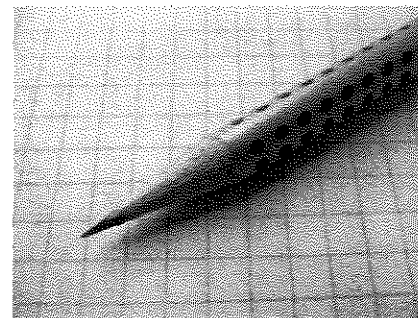


5.7 Get to the Point

A Solidify Understanding Task



CC BY photosteve101
<https://flic.kr/p/9fNG8w>

Carlos and Clarita need to clean the storage shed where they plan to board the pets. They have decided to hire a company to clean the windows. After collecting the following information, they have come to you for help deciding which window cleaning company they should hire.

- *Sunshine Express Window Cleaners* charges \$50 for each service call, plus \$10 per window.
 - *"Pane"less Window Cleaners* charges \$25 for each service call, plus \$15 per window.
1. Which company would you recommend, and why? Prepare an argument to convince Carlos and Clarita that your recommendation is reasonable. (It is always more convincing if you can support your claim in multiple ways. How might you support your recommendation using a table? A graph? Algebra?)

Your presentation to Carlos reminds him of something he has been thinking about—how to find the coordinates of the points where the boundary lines in the “Pet Sitter” constraints intersect. He would like to do this algebraically since he thinks guessing the coordinates from a graph might be less accurate.

2. Write equations for the following two constraints.

- *Space*
- *Start-up Costs*

Find where the two lines intersect algebraically. Record enough steps so that someone else can follow your strategy.

3. Now find the point of intersection for the two time constraints.

- *Feeding Time*
- *Pampering Time*

READY, SET, GO!

Name _____

Period _____

Date _____

READY

Topic: Pythagorean theorem

An easy way to check if a triangle contains a 90° angle (also called a right triangle) is to use the Pythagorean theorem. You may remember the theorem as $a^2 + b^2 = c^2$, where c is the length of the longest side (the hypotenuse) and a and b are the lengths of the two shorter sides.

Identify which lengths make a right triangle. Example: Given 5, 12, 13

Replace a , b , and c with the numbers $(5^2 + 12^2 = 13^2) \rightarrow (25 + 144 = 169) \rightarrow (169 = 169)$

Since $169 = 169$, a triangle with side lengths of 5, 12, and 13 must be a right triangle.

Do these numbers represent the sides of a right triangle? Write YES in the boxes that apply.

1. 9, 40, 41	2. 3, 4, 5	3. 6, 7, 8	4. 20, 21, 29
5. 9, 12, 15	6. 10, 11, 15	7. 6, 8, 10	8. 8, 15, 17

SET

Topic: Solving systems of equations using substitution.

Solve each system of equations using substitution. Check your solution in both equations.

In this problem, substitute $(x + 1)$ in place of y in the second equation.

$$9. \begin{cases} y = x + 1 \\ x + 2y = 8 \end{cases}$$

In this problem, substitute $(3 + y)$ in place of x in the first equation.

$$10. \begin{cases} y + 2x = 7 \\ x = 3 + y \end{cases}$$

$$11. \begin{cases} x = 9 + 2y \\ 3x + 5y = 20 \end{cases}$$

$$12. \begin{cases} y = 2x - 4 \\ 3y + 21x = 15 \end{cases}$$

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

14.
$$\begin{cases} y = 2x - 3 \\ x + y = -5 \end{cases}$$

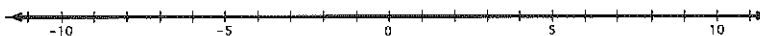
15. Tickets to a concert cost \$10 in advance and \$15 at the door. If 120 tickets were sold for a total of \$1390, how many of the tickets were purchased in advance?

GO

Topic: Solving one variable inequalities

Solve the following inequalities. Write the solution set in *interval notation* and graph the solution set on a number line.

16. $4x + 10 < 2x + 14$



17. $2x + 6 > 55 - 5x$



18. $2\left(\frac{x}{4} + 3\right) > 6(x - 1)$



19. $9x + 4 \leq -2\left(x + \frac{1}{2}\right)$



Solve each inequality. Give the solution in *set builder notation* (e.g. $\{x \in \mathbb{R} | x < 2\}$).

20. $-\frac{x}{3} > -\frac{10}{9}$

21. $5x > 8x + 27$

22. $\frac{x}{4} > \frac{5}{4}$

23. $3x - 7 \geq 3(x - 7)$

24. $2x < 7x - 36$

25. $5 - x < 9 + x$