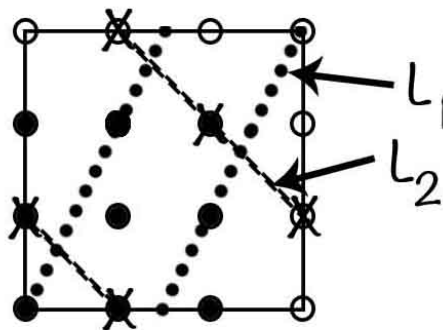# Handout: How often do lines cross?

Recall: In the real world, lines cross once, or they are parallel.

Big Question: What happens in our Plots?

Part 1: What is parallel in Plot 3?

1. These two lines do **NOT** cross (remember only the grid points matter, the "visual aide lines" L_1 and L_2 are just to help us find the trees we're interested in on our actual "lines").

   Find a visual way why it makes sense to think of L_1 and L_2 as parallel. Hint: Find a different "visual aide line" that touches the same trees as L_2 (ie that touches $(1,0)$, $(0,1)$, $(2,2)$)

2. Find a third "visual aide line" for L_2.

3. Can you find more "visual aide lines" for L_2?

Part 2: Investigating general Plots.

1. How often do lines cross on Plot 3?

2. How often do lines cross on Plot 5?

3. How often do lines cross on Plot 4?

4. How often do lines cross on Plot 6?

5. How often do lines cross on Plot 7?

6. Is there anything special about the Plots where the lines cross ZERO or ONE time?

7. How often do lines cross on Plot 9?