Concept: Equation of a Straight Line

Name:

PART A: COMPUTER COMPONENT

Instructions: In U**M**ATH X˙ follow the **Content Menu** path:

Graphing > **Equation of a Straight Line**

⌨ Work through all Sub Lessons of the following Lessons **in order**:
- *Graph y=mx+b*
- *Slope y-intercept Equations*
- *Exercises: Slope, y- intercept*
- *Parallel & Perpendicular Lines*

NOTE*:* You will not be finishing the entire section before stopping to complete some **OFF COMPUTER EXERCISES**.

Additional Required Materials: Graph Paper

✎ As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal..

When you reach the end of the lesson *Parallel & Perpendicular Lines* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

NOTES

▷The y intercept is the value of the **_y_** coordinate at the point where is the x coordinate is **_zero._**

▷We can graph a straight line by finding **_one_** point *(the easiest point is found by determining the*
_y_ *-intercept and then using the **_slope_** to sketch the line).*

▷The equation of a straight line can be expressed in the form $y = \underline{\textbf{\textit{mx + b.}}}$
*Where **_m_** is the slope and **_b_** is the y-intercept.*

▷When 2 lines are parallel, the lines will **_never_** intersect. Their slopes are the **_same._**

▷When 2 lines are perpendicular, the lines meet at **_90 degrees_**. Their slopes are negative **_reciprocal._**

OFF COMPUTER EXERCISES

UMATH X

NOTE: *You will require extra sheets of graph paper for this section.*

1. For each of the 2 lines below, you are given the slope and the y-intercept. For each line, write the equation and graph it on grid paper using the slope and y-intercept. *Then, check your graph by finding a third point on the line.*
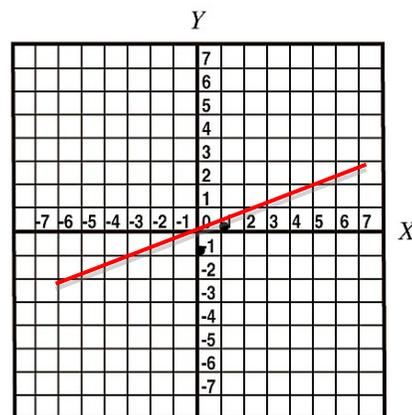
      (a) Slope of $^-2$, y-intercept of 5

           Equation: *y = mx + b therefore, y = -2x +5*
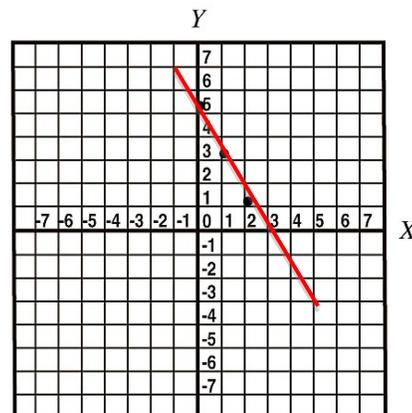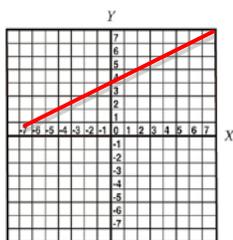

      (b) Slope of ½, y-intercept of 0

           Equation: *y = mx + b therefore, y = ½x*
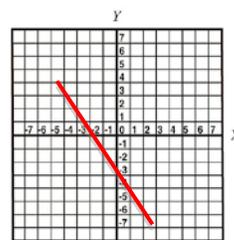

2. Use the slope and the y intercept to graph each of the following lines. *Then, use a 3rd point on the line to check your graph.*
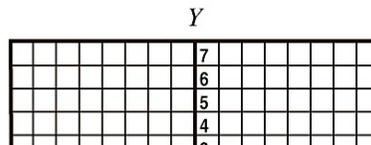
    (a) $y = \dfrac{2x}{5} + 3$
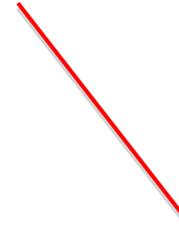

    (b) $y = \dfrac{-3x}{2} - 1$

3. A line has an x-intercept of 4 and a y-intercept of 5. *Graph this line.*
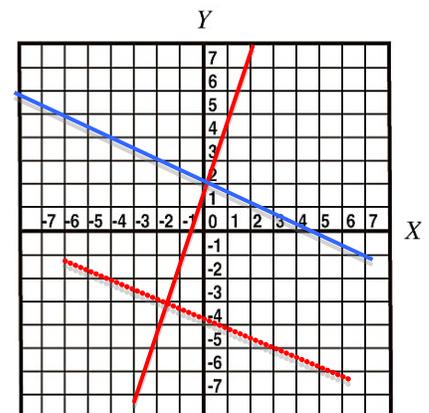
Equation:

_5x + 4y = 20_

4. You are given the line. $y = 3x + 2$

   (a) The slope is **_3._**

   (b) The y intercept is **_2._**

   (c) *Use the y intercept and the slope to graph this line on grid paper.*

   (d) The slope of a line, which is perpendicular to the line above, is $\dfrac{-1}{3}$

   (e) On the grid paper, draw many lines which are perpendicular to $y = 3x + 2$.

   (f) Use a red pencil to draw the particular perpendicular line, which has y intercept ¯4. *What is the
   equation of this red line?*

   Equation:

5. Raul packages CDs and is paid according to $y = .25x + 4$, where y is his earnings and
   x is the number of CD's packaged.

(a) Graph this equation.

(b) Find the slope and interpret its meaning. ***The slope is $0.25, which is interpreted as being paid $0.25 for each CD that is packaged.***

(c) Find the y intercept and interpret its meaning. ***The y-intercept is 4, which is interpreted as being paid a one-time rate of $4.00.***