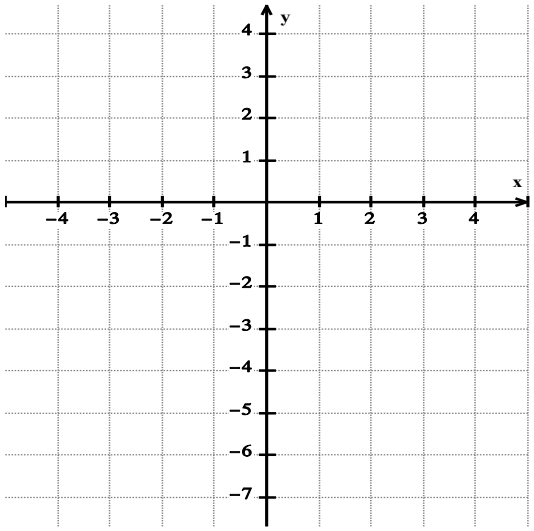
Determining the Equation of a Line with a Point Date_____

Part 1. Let's use our previous knowledge and skills …

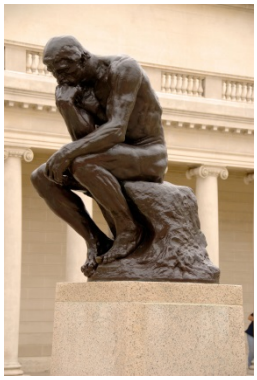
(A) Graph the line passing through the point $P(-4,-6)$ with slope $\frac{3}{4}$.



(B) Determine the equation of the line using your graph _____

Part 2: Let's think of an alternative method without the aid of the graph …

(C) Determine an algebraic method of determining the equation of the above line.



Learning Goal:

❑ I can determine the equation of a line given clues about its slope and any point on a line.

Procedure of Finding the Equation of any Line Given a Point, (x, y)

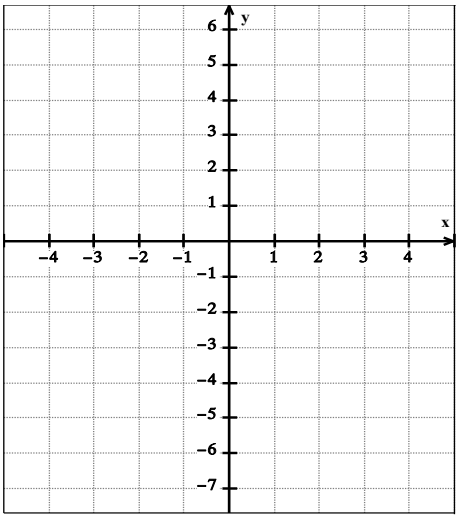
Step ❶	Determine the value of the slope and label the coordinate as (x, y).
Step ❷	Substitute the value of the slope and the value of (x, y) into the equation $y = mx + b$
Step ❸	Solve for the missing y-intercept, b.
Step ❹	Write the equation of the line in the slope y-intercept form $y = mx + b$.

Part 3: Let's practice …

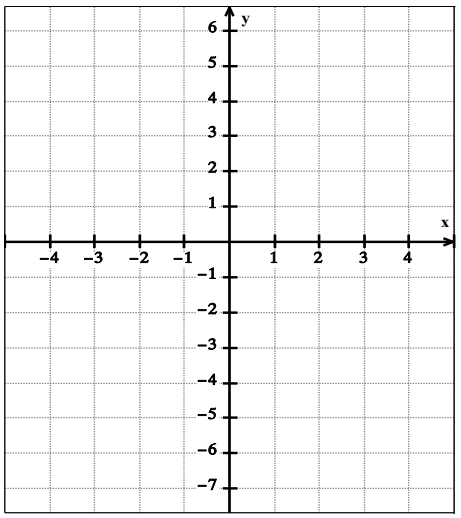
(D) Determine the equation of the line with slope $-\frac{2}{3}$ passing through A(-6,1).

Step ❶ | Step ❷ and Step ❸ | Step ❹

(E) Determine an equation of a line that is **parallel** to $3x - y + 5 = 0$ and passes through the point $B(2,-1)$. Graph both lines.



(F) Determine an equation of a line that is **perpendicular** to $4x + 3y - 15 = 0$ and passes through the point $G(-1,-3)$. Graph both lines.



Part 4: Application:

(G) Katie bought a new SUV. According to her manual, the average rate of fuel consumption is 9 L/100 km. Since her last fill up, she has driven 600 km and has 21 L of gasoline left.

(i) Write an equation showing the relation between the volume of fuel, V, in litres and the distance driven, d, since the last fill up, in kilometers.

(ii) What is the meaning of the V-intercept?

(iii) If Katie drives 200 km since her last fill-up, how much fuel does she have left?

(iv) How much distance can be driven on a full tank of gas?

Homework p. 335-337 #1-6, 8, 11