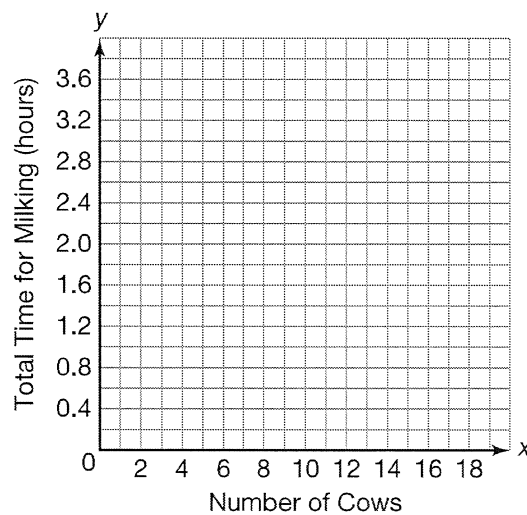


Name \_\_\_\_\_ Date \_\_\_\_\_

### Prepping for the Robot Challenge

#### Solving Linear Systems Graphically and Algebraically

1. Wesley owns a dairy farm. In the morning, it takes him 0.3 hour to set up for milking the cows. Once he has set up, it takes Wesley 0.2 hour to milk each cow by hand. He is contemplating purchasing a milking machine in hopes that it will speed up the milking process. The milking machine he is considering will take 0.4 hour to set up each morning and takes 0.05 hour to milk each cow.
  - a. Write a system of linear equations that represents the total amount of time Wesley will spend milking the cows using the two different methods.
  - b. Compare the equations in the system you wrote in part (a). Explain what they mean in terms of the problem situation.
  - c. Graph both equations on the coordinate plane.



d. Use the graph to estimate the break-even point. Explain how you determined your answer.

e. What does the break-even point represent in this problem situation?

f. Verify your answer to part (d) by solving the system algebraically.

g. Does the solution make sense in terms of this problem situation? Explain your reasoning.

h. Which method of milking is more efficient? Explain your reasoning.

i. Is this system of equations consistent or inconsistent? Explain your reasoning.

