

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

### Using Distance, Time, and Speed Relationships to Solve Linear Systems by Graphing

<http://standards.nctm.org/document/eexamples/chap5/5.2/index.htm#APPLET>

Recall using the applet of the boy and girl moving between the house and the tree. If you need a refresher on the instructions for controlling movement, please be sure to read them on the applet site.

1. Move the boy back to the tree and move the girl back to the house. Keep both of their speeds at the same 2 steps per "second". Run the applet. How long does it take the boy to reach the house? \_\_\_\_\_ How long does it take the girl to reach the tree? \_\_\_\_\_ Explain why the times are the same. \_\_\_\_\_  
What is the equation of the distance the girl is from the house as a function of time? \_\_\_\_\_  
What is the equation for the boy's distance from the house as a function of time? \_\_\_\_\_ What is the point of intersection? \_\_\_\_\_  
What is the meaning of this point of intersection? \_\_\_\_\_
2. Reset the applet, but move the girl 10 steps closer to the tree and have the boy move at 4 steps per second. Write an equation for the girl's path. \_\_\_\_\_ Write an equation for the boy's path. \_\_\_\_\_ What is the point of intersection for their paths? \_\_\_\_\_ What is the meaning of this point? \_\_\_\_\_
3. Now, move the boy to the house and turn him around. The boy, who takes 7 steps per second, gives the girl, who takes 5 steps per second, a 25 step head-start. Who reaches the tree first? \_\_\_\_\_ Write an equation for the distance the boy is from the house. \_\_\_\_\_  
Write an equation for the distance the girl is from the house. \_\_\_\_\_  
Where do the two lines intersect? \_\_\_\_\_ What is the meaning of the point of intersection of the two lines on the graph? \_\_\_\_\_  
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4. Have the boy start at the house and give the girl a head start of your choosing. Have both of them run at the same speed. You determine what that speed will be. Write the equation for the boy's distance from the house. \_\_\_\_\_ Write the equation of the girl's distance from the house. \_\_\_\_\_ Now run the scenario. What does the graph look like? \_\_\_\_\_ What is the intersection of the two paths? \_\_\_\_\_ Explain \_\_\_\_\_  
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5. Have the boy and girl both start at the house and run toward the tree at the same speed. You determine what speed you would like them to move. What is the equation for the boy's distance from the house as a function of time? \_\_\_\_\_ What is the equation for the girl's distance? \_\_\_\_\_ What does the graph look like? \_\_\_\_\_ What is the intersection? \_\_\_\_\_  
Explain \_\_\_\_\_