

Solving Systems of Linear Equations

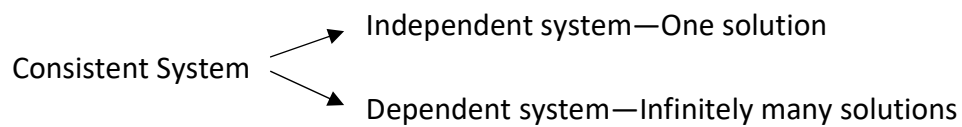
- What does it mean to “Solve a system of linear equations?”
- Three main methods
 - Graphing, Algebraically and Matrices
- Graphing Examples
 - What is the solution of the system?

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

- You want to buy a camera. A film camera costs \$89.98, and each photo costs \$0.24. A digital camera costs \$124.48, and each photo costs \$0.09. After how many photos will the overall cost of the cameras be the same? What will that cost be?
- The enrollments of two high schools are given in the table. If the trends continue, when can the schools expect have the same enrollment? What will the enrollment be?

Year	School A	School B
2005	628	432
2006	632	436
2007	627	461
2008	621	477
2009	615	488
2010	612	498

- *Consistent System*: At least one solution.
- *Inconsistent System*: No solution.



Inconsistent System—No solution

- Determine without graphing whether the system is independent, dependent, or inconsistent.

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

- Algebraically
 - *Direct Substitution*: What is the solution of the system of equations?

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

- *Elimination*: What is the solution of the system of equations?

$$\begin{cases} 7x + 5y = 2 \\ 8x - 9y = 17 \end{cases}$$

- What are the solutions of the following systems?

$$\begin{cases} 6x + 4y = 2 \\ 3x + 2y = -1 \end{cases}$$

- What are the solutions of the following systems?

$$\begin{cases} 6x - 3y = 15 \\ -8x + 4y = -20 \end{cases}$$

- You are in charge of ordering labels for a small business. A company that makes custom labels charges a yearly fee plus a cost per label. You paid \$375 last year for 300 labels. This year you ordered 1,000 labels and paid \$725. What are the yearly fee and cost per label, assuming the prices didn't change?