

NAME _____

Graphic

DATE _____

Line Designs

PERIOD _____

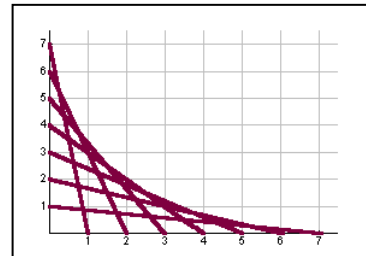
A QUICK REVIEW: The formula $y = mx + b$ is one way of writing the equation of a line. The value of b is the where the line crosses the y -axis, and m is the slope, the change in y divided by the change in x $\left(\frac{y_2 - y_1}{x_2 - x_1}\right)$.

Find two points on the line. Calculate the slope, identify the y -intercept, and finally, write the equation for the line.

TRY IT HERE.

There are seven lines in the graph to the right. Find two points, calculate the slope, and write the equation for the lines shown in the graph to the right.

Point 1	Point 2	Slope	Equation of line	Domain



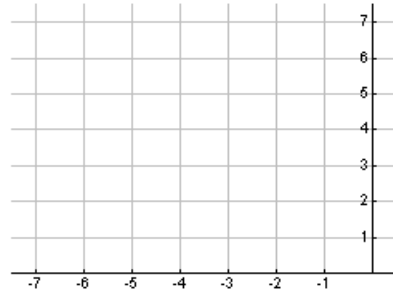
Use a graphing calculator to check to see if your equations are correct. The window should be set to $x_{\min} = 0$, $x_{\max} = 7.5$, $x_{\text{scl}} = 1$; $y_{\min} = 0$, $y_{\max} = 7.5$, and $y_{\text{scl}} = 1$. Leave any other scales alone. Go to the $y=$ menu and enter your equations. Press graph to check.

FURTHER WORK.

Find the equations for the lines that would make the same pattern for each of the other three quadrants of the coordinate grid. Draw the line design. Finally, find all the information to fill the chart.

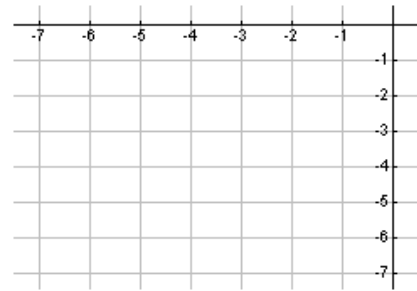
QUADRANT 2

Point 1	Point 2	Slope	Equation of line	Domain



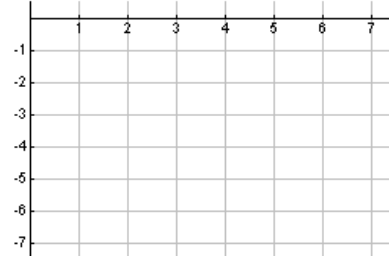
QUADRANT 3

Point 1	Point 2	Slope	Equation of line	Domain



QUADRANT 4

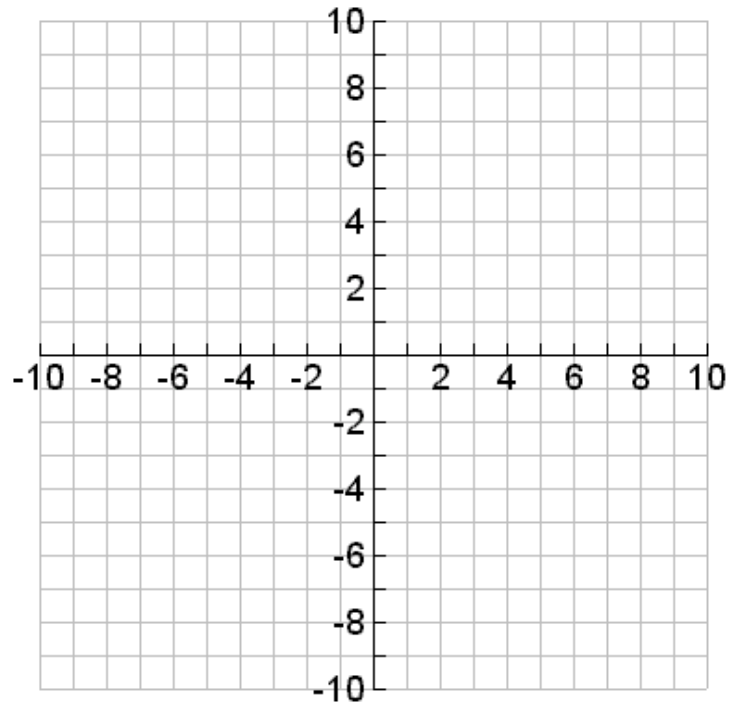
Point 1	Point 2	Slope	Equation of line	Domain



QUESTIONS

1. Describe any patterns you discovered while working out the equations to these special lines?
2. Were there any special circumstances that helped you to find the equations more quickly? What were they?
3. Using this type of patterning, could you find the equations to any pattern of lines on a coordinate grid more easily? How?
4. Which two points made it easier to find the slope? Write the special names for these points if you remember them.
5. Using your own grid, make a line design showing all four quadrants on one sheet of paper. Attach it to this worksheet.

EXTENSIONS. Now it is your turn. Use the grid below to create an original line design of your own making. It is always a good idea to use color.



Using what you learned in the previous line design, find the equations for the lines you used to create this pattern. Label each line with its equation.

EXTRA CREDIT: Put your line design on a graphing calculator and print it out in class to attach to this worksheet.