Linear Functions (Review)

Table

+1	+1	+1	+1	+1	

x	0	1	2	3	4	5
y	1	0	-1	-2	-3	-4

-1 -1 -1 -1 -1

• Shows a consistant rate of change (add/sub pattern)

Graph
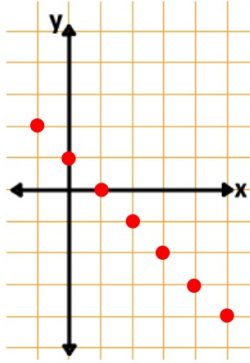
• Straight line

Rule Next = Now - 1 starting at 1

$y = -1x + 1$

• Next = Now + rate of change starting at the starting pt.
• $y = mx + b$

Linear equations contain one or two variables with no variables having an exponent other than 1 and no multiplication of variables

Linear Equations	Non linear equations
$5x - 3y = 7$	$7a + 4b^2 = -8$
$x = 9$	$y = \sqrt{x + 5}$
$6s = -3t - 15$	$x + xy = 1$

Standard Form $Ax + By = C$ x should be positive and there should not be any fractions or decimals

Write each equation in standard form where A, B, and C are integers whose greatest common factor is 1. Identify A, B, C.

1. $y = -5x + 6$ 2. $\frac{2}{7} x = 3y + 5$ 3. $5x - 10y = 25$

Rate of Change/Slope
measures the steepness of a line
3 ways to find

1. Equation

$y = m\text{x} + b$

$y = 5\text{x} + 3$

$m = 5$

2. Formula

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

(2, 5) (-2, 1)
  x_1 y_1 x_2 y_2

$m = \dfrac{5 - 1}{2 - (-2)}$

$m = \dfrac{4}{4} = 1$

3. Graph $\dfrac{\text{rise}}{\text{run}}$

$m = \dfrac{3}{2}$
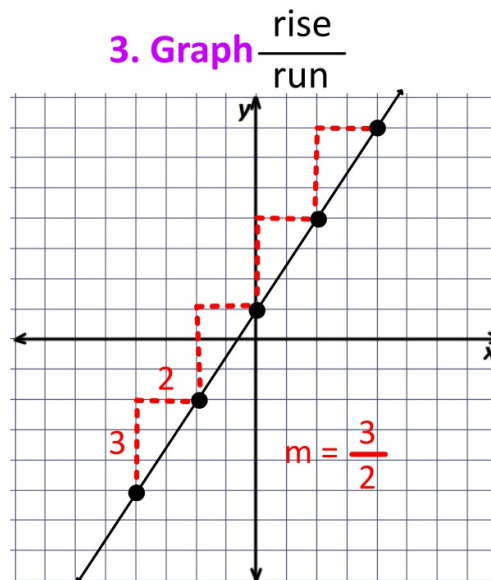
Find the slope of each linear function.

1) $y = -4\text{x} - 5$

2)
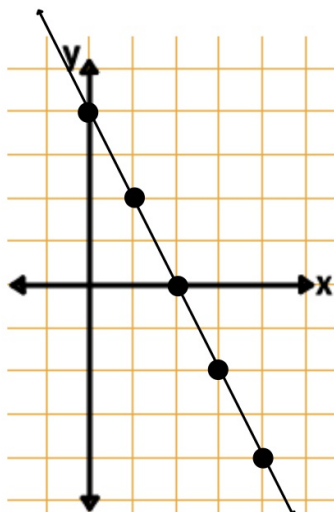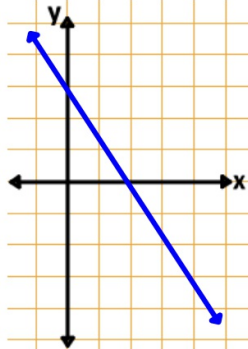

3)

x	y
5	20
7	16
9	12
11	8

4) What is the slope of the line that goes through points (2, -5) (-3, 5).
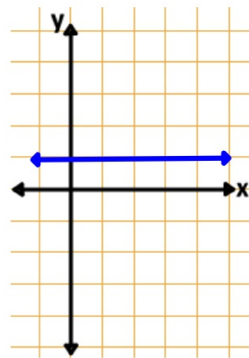
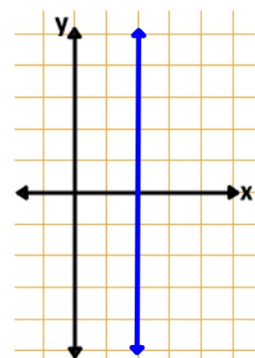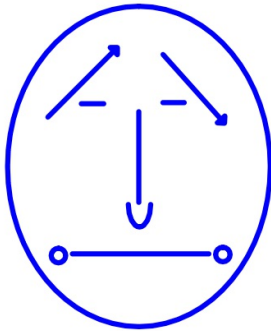# 4 types of slope
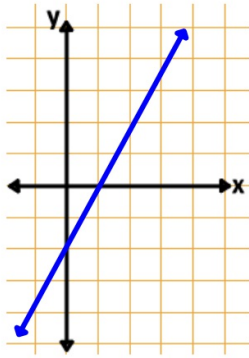
positive   negative   zero   undefined
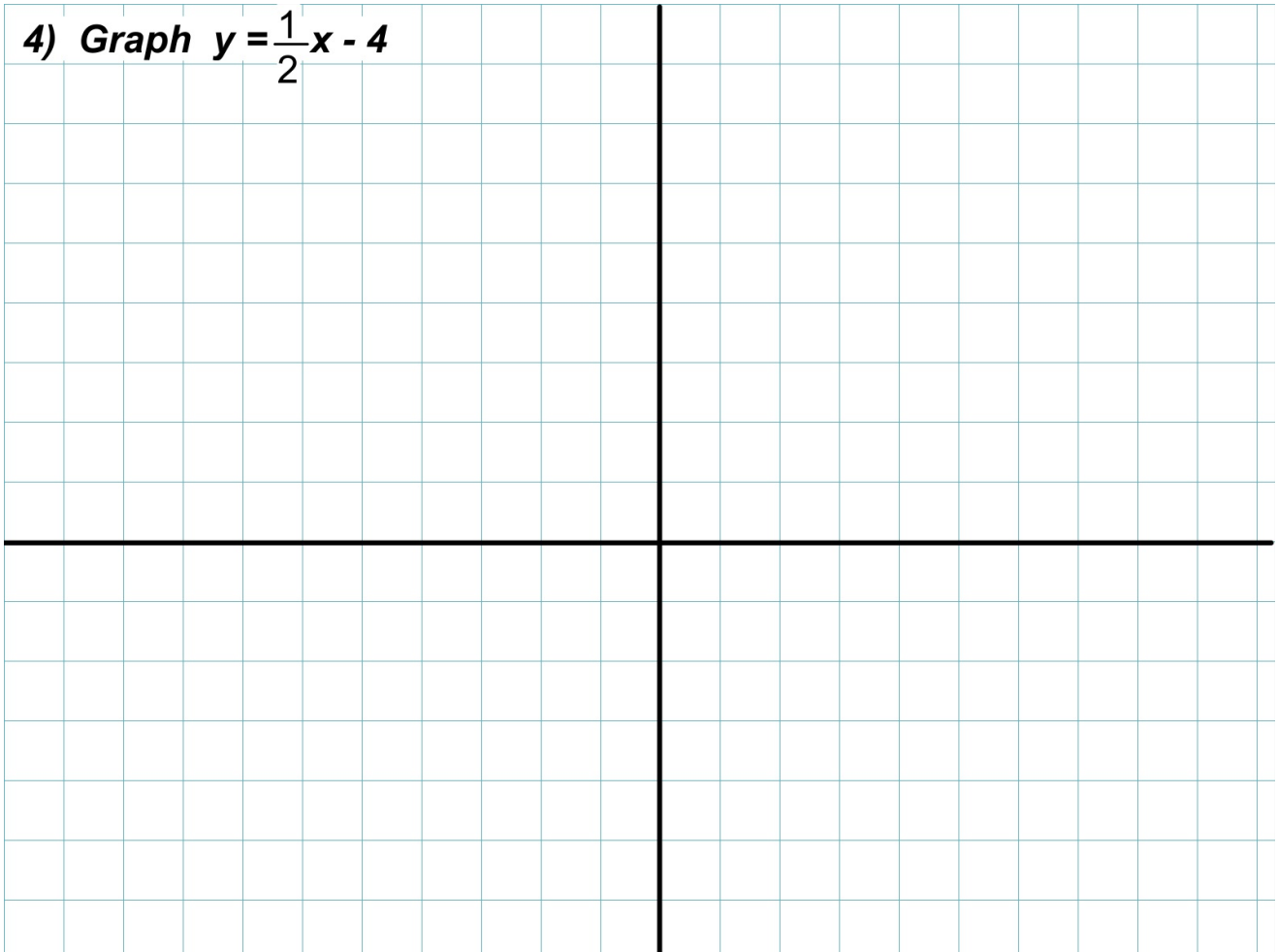
Parallel lines have the <u>same slope</u>
Perpendicular lines have <u>opposite reciprocal slopes</u>
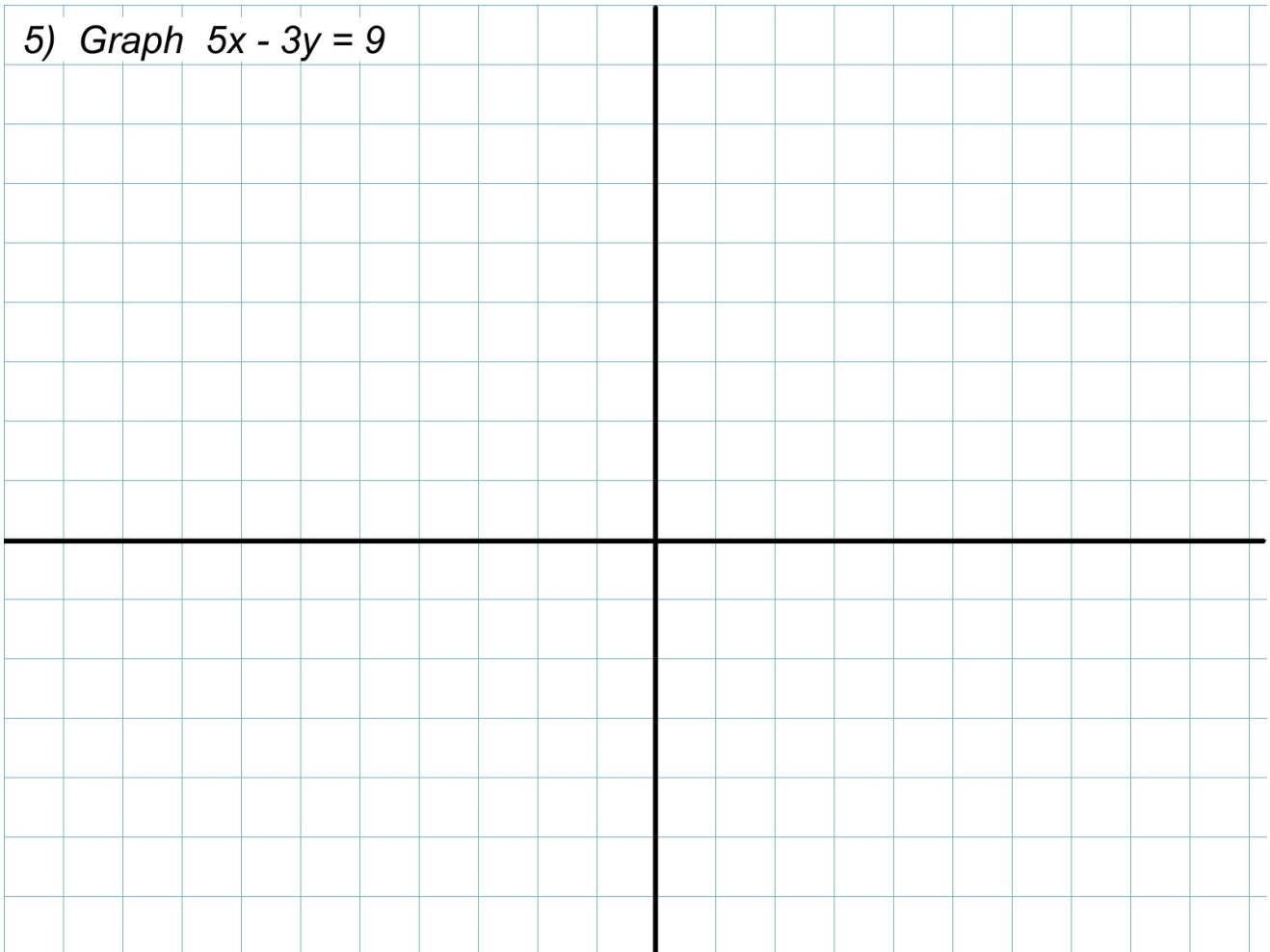
To graph a line using slope and a point:

first graph the point

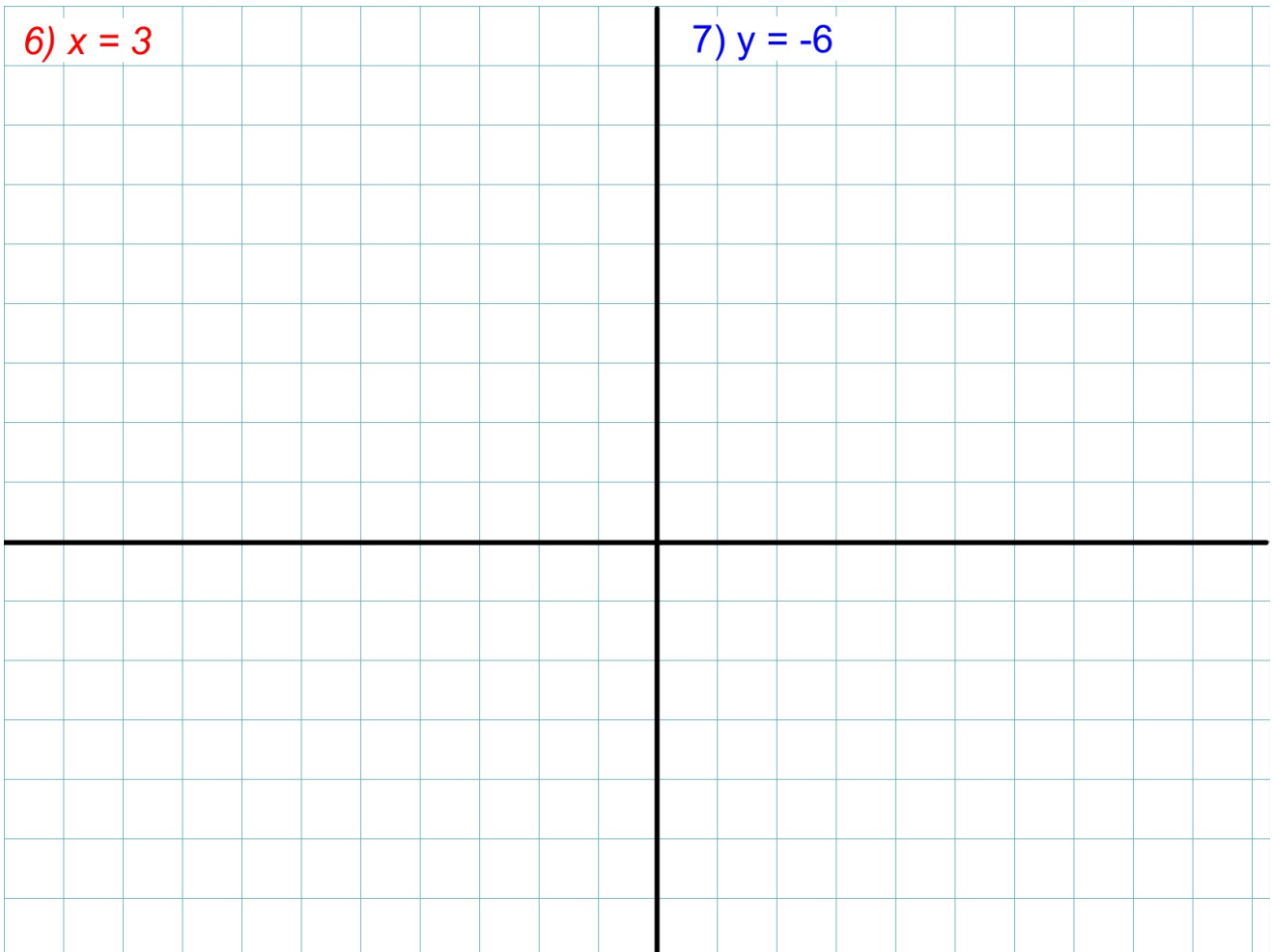*then use rise over run to graph the slope*
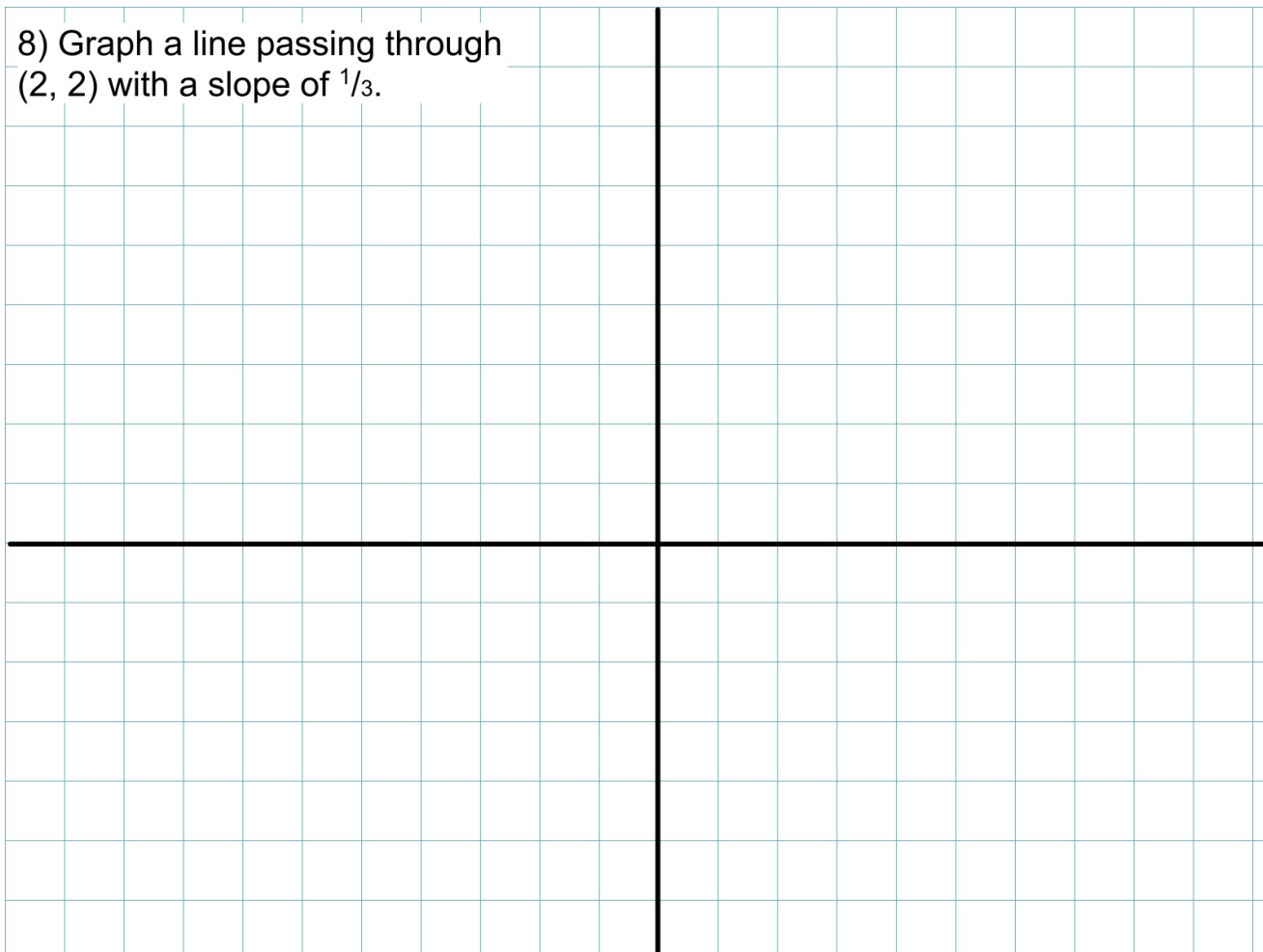
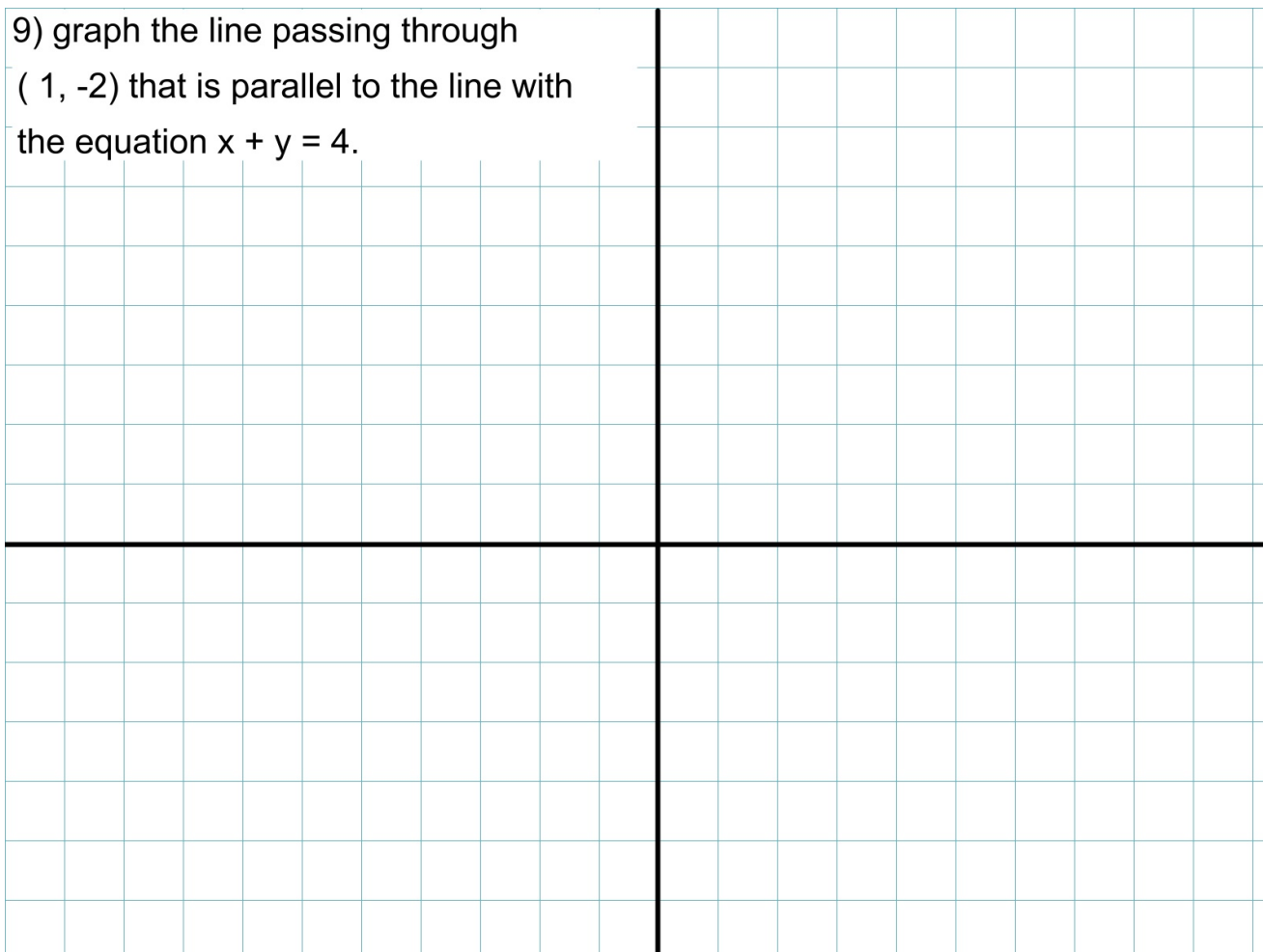4) Graph $y = \frac{1}{2}x - 4$

5) *Graph 5x - 3y = 9*

6) *x = 3*

7) y = -6

8) Graph a line passing through
(2, 2) with a slope of $\frac{1}{3}$.

9) graph the line passing through

(1, -2) that is parallel to the line with

the equation x + y = 4.

10) graph the line passing through

(2, 1) that is perpendicular to the
line with the equation 2x - 3y = 3.