### ALGEBRA ONE NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### NOTES – POINT-SLOPE FORM ON THE COORDINATE PLANE

What is **POINT-SLOPE** form? **y – y1 = m (x – x1) m =**

**(x1, y1)**

Why would anyone

want to use this form?

Write the equation of a line that goes through the following point and has the given slope.

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| Example A  through (1, 2)  slope of | Example B  through (-4, 0)  slope of -3 | Example C  through (-5, -2)  slope of zero |

## Example D

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x

y

Identify the point and slope given by the equation y – 5 = -3(x + 1).

point = \_\_\_\_\_\_\_\_\_\_

slope = \_\_\_\_\_\_\_\_\_\_

Graph the line using the point and slope given by the equation.

Change the point-slope form into slope-intercept form.

Check to see if the graph and equation match.

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x

y

## Example E

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| --- | --- |
| x | y |
| -2 | 5 |
| 0 | 1 |
| 3 | -5 |
| 4 | -7 |

Graph the line modeled by the table.

Write the equation in point-slope form.

## Change the point-slope form into slope-intercept form.

**Why would we want to use this form?**

Example F

ABC Moving Co. charges a daily fee for renting a moving truck, plus a charge of fifty cents per mile driven in the truck. It costs $64 to rent the truck on a day when it is driven 48 miles.

1. Write a point-slope form equation to model the charge (y) based on the number miles (x).
2. Convert the equation you wrote in the previous question into slope-intercept form.
3. What is the daily fee for renting the truck?

**Could we use point-slope form to write equations for parallel and perpendicular lines? ABSOLUTELY!**

* Parallel lines have \_\_\_\_\_\_\_\_\_\_\_\_\_ slopes.
* Perpendicular lines have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ slopes.

Example G:

1. Write a point-slope equation for the line that is parallel to y = 2x – 6 that goes through (4, -6).
2. Change your point-slope equation into slope-intercept form.

Example H:

1. Write a point-slope equation for the line that is perpendicular to y = 2x – 6 that goes through (4, -6).
2. Change your point-slope equation into slope-intercept form.

Example I:

1. Write an equation for the line that is parallel to y = 2 that goes through (3, -5).
2. Write an equation for the line that is perpendicular to y = 2 that goes through (3, -5)