

Hot air balloons

Balloon 1 is ten meters above the ground and rising at 15 meters per minute. Balloon 2 is 150 meters above the ground, descending at twenty meters per minute. In how many minutes will the balloons be at the same height? How high will the balloons be at that time?

Skydiving

Two skydivers jumped from different airplanes. Skydiver A was at an altitude of 9,976 feet after 1 second and reached the ground after 5.75 minutes (345 seconds). Skydiver B jumped from an altitude of 10,005 feet and reached an altitude of 9,686 feet after 11 seconds. When will the skydivers be at the same height?

Pizza and Soda

Alexis bought pizza and soda for the ski club meeting. For one meeting she bought 4 pizzas and 10 sodas for \$63. The next meeting she bought 3 pizzas and 8 sodas for \$48. What is the cost of one pizza? What is the cost of one soda?

Vans and Buses

The senior classes at High School A and High school B planned separate trips to the county fair. The senior class at High School A rented and filled 2 vans and 8 buses with 442 students. High School B rented and filled a van and 4 buses with 224 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

Boat Travel

A boat traveled 189 miles each way downstream and back. The trip downstream took 9 hours. The trip back took 21 hours. What is the speed of the boat in still water? What is the speed of the current?

Use substitution to solve each system of equations. If the system does not have exactly one solution, state whether it has *no* solution or *infinitely many* solutions.

1)
$$\begin{aligned} 2x + 7y &= 3 \\ x &= 1 - 4y \end{aligned}$$

3)
$$\begin{aligned} y &= \frac{3}{5}x \\ 3x - 5y &= 15 \end{aligned}$$

2)
$$\begin{aligned} 6x - 2y &= -4 \\ y &= 3x + 2 \end{aligned}$$

4)
$$\begin{aligned} x + 3y &= 12 \\ x - y &= 8 \end{aligned}$$