

# Graphing Systems at the Races

1. Have students login to Navigator as soon as they enter the classroom. Send **SystemsWarmup.edc** to the students, force delete the questions and collect the answers from students as well.
2. At this juncture, students should be familiar with what a system of equations is and what the solution to a system represents. Start a discussion of how you might use the properties of systems and solving systems in real situations. If you catch a good idea (cost vs. revenue to measure when you turn a profit is a good one) map it through with your students.
3. Transition into this system based on a greyhound race, saying you'll be able to determine the winning dog using the velocity of the dog and the target. Mentally divide the class in half, and send one half **LuckytheDog.edc** while you send the other half **Rabbit.edc**. Instruct the students then to go into the Activity Center and submit the equation that they have constructed from the Learn Check file they received (use a piece of paper). Use the window  $0 \leq x \leq 30$ ,  $0 \leq y \leq 1000$ . Troubleshoot the lines until you have two lines that intersect near the top right corner of the graph. Ask students which lines represent which? Ask what it means that they intersect? Guide ensuing discussion.
4. Next, give all students **GreyhoundProblem.edc**. This is the entire problem, and students will need to exit Navigator to solve it. Be sure to discuss the window used if students are going to solve the system graphically outside of Navigator. Once they have solved the system, have the students go back into Navigator in the Activity Center (readied to accept a point from the students, or two one-item lists). Ask students what this point represents, have them explain in complete sentences. Also, ask them what clues in the equations might have given away the fact that the dog catches the rabbit (slope). What would happen if they were the same slopes (speeds)?
5. After wrapping up that exercise, you can have an independent practice by sending out **NASCARproblem.edc**. This involves two drivers (I am not a NASCAR fan, I just used two names I hear a lot on ESPN) closing in on the finish line at different speeds, and the finish line is a quarter mile away (1320 feet). The main questions are to find the intersection of the system and determine who won the race (was the intersection before or after 1320 feet?)