Name: ______________________

Worksheet #1 - Review of Basic Algebra

In this worksheet, you will solve and graph linear equations.

1. Find the slope of a line passing through the points (2, 4) and (5, −1).

2. Find an equation for a line passing through the points (2, 4) and (5, −1).

3. Find an equation for a line passing through the points (1.1, 2) and (1.3, 4).
Recall that the $x$-intercept of a line is the value of $x$ where the line crosses the $x$-axis; similarly, a $y$-intercept is the $y$-value where the line crosses the $y$-axis. You can find an intercept by setting the other variable equal to zero and then solving the resulting equation.

4. Find the $y$-intercept of the line given by the equation $2x + 3y = 6$.

5. Find the $x$-intercept of the line given by the equation $2x + 3y = 6$.

6. Use the intercepts you found above to graph the line $2x + 3y = 6$ on the coordinate-axes below.
The graph below shows two lines: $y = 2x + 1$ and $y = 4 - x$. Label each line to show which equation corresponds to which line. Then, from the graph, estimate the coordinates of the point where the two lines cross.

[Graph showing two lines intersecting at a point labeled as the intersection]

Intersection: ____________

Carefully graph the following two lines on the coordinate axes below: $y = 2 - x$ and $y = 2x - 4$. Then estimate from the graph the coordinates of the point where the two lines cross.

[Graph showing two lines intersecting at a point labeled as the intersection]

Intersection: ____________
Recall that two lines are **parallel** if they have the same slope; two lines are **perpendicular** if their slopes are negative reciprocals of each other.

9. Find an equation for a line that goes through the origin and is parallel to the line $y = 2x + 5$. Then graph both lines on the given coordinate axes.

10. Find an equation for a line that goes through the origin and is perpendicular to the line $y = 2x + 5$. Then graph both lines on the given coordinate axes, and estimate from the graph the coordinates of the point where the two lines cross.