Opportunities to Articulate Mathematics and Emphasize Meaning

1. What is an equation?

2. What does it mean for a number to be a solution of an equation?

3. Suppose you have a system of two equations in two unknowns. What does it mean for an ordered pair to be a solution of the system?

4. Any system of two linear equations in two unknowns can be written in the form

\[ Ax + By = C \]
\[ Dx + Ey = F \]

for some numbers \( A, B, C, D, E, \) and \( F \). What are the possibilities for the set of solutions of such a system? Why?

5. Given a line \( Ax + By = C \) and a non-zero number \( k \), what can you say about the line \( k(Ax + By) = kC \)?

6. Given two lines \( Ax + By = C \) and \( Dx + Ey = F \) and non-zero numbers \( k \) and \( m \), what can you say about the line \( k(Ax + By) + m(Dx + Ey) = kC + mF \)?