Algebra 1 – Unit 4 Guide

Slope, Y-intercepts, Writing and Graphing Equations

Everything you need to know for this unit!

| SLOPE	SLOPE-INTERCEPT FORM
Given a graph $$\frac{\text{rise}}{\text{run}}$$ Points: $(3,4)$ and $(0,-2)$	$y = mx + b$ slope, intercept $(0,b)$, slope $= m = 2$, $b = 3$ $m = 2$ y-intercept $= (0,3)$ $\boxed{y = 2x + 3}$
Given two points $$(x_1, y_1) \text{ and } (x_2, y_2)$$ $$m = \frac{y_2 - y_1}{x_2 - x_1}$$	
Given an equation $$y = \frac{7}{2}x - 3$$ Since it's in $y = mx + b$ form, we can easily see that the slope is $\frac{7}{2}$. ***If the equation is not solved for y = you must solve for y***	

| POINT-SLOPE FORM	PARALLEL AND PERPENDICULAR LINES
slope $$y - y_1 = m(x - x_1)$$ **coordinates of a point on the line** ***Sometimes, we will need to solve this equation for y = ***	$m = \frac{1}{3}$, $m = \frac{1}{3}$ $m = -\frac{3}{1} = -3$, $m = \frac{1}{3}$ Parallel lines have the SAME slope. Perpendicular lines have an OPPOSITE, RECIPROCAL slope. Use $y - y_1 = m(x - x_1)$ after figuring out slope and using the point given. We usually then solve this for y = to put into slope-intercept form.

Algebra 1 – Unit 4 Study Packet

Slope, Y-intercepts, Writing and Graphing Equations
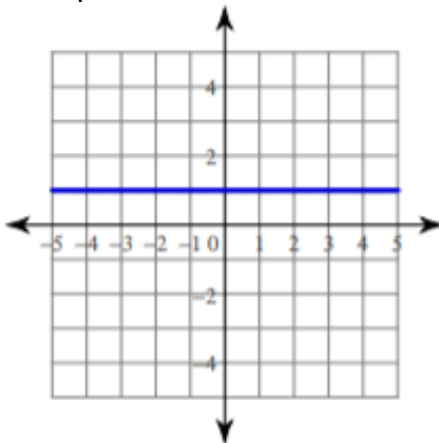
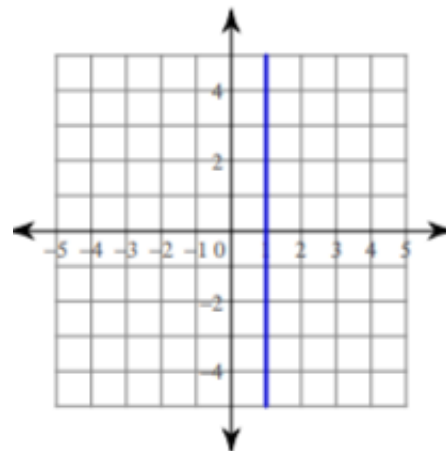### Skill #1 – Finding Slope

1. Find the slope:
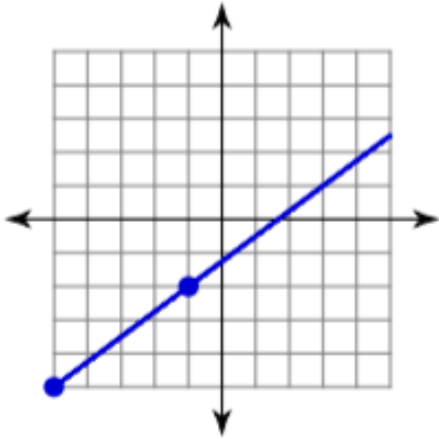
2. Find the slope:
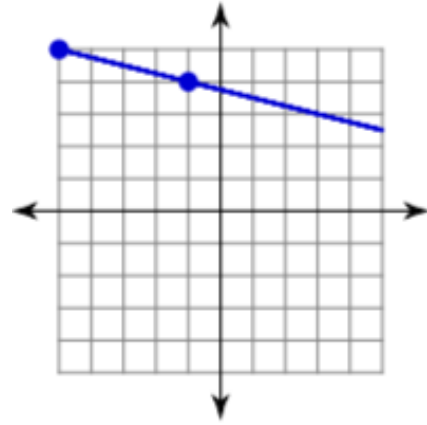
3. Find the slope:

4. Find the slope:

5. Find the slope:

$$y = -\frac{5}{4}x + 3$$

6. Find the slope:

$$y = \frac{1}{4}x - 4$$

7. Find the slope:

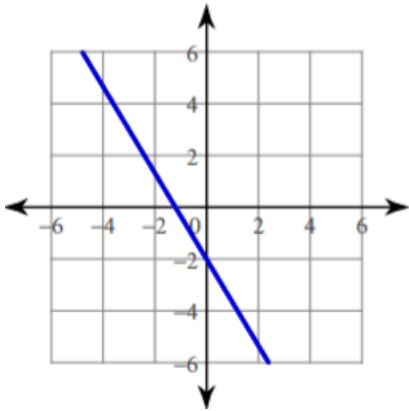$$7x + 2y = -28$$

8. Find the slope:

$$x - 2y = 7$$

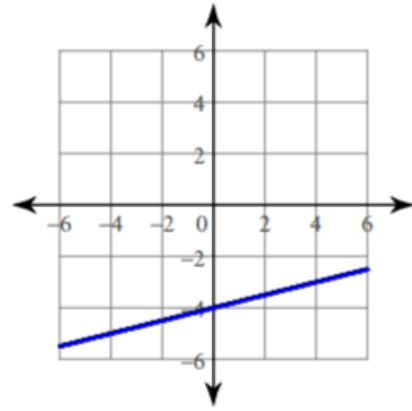| 9. Find the slope: $(3,4)$ and $(-4,-5)$	10. Find the slope: $(11,-18)$ and $(-1,-7)$
11. Find the slope: $(2,4)$ and $(2,-1)$	12. Find the slope: $(-4,5)$ and $(3,5)$
13. Determine what type of slope is shown: A) Positive B) Negative C) Undefined D) Zero	14. Determine what type of slope is shown: A) Positive B) Negative C) Undefined D) Zero
15. What is the **y-intercept** of the graph of the following equation? $y = -4x - 10$	16. What is the **y-intercept** of the graph of the following equation? $3x - 6y + 6 = 0$

Skill #1   □ I can determine the slope of a line, given the equation.
                   □ I can determine the slope of a line, given the coordinates of two points on the line.
                   □ I can determine the slope of a line, given the graph of a line.
                   □ I can recognize and describe a line with a positive, negative, zero, or undefined slope.
                   □ I can determine the y-intercept from a graph or a equation
                   □ Need more practice (IXL – S.2, S.3, S.5)
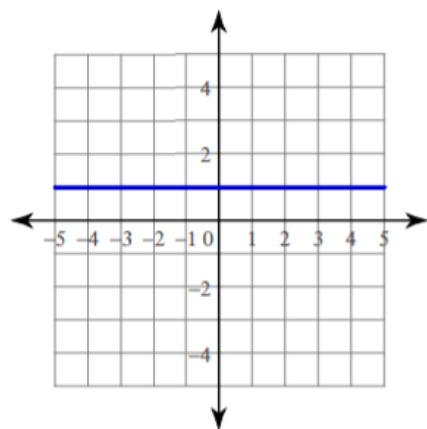
Skill #2 – Writing Equations

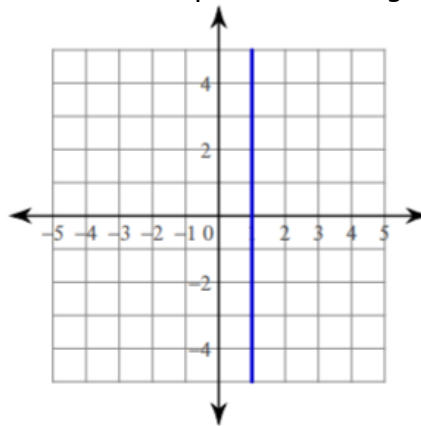### 1. Write slope-intercept form of the equation of the line:
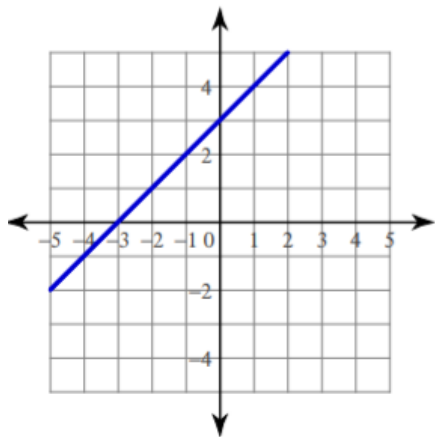
2. Write slope-intercept form of the equation of the line:
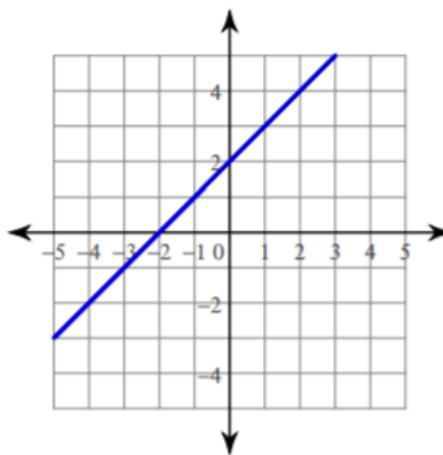
3. Write the equation for the given line:

4. Write the equation for the given line:

5. Write the equation of the line with a slope of 4 and y-intercept of -3.

6. Write the equation of the line with a slope of $-\frac{3}{5}$ and y-intercept of 5.

7. Write the slope-intercept form of the equation of a line with a slope of 2 and passing through the point (2,-5).

A) $y = 2x - 4$ B) $y = 2x + 1$

C) $y = 2x - 9$ D) $y = 2x + 9$

8. Write the slope-intercept form of the equation of a line with a slope of $-\frac{1}{5}$ and passing through the point (5,1).

A) $y = -\frac{1}{5}x$ B) $y = -\frac{1}{5}x + 2$

C) $y = -\frac{1}{5}x - 5$ D) $y = -\frac{1}{5}x + 1$

| 9. Write the slope-intercept form of the equation that passes through (5,2) and (0,-5).	10. Write the slope-intercept form of the equation that passes through (0,4) and (-4,6).
A) $y = \frac{7}{5}x - 5$ B) $y = \frac{7}{5}x - 7$ C) $y = \frac{5}{7}x + 5$ D) $y = \frac{5}{7}x + 7$	A) $y = -\frac{1}{2}x - 4$ B) $y = \frac{1}{2}x - 2$ C) $y = \frac{1}{2}x + 4$ D) $y = -\frac{1}{2}x + 4$

Skill #2   □ I can write the equation of a line when given the graph of a line.
□ I can write the equation of a line when given two points on the line.
□ I can write the equation of a line when given the slope and a point on the line.
□ I can write the equation of a vertical line and horizontal line.
□ Need more practice (IXL – S.7, S.8, S.9, S.18, S.19, S. 21, S.22)
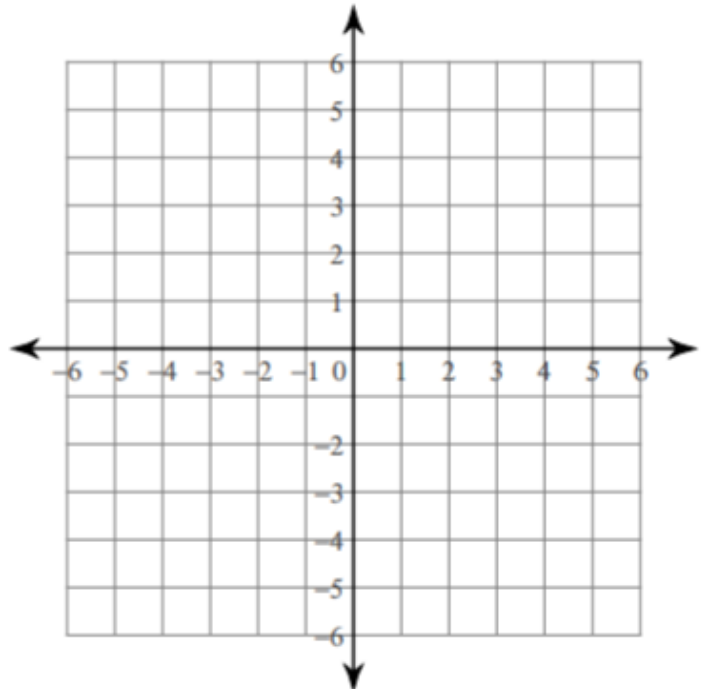
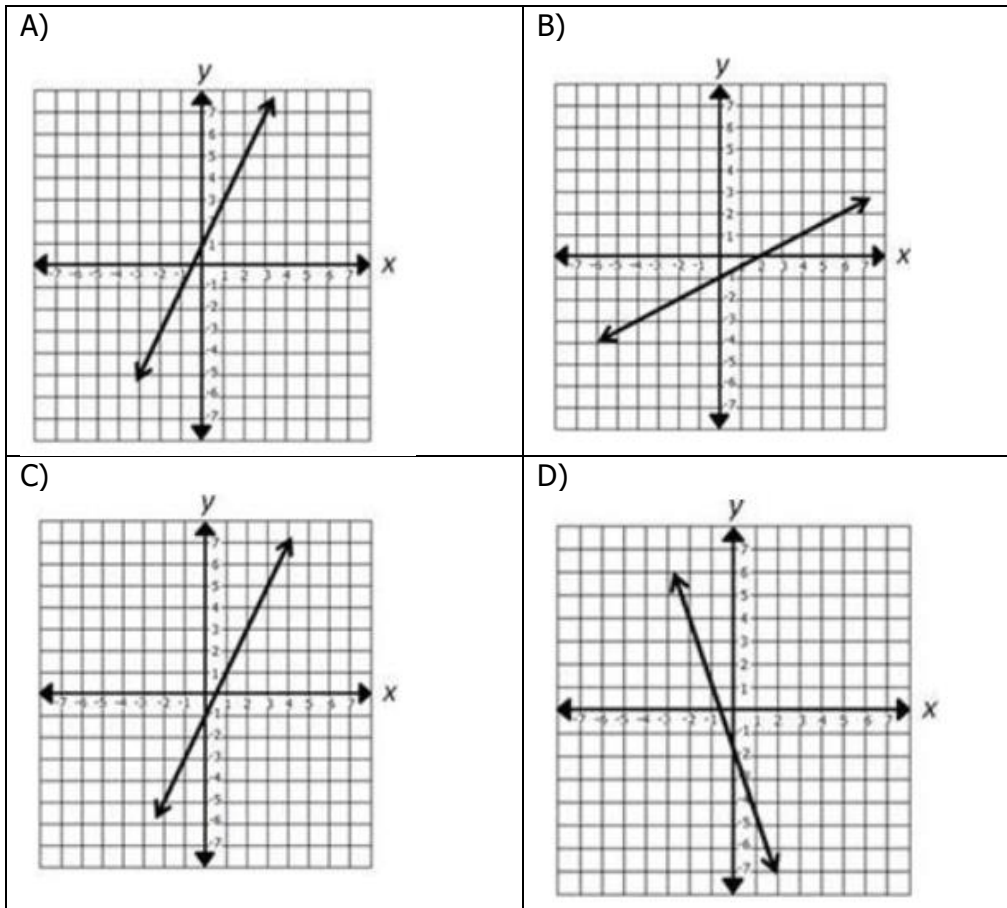## Skill #3 – Graphing Equations
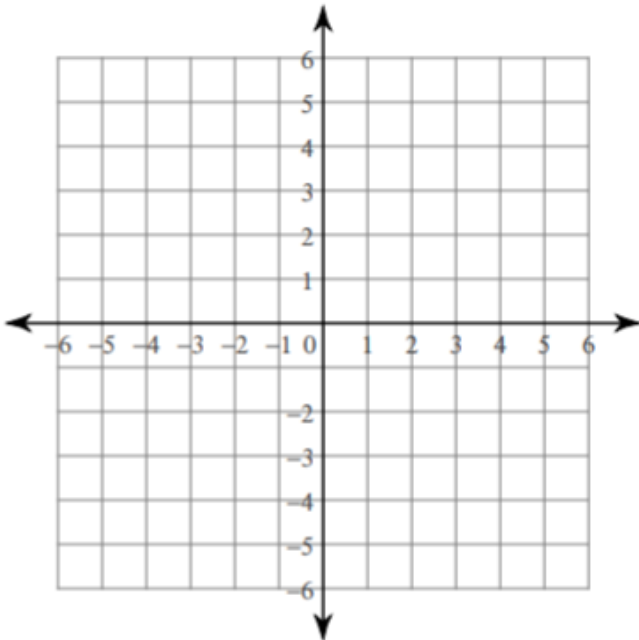
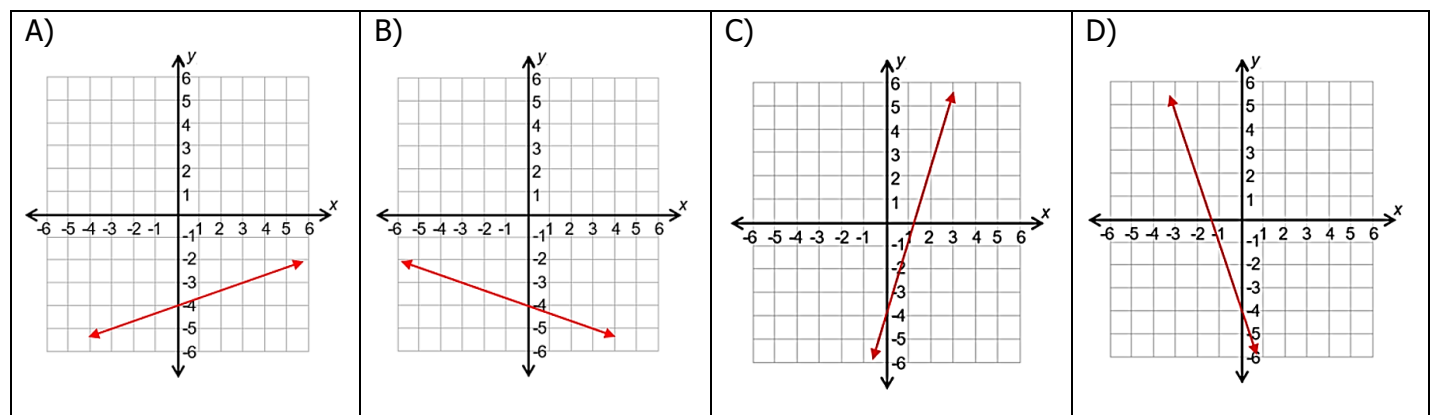| 1. Sketch the graph of the line:	2. Sketch the graph of the line:
$$y = \frac{5}{4}x - 2$$	$$y = -x + 4$$

3. Which graph best represents y= 2x – 1?

A)

B)

C)

D)

4. Which graph best represents x – 3y = 12?

A)

B)

C)

D)

Skill #3   □ I can graph a linear equation in two variables (x,y).
           □ Need more practice (IXL – S.6, S.17, S.20)

Skill #4 – Parallel and Perpendicular Lines

1. Identify the lines as parallel, perpendicular, or neither. $$y = -2x + 2$$ $$y = \frac{1}{2}x + 1$$	2. Identify the lines as parallel, perpendicular, or neither. $$y = -\frac{4}{5}x - 1$$ $$y = -\frac{4}{5}x - 2$$
3. Write an equation in that is parallel to <center>y = -3x – 2</center> and passes through the point (-1,5).	4. Write an equation in that is perpendicular to <center>y = -½x + 8</center> and passes through the point (6,-2).

Skill #4	□ I can write the equation of a line parallel or perpendicular to a given line through a given point. □ Need more practice (IXL – S.23, S.24)