope formula. $m = \frac{2-4}{-3-5} = \frac{-2}{-8} = \frac{1}{4}$
4. Complete the chart.

Equation of line	Slope	Co-ordinates of the Y - intercept	Slope of a parallel line	Slope of a perpendicular line
$y = 2x - 5$	2	(0, -5)	2	$-\frac{1}{2}$
$y = -3x$	-3	(0, 0)	-3	$\frac{1}{3}$
$y = \frac{2}{3}x - 1$	$\frac{2}{3}$	(0, -1)	$\frac{2}{3}$	$-\frac{3}{2}$

Part B Graphing Skills and Knowledge Use your own graph paper.

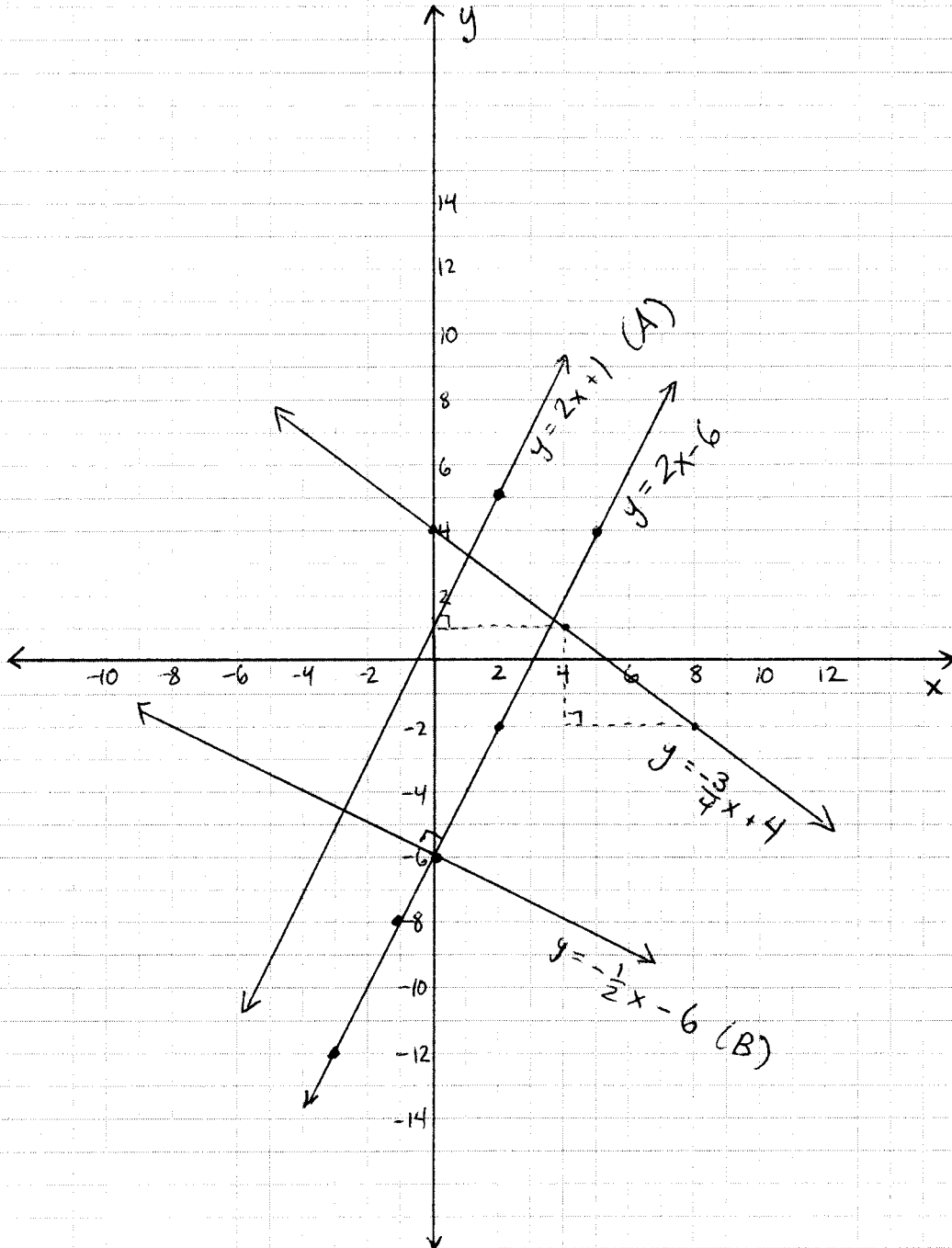
- 1) a) Graph the equation $y = 2x - 6$ using the table of values provided.

X	Y
0	-6
2	-2
5	4
-1	-8
-3	-12

- b) Graph line A, parallel to the one in a) that passes through the point (2, 5). $y = 2x + 1$
 - c) Graph a line B, perpendicular to the one in a) going through the same y-intercept. $y = -\frac{1}{2}x - 6$
- 2) Graph the equation $y = -\frac{3}{4}x + 4$ using the y-intercept and a triangle for slope.
 - 3) Determine if the point (-2, 10) lies on the line $y = 5x - 7$ without use of a graph.

$$\begin{aligned} LS = y &= 10 \\ RS = 5x - 7 &= 5(-2) - 7 \\ &= -10 - 7 \\ &= -17 \end{aligned}$$

REVIEW: COORDINATE GEOMETRY



4) Determine the equation of a line in the form $y = mx + b$ in each problem.

a) slope is -3 and y -intercept is $(0, 5)$. $y = -3x + 5$

b) the line has a slope of 2 and passes through the point $(3, -5)$. $y = 2x - 11$

c) the line passes through the points $(2, 7)$ and $(4, -1)$. $y = -4x + 15$

5. Determine the point of intersection between the lines $y = -3x + 5$ and $y = x - 3$ without use of a graph. Write a final statement as well.

$(2, -1)$

6. Finding the Equation of a Line. Given the slope of the line and one point on the line.

a. Point is $(4, -3)$ and $m = 2$. $y = 2x - 11$

b. Point is $(-1, 6)$ and $m = 5$. $y = 5x + 11$

c. Point is $(-2, -5)$ and $m = -3$. $y = -3x - 11$

d. Point is $(-4, -1)$ and $m = \frac{1}{2}$. $y = \frac{1}{2}x + 1$

e. Point is $(10, 2)$ and $m = -\frac{3}{5}$. $y = -\frac{3}{5}x + 8$

7. Finding the Equation of a Line. Given two points.

a. Points are $(2, 7)$ and $(1, 4)$. $y = 3x + 1$

b. Points are $(-1, 5)$ and $(1, 1)$. $y = -2x + 3$

c. Points are $(2, -4)$ and $(3, -4)$. $y = -4$

d. Points are $(\frac{1}{2}, 2)$ and $(\frac{3}{4}, \frac{2}{3})$. $y = -\frac{16}{3}x + \frac{14}{3}$

e. Points are $(\frac{2}{3}, \frac{5}{4})$ and $(-\frac{1}{6}, \frac{1}{4})$. $y = \frac{6}{5}x + \frac{9}{20}$

$$4A, m = -3, b = 5$$

$$\therefore y = -3x + 5$$

$$B, m = 2$$

$$y = 2x + b$$

$$-5 = 2(3) + b$$

$$b = -11$$

$$\therefore y = 2x - 11$$

$$C, m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-1 - 7}{4 - 2}$$

$$= \frac{-8}{2} = -4$$

$$y = -4x + b$$

$$7 = -4(2) + b$$

$$b = 15$$

$$\therefore y = -4x + 15$$

$$6A, m = 2$$

$$y = 2x + b$$

$$-3 = 2(4) + b$$

$$b = -11$$

$$\therefore y = 2x - 11$$

$$B, m = 5$$

$$y = 5x + b$$

$$6 = 5(-1) + b$$

$$b = 11$$

$$\therefore y = 5x + 11$$

$$5, y = -3x + 5$$

$$y = x - 3$$

$$\therefore -3x + 5 = x - 3$$

$$-3x - x = -3 - 5$$

$$-4x = -8$$

$$\therefore \underline{x = 2}$$

$$y = (2) - 3$$

$$\therefore \underline{y = -1}$$

\therefore THE P.O.I. IS $(2, -1)$

check 1st eq'n

$$LS = y = -1$$

$$RS = -3x + 5$$

$$= -3(2) + 5$$

$$= -1$$

$$\therefore LS = RS$$

$$6C, m = -3$$

$$y = -3x + b$$

$$-5 = -3(-2) + b$$

$$b = -11$$

$$\therefore y = -3x - 11$$

$$D, m = \frac{1}{2}$$

$$y = \frac{1}{2}x + b$$

$$-1 = \frac{1}{2}(-4) + b$$

$$-1 = -4/2 + b$$

$$-1 = -2 + b$$

$$b = 1$$

$$\therefore y = \frac{1}{2}x + 1$$

$$E, m = -\frac{3}{5}$$

$$y = -\frac{3}{5}x + b$$

$$2 = -\frac{3}{5}(10) + b$$

$$2 = -30/5 + b$$

$$2 = -6 + b$$

$$b = 8$$

$$\therefore y = -\frac{3}{5}x + 8$$

REVIEW: COORDINATE GEOMETRY

$$7A/ \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{4 - 7}{1 - 2} = \frac{-3}{-1} = 3$$

$$y = 3x + b$$

$$4 = 3(1) + b$$

$$b = 1$$

$$\therefore y = 3x + 1$$

$$B/ \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{1 - 5}{1 - (-1)} = \frac{-4}{2} = -2$$

$$y = -2x + b$$

$$1 = -2(1) + b$$

$$b = 3$$

$$\therefore y = -2x + 3$$

$$C/ \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-4 - (-4)}{3 - 2} = \frac{0}{1} = 0$$

\therefore HORIZONTAL LINE

$$y = 0x + b$$

$$y = b$$

$$b = -4$$

$$\therefore y = -4$$

$$D/ \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{\frac{2}{3} - 2}{\frac{3}{4} - \frac{1}{2}} = \frac{\frac{2}{3} - \frac{6}{3}}{\frac{3}{4} - \frac{2}{4}} = \frac{-\frac{4}{3}}{\frac{1}{4}} = -\frac{4}{3} \times \frac{4}{1} = -\frac{16}{3}$$

$$y = -\frac{16}{3}x + b$$

$$2 = -\frac{16}{3}\left(\frac{1}{2}\right) + b$$

$$2 = -\frac{16}{6} + b$$

$$2 + \frac{16}{6} = b$$

$$2 + \frac{8}{3} = b$$

$$\frac{6}{3} + \frac{8}{3} = b$$

$$b = \frac{14}{3}$$

$$\therefore y = -\frac{16}{3}x + \frac{14}{3}$$

$$E/ \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{\frac{1}{4} - \frac{5}{4}}{-\frac{1}{6} - \frac{2}{3}} = \frac{-\frac{4}{4}}{-\frac{1}{6} - \frac{4}{6}} = \frac{-1}{-\frac{5}{6}} = -1 \times \left(-\frac{6}{5}\right) = \frac{6}{5}$$

$$y = \frac{6}{5}x + b$$

$$\frac{5}{4} = \frac{6}{5}\left(\frac{2}{3}\right) + b$$

$$\frac{5}{4} = \frac{12}{15} + b$$

$$\frac{5}{4} = \frac{4}{5} + b$$

$$\frac{5}{4} - \frac{4}{5} = b$$

$$\frac{25}{20} - \frac{16}{20} = b$$

$$b = \frac{9}{20}$$

$$\therefore y = \frac{6}{5}x + \frac{9}{20}$$