ESTABLISHING PURPOSE

1. What are the key content standards I will focus on in this lesson?

Content Standards:
- 8.EE.C.8
  Analyze and solve pairs of simultaneous linear equations.
  a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

Standards for Mathematical Practice:
- Reason abstractly and quantitatively.
- Look for and make use of structure.

2. What are the learning intentions (the goal and why of learning, stated in student-friendly language) I will focus on in this lesson?

Content: I am learning to understand that the intersection of two lines on a graph represents the solution to two simultaneous linear equations.
Language: I am learning to articulate the meaning of solutions of systems of equations both abstractly and within a specific context.
Social: I am learning to communicate our thinking to our peers even before we completely understand a topic.

3. When will I introduce and reinforce the learning intention(s) so that students understand it, see the relevance, connect it to previous learning, and can clearly communicate it themselves?

I will open the day with an explanation of the learning intentions and brief expansion of each. I really want to emphasize the social intention today so that students can practice thinking out loud as they problem solve. Transparent struggle is important for collaboration. I will also reiterate the language intention as we discuss and explain points on our graph.

SUCCESS CRITERIA

4. What evidence shows that students have mastered the learning intention(s)? What criteria will I use?

I can statements:
- I can describe a graph as a set of points which satisfies an equation and identify the meaning of a given point on the graph.
- I can explain how the intersection of two lines represents a point where both equations are true.
- I can explain the meaning of a solution to a system of equations mathematically and within a context.
How will I check students’ understanding (assess learning) during instruction and make accommodations?

During direct instruction, I will be using the think-pair-share protocol so students can process the concepts with a peer and I can formatively assess their conversations and responses. This will also give me the chance to note who will need additional guided practice when we transition to collaborative work time. Finally, today’s task comprehensively addresses and assesses each success criterion. I will collect the task at the end of the day and use these data to create tomorrow’s study-group stations.

INSTRUCTION

What activities and tasks will move students forward in their learning?

1. Think-Pair-Share/Direct Instruction Combo
   I will ask students to process questions in think-pair-share format and I will model specific skills and strategies based on their responses/needs. I want to give them the chance to make discoveries and teach each other first.

2. Collaborative Task: Analyzing Systems
   This task is designed to help students show their understanding of the meaning of the point of intersection on the graph of a system.

What resources (materials and sentence frames) are needed?

1. Printed copies of each graph for student pairs
2. Printed copies of the task for each learner

How will I organize and facilitate the learning? What questions will I ask? How will I initiate closure?

1. Think-Pair-Share
   a. Organize students into pairs and instruct the learning intentions of the day. Have students record success criteria in their notebooks.
   b. Project an image of a graph of a system in a context. Which equation is represented by each line on the graph (provide two choices)? What does this tell us about the meaning of a given point on the line? Describe the situation represented by each line. What key features made you describe it in that way? What are the key features of this graph that help communicate its meaning? What does this point of intersection represent mathematically? What does the intersection mean in the context? In the context, what was happening before the intersection and what happens after the intersection?
c. Project another image of a graph of a system in a different context. Model the sense-making process by answering the preceding questions again in a think-aloud. Explicitly link my think-aloud to Success Criteria 1, 2, and 3 when I model that behavior.

2. Pair Work: Analyzing Systems Task

Students work in their pairs to answer questions on the final task. These questions are aligned to the second and third success criteria for the lesson.

3. Closure: Share-Out

a. Explain what is meant by the “solution” of a system of equations.
b. How does this relate to their graphs?
c. How does this relate to tables of values?
d. Take a minute and re-read through your I can statements and check the boxes that you are feeling confident about.