Assessing the Understanding of Solutions of Equations and Systems: Results from the NSF Rice Mathematics Leadership Institute

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1. a. Find the solution set of the equation $2(x-2)+4(x+1)=6x$.

b. Find the solution set of the system of equations $\begin{cases} y=2(x-2)+4(x+1) \\ y=6x \end{cases}$.

c. Compare and contrast the two solution sets.

Find the solution sets for each of the following one-variable equations:

$2(x - 1) = 2x - 2$ $\qquad$ $x = x + 1$ $\qquad$ $3(x + 2) = 5x + 4$

Compare the solution sets for the following one- and two-variable equations:

$2(x - 1) = 2x - 2$ $\qquad$ $x = x + 1$ $\qquad$ $3(x + 2) = 5x + 4$

$$\begin{aligned} x - y &= 8 \\ 2x + y &= 1 \end{aligned} \qquad \begin{aligned} x + y &= 3 \\ 2x + 2y &= -4 \end{aligned} \qquad \begin{aligned} x - 3y &= 6 \\ 2x - 6y &= 12 \end{aligned}$$