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NOTES: Section 2.4 – Write Equations of Lines

Goals: #1 – I can write the equation of a line in slope-intercept form when given the slope and y-intercept.

#2 – I can write the equation of a line in point-slope form when given the slope and a point on the line, or when given 2 points on a line, then convert the equation to slope-intercept form.

#3 – I can convert a linear equation to standard form.

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Homework: Lesson 2.4 Worksheet

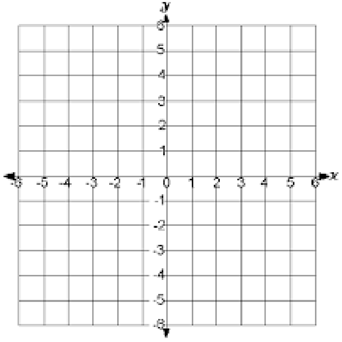
Warm Up:

1. Find the x-intercept and y-intercept of the following equation: $5x - 2y = 10$

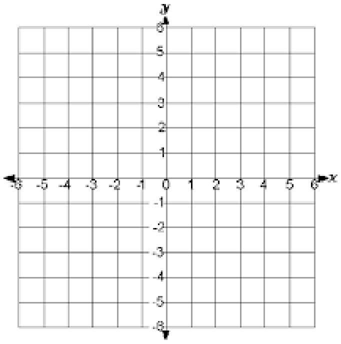
x-intercept: __________ x-intercept: __________

y-intercept: __________ y-intercept: __________

2. Graph $2x - 5y = 10$



3. Graph $x = 3$



Exploration #1: Work with a partner and match the following:

__________1. Slope-intercept form A. $y - y_1 = m(x - x_1)$

__________2. Standard form B. $Ax + By = C$

__________3. Point-slope form C. $y = mx + b$

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Notes:

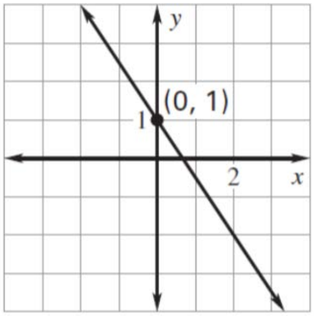
Any linear equation in the form ______________________ is said to be in slope-intercept form.

Any linear equation in the form ______________________ is said to be in standard form.

Any linear equation in the form ______________________ is said to be in point-slope form.

Example #1: Write an equation of the line shown.

1.



Equation: ______________________

What form did you write your equation in? ______________________

Example #2: Write an equation that passes through $(0, -1)$ and has a slope of 2.

Equation: ______________________

What form did you write your equation in? ______________________

Notes:

When given the _________________ and the ______________________ of a line, use the ______________________ to write the linear equation.

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Example #3: Write an equation of the line that passes through $(5, 4)$ and has a slope of -3.

Equation: ____________________

What form did you write your equation in? ____________________

Example #4: Write an equation of the line that passes through $(-1, 1)$ and

a. is parallel to the line $y = -2x + 3$ b. is perpendicular to the line $y = -2x + 3$

Equation: ____________________ Equation: ____________________

What form did you write your equation in? ____________________

CHALLEGE: Try to write your equations in the other two forms.

Notes:

When given the _______________ and the ____________________ of a line, use the _______________________ to write the linear equation.

However, we can rewrite these equations in _______________________ by solving for ____.

Example #5: Write your equations in Example #3 and #4a-b also in slope-intercept form.

#3: #4a: #4b:

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Example #6: Write an equation of the line that passes through $(3, 1)$ and $(2, -3)$.

Equation: ______________________

What form did you write your equation in? ______________________

Write in *slope-intercept* form: ______________________

Write in *standard* form: ______________________

Notes:

When given ______________________ of a line, first use the ______________________ to find the slope. Then, use the ______________________ with either given point to write the linear equation.

Example #7: Females began participating in U.S. high school sports in 1990. In the school year ending in 1993, 2.00 million females participated in U.S. high school sports. By 2003, the number had increased to 2.86 million. Assume that the increase rate for female sport participants is linear.

a. What is the average growth rate of female participants in sports?

b. How many females participated in sports the first year it was allowed?

c. Write an equation, in slope-intercept form, that models the number of female sport participants, f, as a function of the years, x, after female participation was allowed.

d. Use the model from part c to predict the number of female participants in U.S. high school sports 50 years after it was allowed.

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