

Application Problems

1. Gail leaves the trailhead at dawn to hike 12 mi toward the lake, where her friend Laura is camping. At the same time, Laura starts her hike toward the trailhead, Gail is walking uphill so she averages only 1.5 mi/h, while Laura averages 2.5 mi/hr walking downhill. When and where will they meet?



- Define variables for time and distance from the trailhead.
 - Write a system of two equations to model this situation.
 - Solve this system by creating a table and finding the values for the variables that make both equations true. Then locate this solution on a graph.
 - Check your solution and explain its real-world meaning.
2. Use the calculator table feature to find the solution to these systems of equations. Confirm the solution by using a graph.

A.
$$\begin{cases} y = -9 + 2x \\ y = 3 + 0.5x \end{cases}$$

B.
$$\begin{cases} y = 4x - 5.5 \\ y = -3x + 5 \end{cases}$$

C.
$$\begin{cases} y = 100 + 10x \\ y = 50 + 20x \end{cases}$$

3. The total tuition for students at South College and North College consists of student fees plus costs per credit. Some classes have different credit values. The table shows the total tuition for programs with different numbers of credits at each college.

Total Tuition		
Credits	South College	North College
1	55	47
3	115	111
6	205	207
9	295	303
10	325	335
12	385	399

- A. Write a system of equations that represents the relationship between credit hours and total tuition for each college.
- B. Find the solution to this system of equations and check it.
- C. Which method did you use to solve this system? Why?
- D. What is the real-world meaning of the solution?
- E. When is it cheaper to attend South College? North College?