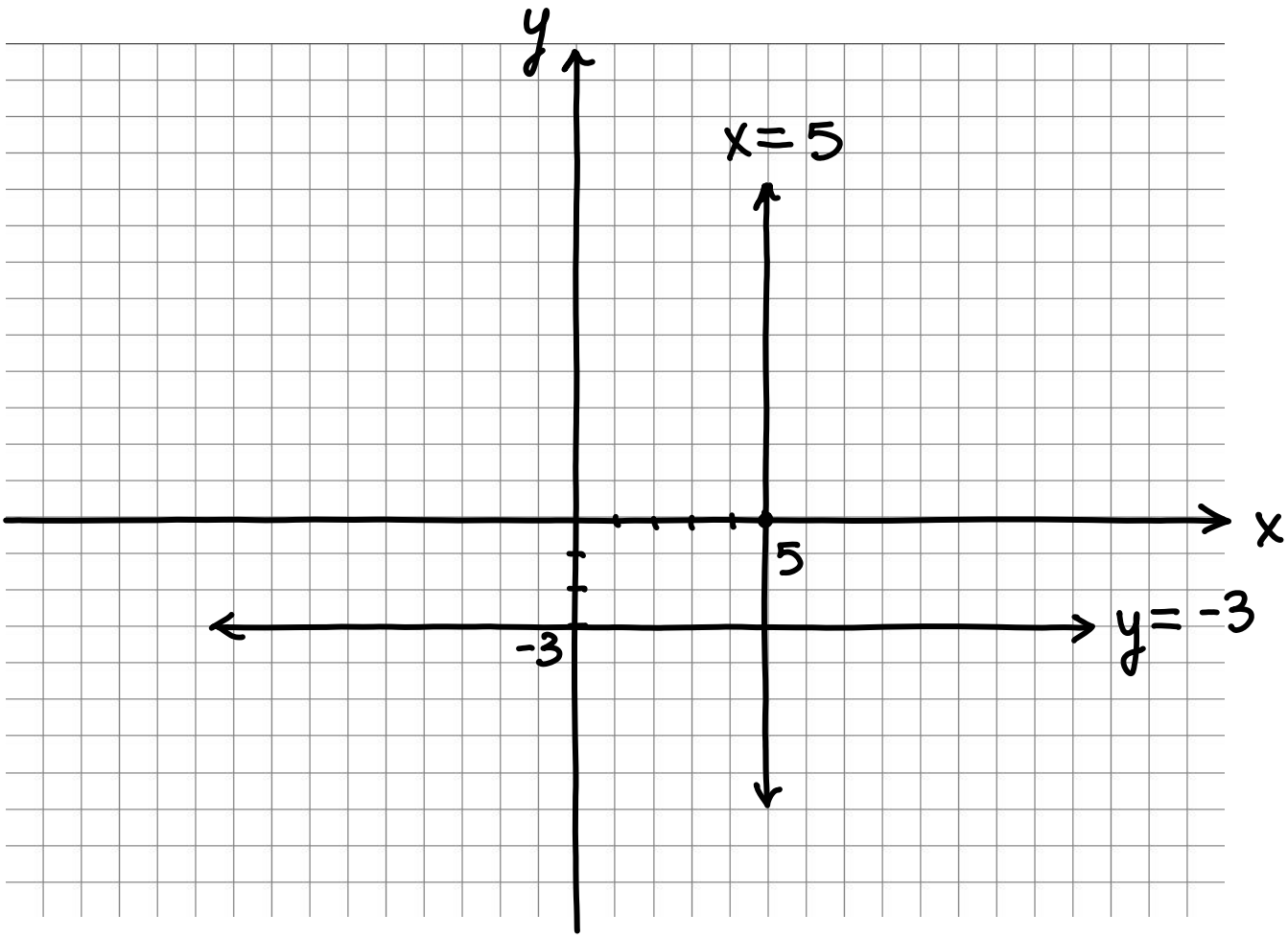
# Graphing Linear Equations

## *Chapter Review*

## Graphing Lines with One Variable

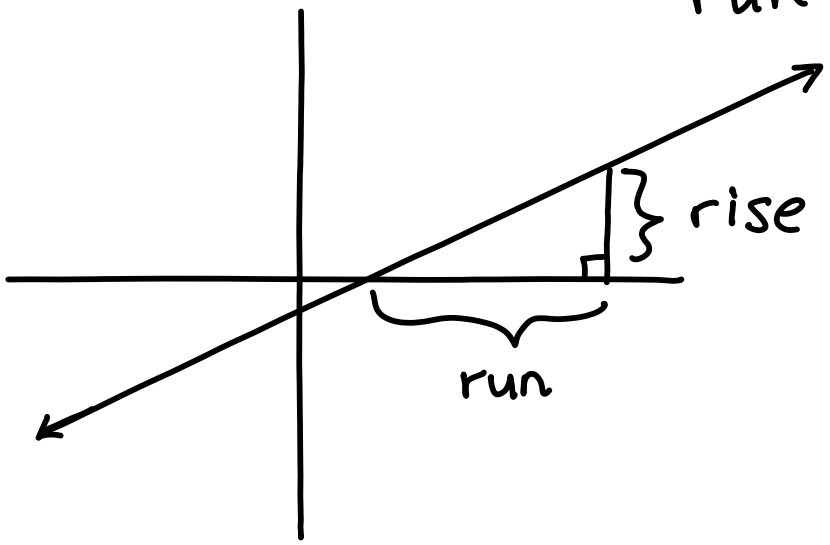
$x = 5$ $x$ = number, vertical line

$y = -3$ $y$ = number, horizontal line



# Slope of a Line

Defined as $m\,(\text{slope}) = \dfrac{\text{rise}}{\text{run}}$




Slope formula $= m = \dfrac{y_1 - y_2}{x_1 - x_2}$

$x_1$ $y_1$ $x_2$ $y_2$

(1, 6), (2, 3) ← these points are on the line

$$m = \frac{6-3}{1-2} = \frac{3}{-1} = -3$$

slope $= -3$

# Graphing Lines with Two Variables

Three methods

1. Construct a table
2. $y = mx + b$ slope-intercept method
3. X and Y Intercept Method

Graphing a line using a table

1. Construct a table by plugging in a x-value into the equation
2. Next solve for y
3. The x-value and y solution are a point on the line $(x, y)$

Example, graph $y + 2x = 6$

$$y + 2x = 6$$

plug-in 1, then solve for y

$$y + 2(1) = 6$$
$$y + 2 = 6$$
$$y = 4$$

| x | y |
|---|---|
| 1 | 4 |
| 5 | |

the point $(1, 4)$ in on the line, try another x-value, $x = 5$

$y + 2x = 6$

$y + 2(5) = 6$

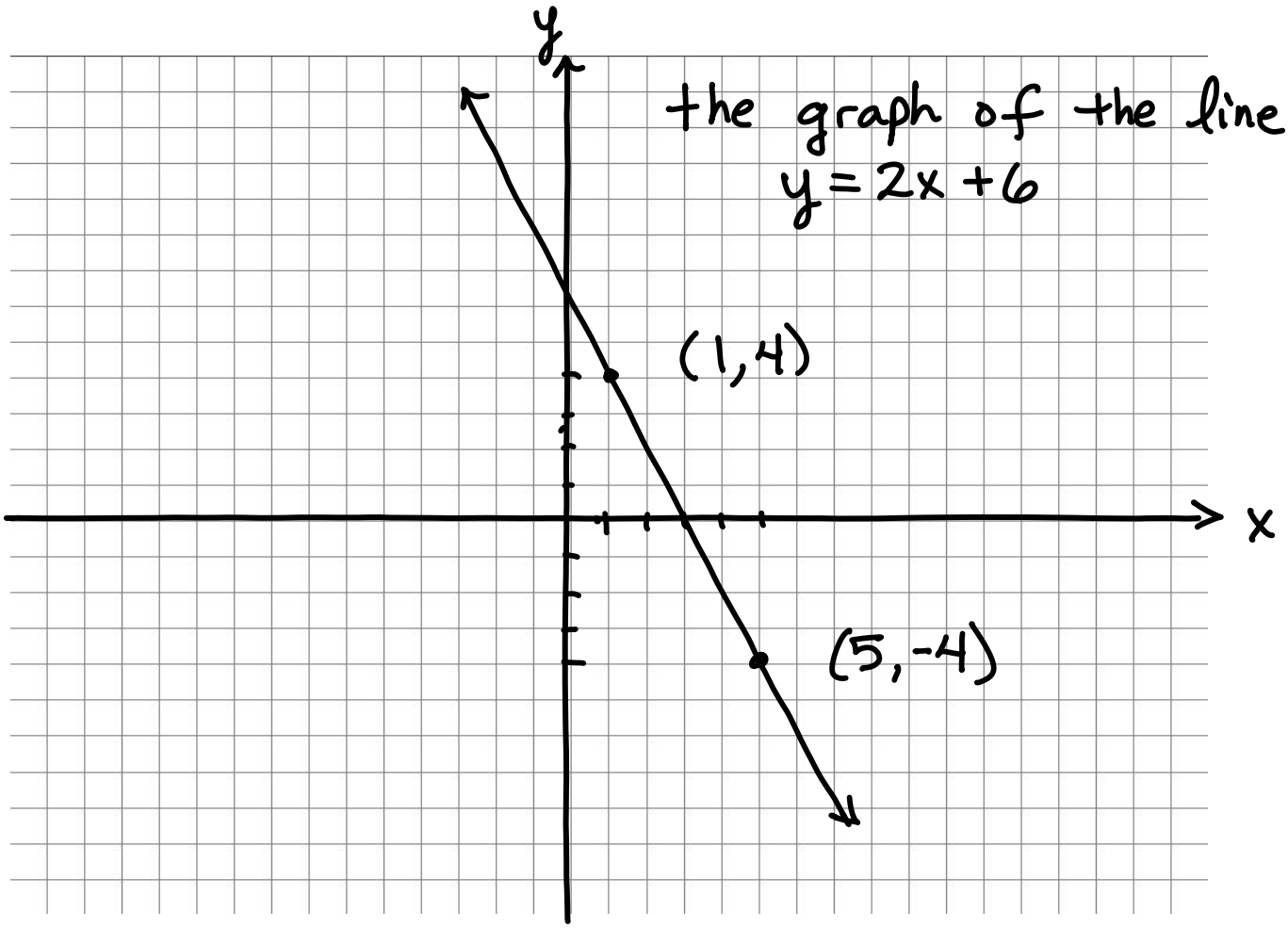
$y + 10 = 6$

$y = -4$

| x | y |
|---|---|
| 1 | 4 |
| 5 | -4 |

the point (5,-4) is also on the line

plot the two points and draw the line



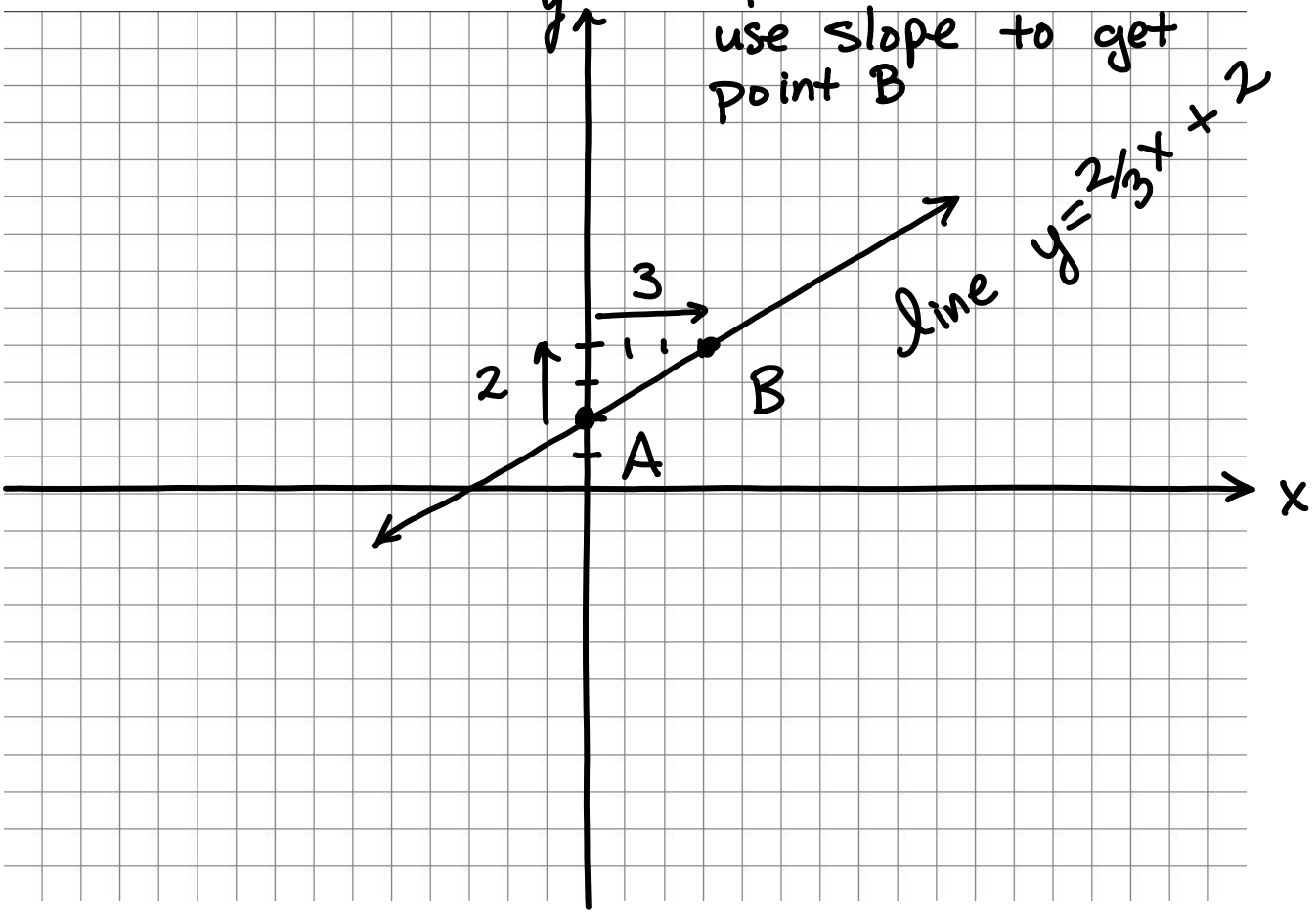

the graph of the line $y = 2x + 6$

# Graphing lines using $y = mx + b$

Next use the slope to find a second point on the line

first plot b, this is the y-intercept (one point on line)

Graph $y = \frac{2}{3}x + 2$



# Graphing lines using the XY-Intercepts

1. Plug in $x=0$ and solve for $y$ - this pair of points is the y-intercept, $(0,y)$.
2. Plug in $y=0$ and solve for $x$ - this pair of points is the x-intercept, $(x,0)$.
3. Plot the points - draw the graph

Graph $2x + 3y = -12$

**x-intercept**

$2x + 3(0) = -12$

$2x = -12$

$x = -6$

$(-6, 0)$

**y-intercept**

$2(0) + 3y = -12$

$3y = -12$

$y = -4$

$(0, -4)$