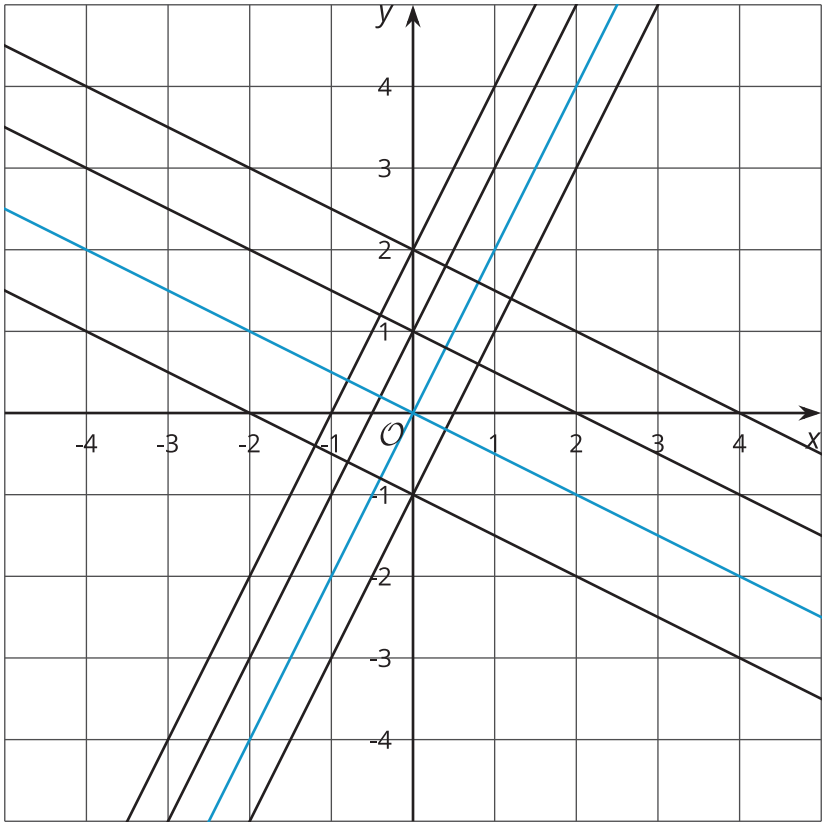
Unit 2, Lesson 19

Linear Patterns

Let's graph and explore systems that make a pattern.

19.1 Writing Out the Pattern

Here is a pattern made from 8 linear equations.



Two of the equations are $y = 2x$ and $y = \frac{-1}{2}x$. If every line is parallel to one of those two, write an equation for each of the other 6 lines.

19.2 Outlining a Pattern

Think of or draw an interesting pattern made of at least 4 lines.

Write at least 4 linear equations to create your pattern with these conditions:

- At least one equation written in standard form: $Ax + By = C$ with constants for A, B, and C.
- At least one equation written in slope-intercept form: $y = mx + b$ with constants for m and b.
- At least 2 lines that intersect.
- At least 2 lines that do not intersect.

19.3 Solving Your Pattern

Trade equations with your new partner. Only the equations should be traded. Do not trade the patterns yet.

1. Create a system of equations by selecting two of the equations that your partner gave you. Without graphing, solve that system of equations or show why there are no solutions. Be prepared to show your reasoning.
2. Select another pair of equations, and do this again.
3. Using one of the equations you have, write a new linear equation to create a system that has infinitely many solutions.
4. Next, you and your partner should show each other your original patterns and check your answers using those graphs.