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4-15: Learning Goals

- Let's write systems of equations from real-world situations.

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4-15-1: How Many Solutions? Matching

Match each system of equations with the number of solutions the system has.

A. $\begin{cases} y = -\frac{4}{3}x + 4 \\ y = -\frac{4}{3}x - 1 \end{cases}$

B. $\begin{cases} y = 4x - 5 \\ y = -2x + 7 \end{cases}$

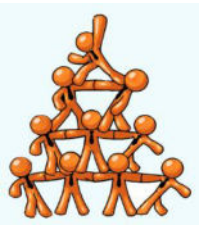
C. $\begin{cases} 2x + 3y = 8 \\ 4x + 6y = 17 \end{cases}$

D. $\begin{cases} y = 5x - 15 \\ y = 5(x - 3) \end{cases}$

1. No solutions

2. One solution

3. Infinitely many solutions



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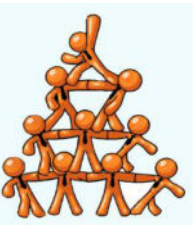
4-15-2: Situations and Systems

For each situation:

- Create a system of equations.
- Then, without solving, interpret what the solution to the system would tell you about the situation.

1. Lin's family is out for a bike ride when her dad stops to take a picture of the scenery. He tells the rest of the family to keep going and that he'll catch up. Lin's dad spends 5 minutes taking the photo and then rides at 0.24 miles per minute until he meets up with the rest of the family further along the bike path. Lin and the rest were riding at 0.18 miles per minute.
2. Noah is planning a kayaking trip. Kayak Rental A charges a base fee of $15 plus $4.50 per hour. Kayak Rental B charges a base fee of $12.50 plus $5 per hour.
3. Diego is making a large batch of pastries. The recipe calls for 3 strawberries for every apple. Diego used 52 fruits all together.
4. Flour costs $0.80 per pound and sugar costs $0.50 per pound. An order of flour and sugar weighs 15 pounds and costs $9.00.



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4-15-3: Solving Systems Practice

Here is a lot of systems of equations:

A. $\begin{cases} y = -2x + 6 \\ y = x - 3 \end{cases}$

B. $\begin{cases} y = 5x - 4 \\ y = 4x + 12 \end{cases}$

C. $\begin{cases} y = \frac{2}{3}x - 4 \\ y = -\frac{4}{3}x + 9 \end{cases}$

D. $\begin{cases} 4y + 7x = 6 \\ 4y + 7x = -5 \end{cases}$

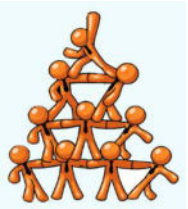
E. $\begin{cases} y = 0.24x \\ y = 0.18x + 0.9 \end{cases}$

F. $\begin{cases} y = 4.5x + 15 \\ y = 5x + 12.5 \end{cases}$

G. $\begin{cases} y = 3x \\ x + y = 52 \end{cases}$

1. Without solving, identify 3 systems that you think would be the least difficult for you to solve and 3 systems you think would be the most difficult. Be prepared to explain your reasoning.

2. Choose 4 systems to solve. At least one should be from your "least difficult" list and one should be from your "most difficult" list.



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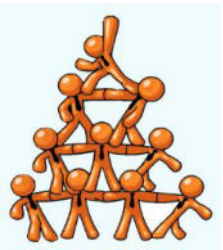
4-15: Lesson Synthesis

$$\begin{cases} y = 2x + 1 \\ y = \frac{1}{2}x + 10 \end{cases}$$

$$\begin{cases} x = 5 - 2y \\ 2x + 6y = 16 \end{cases}$$

$$\begin{cases} 5x + 4y = 20 \\ 10x + 8y = 60 \end{cases}$$



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4-15: Learning Targets

- I can write a system of equations from a real-world situation.

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4-15-4: Solve This

Solve

$$\begin{cases} y = \frac{3}{4}x \\ \frac{5}{2}x + 2y = 5 \end{cases}$$