Processing: Lines an the regions above them and below them– create patterns

Peabody Charter 6th grade -- Z. Wood & M. Pasternak

Today we will focus on using a Processing program to create patterns using lines to define regions of space

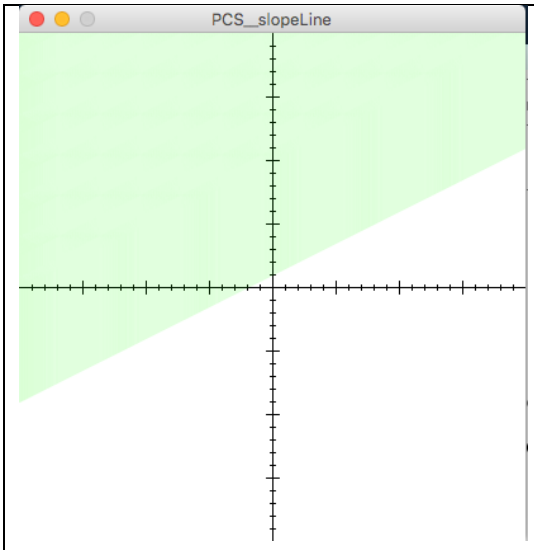
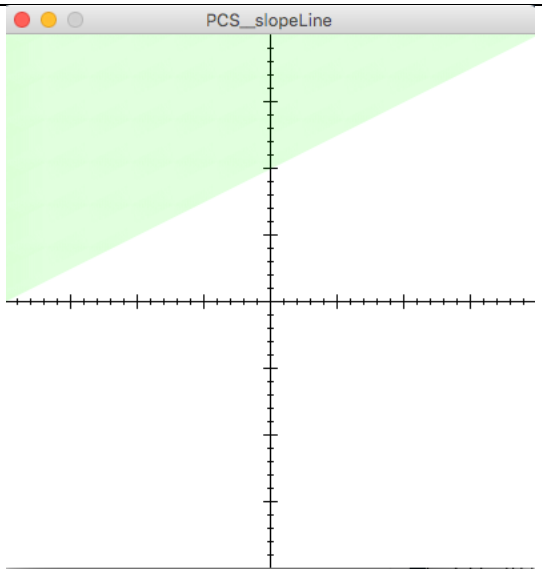
- **TODO: Match the two patterns**

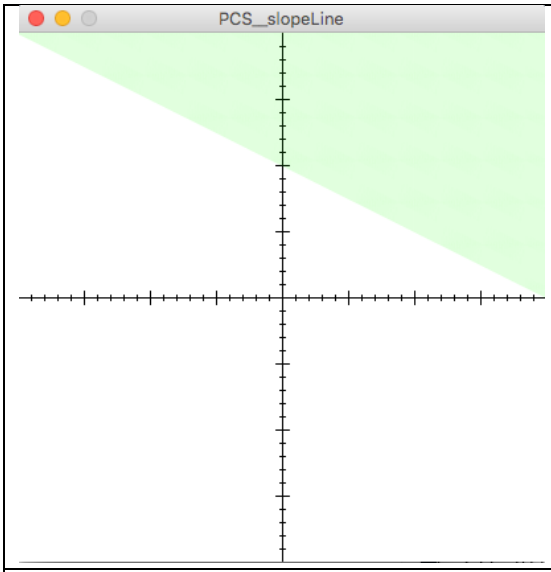
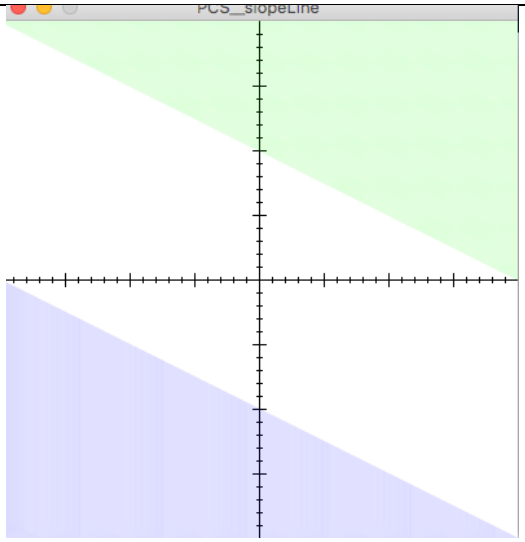
In this exercise, we have mapped the numbers to a more traditional number 2-dimensional grid, with {0, 0} falling in the center of the screen. One way to define a line is:

y = m*x + b

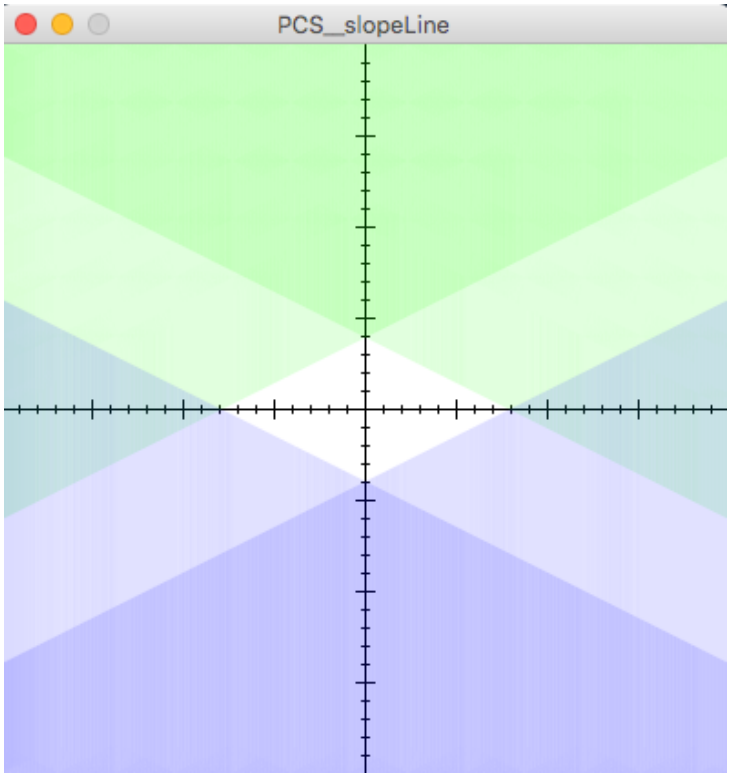
***b** is the y-intercept (where the line crosses the y axis)*

***m** is the slope: rise/run (where **rise** is how much the line changes in y and **run** is how much the line changes in x)*

	
A line can be defined based on where that line crosses the y axis (the "y intercept") and how fast the line changes in the y direction (rise) and how fast the line changes in the x direction (run) – (the slope of a line: rise/run). In this code, we can define that we want to draw the region above a line with a run of 10, a rise of 5 and a y intercept of 10: *drawGreaterThanSlopedLine(10, 5, 10, color(0, 255, 0), 30);*	*We can move how "high" the line is just changing the **y intercept** to a larger value:* *drawGreaterThanSlopedLine(10, 5, **100**, color(0, 255, 0), 30);*

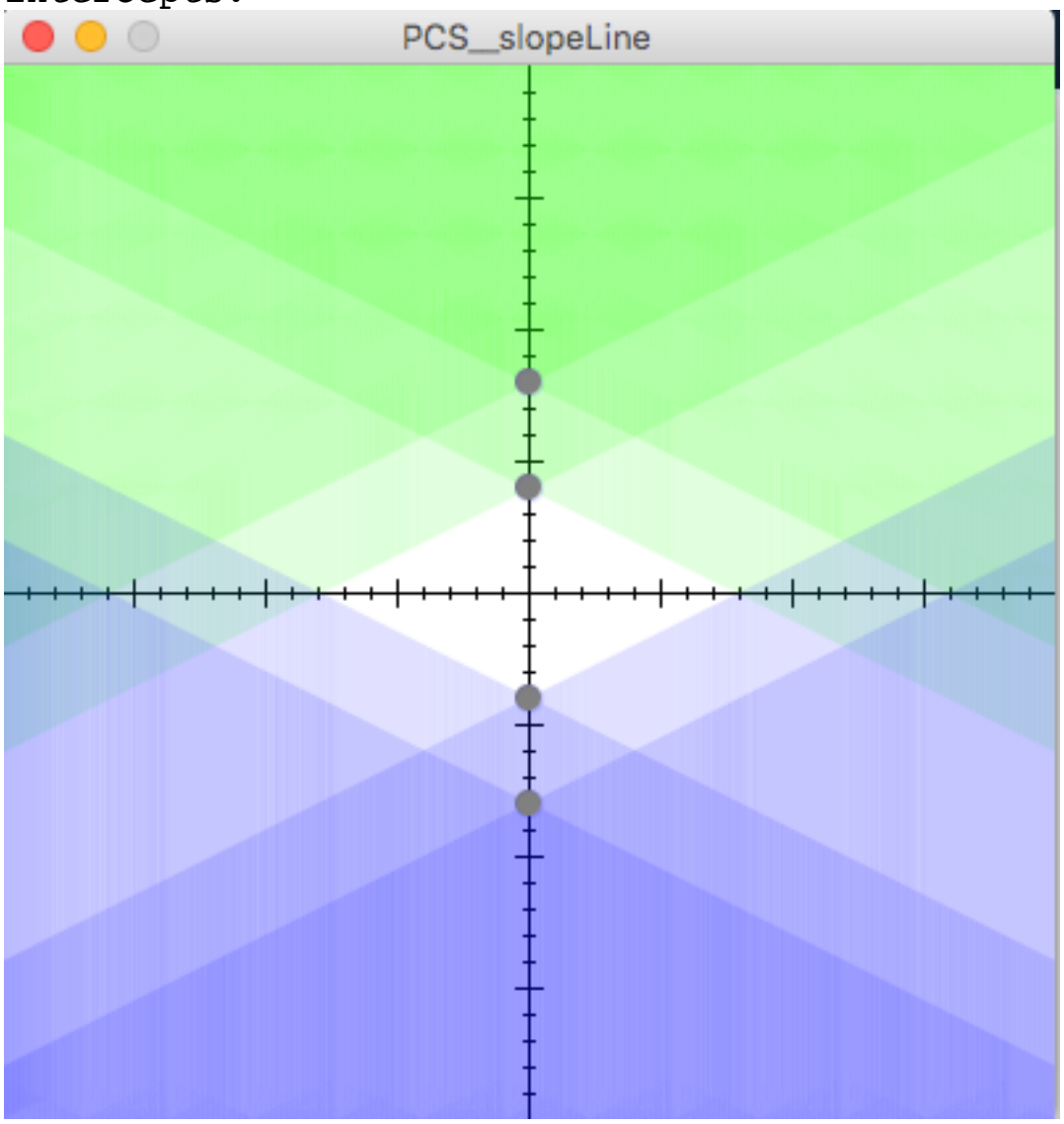
	
We can change the "slope" of the line, by changing the "rise" (or change in Y) to be negative *drawGreaterThanSlopedLine(10, **-5**, 100, color(0, 255, 0), 30);*	*We can also draw the region below a line (with the same slope but different y intercept):* *drawGreaterThanSlopedLine(10, -5, **100**, color(0, 255, 0), 30);* *drawLessThanSlopedLine(10, -5, **-100**, color(0, 255, 0), 30);*

#1) Now using those commands, figure out how to make this pattern:



Note that you can now use all the prior Processing commands, but be sure to map your coordinates to this normal grid using:
centeredX(0) and centeredY(0)
to draw at {0, 0} on the math grid. Or for example:

ellipse(centeredX(100), centeredY(100), 20, 20);

to draw an ellipse at {100, 100} on this math grid.

#2) Now using those commands, and the ellipse command, figure out how to make this pattern – note we are drawing an ellipse at each of the y-intercepts: