

Solving Systems of Equations with ELIMINATION

Big Ideas

*Linear equations without a dependent variable are most readily expressed in **standard form**: $ax + by = c$

*Elimination is the most direct way to solve a system of equations in **standard form**.

Example:

Jim is renting video games and DVD's. One week he rented 3 DVD's and 4 video games and paid \$13.25. The next week he rented 1 DVD and 5 video games and paid \$11.75.

a. Write and solve a system of equations to represent this situation.

b. What is the rental cost of the DVD's? **\$1.75**

c. What is the rental cost of the video games? **\$2**

$$\begin{array}{l} \text{Wk 1 : } 3d + 4v = 13.25 \\ \text{Wk 2 : } 3(1d + 5v = 11.75) \end{array} \rightarrow \begin{array}{l} 3d + 15v = 35.25 \\ \underline{-(3d + 4v = 13.25)} \end{array}$$

$$\frac{11v}{11} = \frac{22}{11}$$

$$v = 2$$

$$\begin{array}{r} 3d + 4(2) = 13.25 \\ 3d + 8 = 13.25 \\ \underline{-8 \quad -8} \end{array}$$

$$\frac{3d}{3} = \frac{5.25}{3}$$

$$d = 1.75$$