5.10 Taken Out of Context
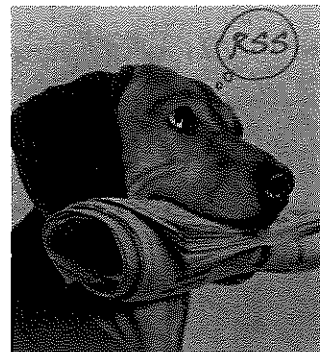
A Practice Understanding Task

Write a shopping scenario similar to those in "Shopping for Cats and Dogs" to fit each of the following systems of equations. Then use the elimination of variables method you invented in "Can You Get to the Point, Too" to solve the system. Some of the systems may have interesting or unusual solutions. See if you can explain them in terms of the shopping scenarios you wrote.

1. $\begin{cases} 3x + 4y = 23 \\ 5x + 3y = 31 \end{cases}$

2. $\begin{cases} 2x + 3y = 14 \\ 4x + 6y = 28 \end{cases}$

3. $\begin{cases} 3x + 2y = 20 \\ 9x + 6y = 35 \end{cases}$

4. $\begin{cases} 4x + 2y = 8 \\ 5x + 3y = 9 \end{cases}$

5. Three of Carlos and Clarita's friends are purchasing school supplies at the bookstore. Stan buys a notebook, three packages of pencils and two markers for $7.50. Jan buys two notebooks, six packages of pencils and five markers for $15.50. Fran buys a notebook, two packages of pencils and two markers for $6.25. How much do each of these three items cost?

   Explain in words or with symbols how you can use your intuitive reasoning about these purchases to find the price of each item.

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Name   Period   Date

READY

Topic: System of inequalities

For each of the systems of inequalities, determine if the given coordinates are solutions to the system. (Show your work.)

1. $\begin{cases} y \le 3x - 5 \\ y \ge x + 2 \end{cases}$	2. $\begin{cases} y > -2x + 9 \\ y \ge 5x - 6 \end{cases}$	3. $\begin{cases} y < -\frac{1}{2}x + 9 \\ y > 6x - 10 \end{cases}$
a. $(6, 10)$ b. $(1, 4)$ c. $(8, 15)$	a. $(-2, -5)$ b. $(-1, 12)$ c. $(5, 0)$	a. $(-2, -5)$ b. $(7, 3)$ c. $(-8, 10)$

SET

Topic: Determining the number of solutions in a system of equations

Write each equation in slope-intercept form. Based on slope-intercept form of the equations determine whether the system of equations has zero, one, or infinitely many solutions. How do you know?

4. $3x - 4y = 13$ $y = -3x - 7$	5. $3x - 3y = 3$ $x - y = 1$	6. $0.5x - y = 30$ $0.5x - y = -30$	7. $4x - 2y = -2$ $3x + 2y = -12$
How many solutions? How do you know?	How many solutions? How do you know?	How many solutions? How do you know?	How many solutions? How do you know?

Solve each system. Write your solution as an ordered pair or indicate if it has no solutions or infinitely many solutions.

8. $\begin{cases} x + 4y = 6 \\ x + y = 3 \end{cases}$

9. $\begin{cases} 2x + y = 5 \\ y = x - 4 \end{cases}$

10. $\begin{cases} y = 2x + 1 \\ 2x - y + 1 = 0 \end{cases}$

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SYSTEMS – 5.10

11. $\begin{cases} 4y - 5x = 9 \\ x - 4y = 11 \end{cases}$

12. $\begin{cases} y = x - 1 \\ -x + y = 4 \end{cases}$

13. $\begin{cases} -2x + 5y = -1 \\ 3x + 2y = 11 \end{cases}$

14. $\begin{cases} -3x + 4y = 12 \\ 2x + y = -8 \end{cases}$

15. $\begin{cases} 9x - 3y = 3 \\ 3x + 8y = -17 \end{cases}$

16. $\begin{cases} -7x + y = -2 \\ 7x - y - 2 = 0 \end{cases}$

17. $\begin{cases} 2y = x + 2 \\ -\frac{1}{2}x + y = 1 \end{cases}$

18. $\begin{cases} 2y = 2x - 2 \\ -\frac{1}{2}x + \frac{1}{2}y = 1 \end{cases}$

19. $\begin{cases} -2y = 4x + 2 \\ 8x - 4y = -4 \end{cases}$

20. $\begin{cases} x + y = 2x + 5 \\ x + y = 6y - 9 \end{cases}$
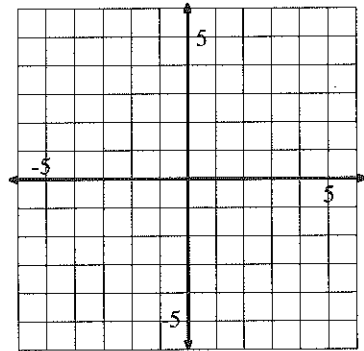
21. $\begin{cases} 5x = -y \\ 5x + 2y = 30 \end{cases}$

22. $\begin{cases} 3x + 8y = 9y - 6 \\ 9x - 3y = 3 \end{cases}$
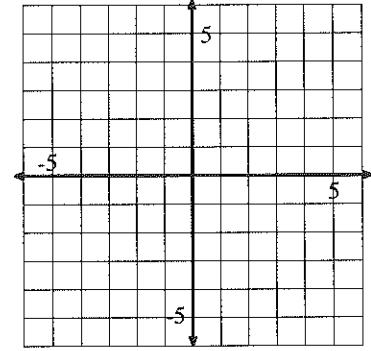
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GO

Topic: graphing two variable inequalities

Graph the following inequalities. Justify the region you shade by showing at least one point in the region as being a solution to each inequality.
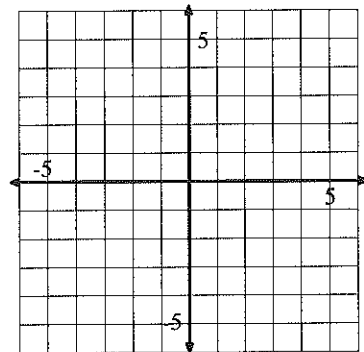
23. $3x - 4y \geq 12$
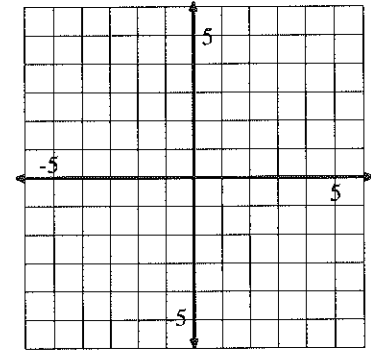

24. $x + 6y < 6$

25. $6x + 5y > 1$
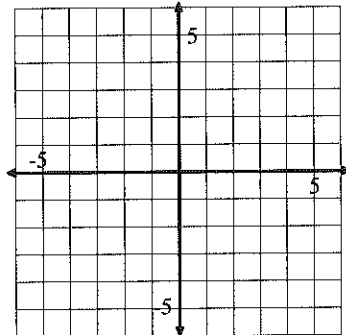

26. $x - \frac{1}{2}y \geq 3$

27. On the same set of axes graph $y < x + 2$ and $y > x + 5$.

Do the solution sets of these two inequalities share any points? Explain.

28. On the same set of axes graph $y < x + 2$ and $y < x + 5$.

Do the solution sets of these two inequalities share any points? Explain.

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