

Applications of Linear Systems of Equations Video Lecture

Section 4.5

Course Learning Objective:

Solve and model applications based on linear systems.

Weekly Learning Objectives:

- 1) Solve problems that can modeled by a system of two linear equations.**
- 2) Solve problems that can modeled by a system of three linear equations.**

Applications of Linear Systems of Equations

A pharmacist needs 500 milliliters of a 20% Phenobarbital solution but has only 5% and 25% Phenobarbital solutions available. Find how many milliliters of each he should mix to get the desired solution.

A grocer needs to mix cashews worth \$6 per pound with peanuts worth \$2 per pound to obtain 10 pounds of a mixture worth \$3 per pound. How many pounds of each kind of nut must be used?

When a plane flies with the wind, it can travel 4200 miles in 6 hours. When the plane flies in the opposite direction against the wind, it takes 7 hours to fly the same distance. Find the speed of the plane in still air and the speed of the wind.

With the current you can row 24 miles in 3 hours. Against the same current, you can row only $\frac{2}{3}$ of this distance in 4 hours. Find your rowing speed in still water and the speed of the current.

A rectangular lot whose perimeter is 320 feet is fenced along three sides. An expensive fencing along the lot's length costs \$16 per foot, and an inexpensive fencing along the lot's two side widths costs only \$5 per foot. The total cost of the fencing along the three sides comes to \$2140. What are the lot's dimensions?

Three numbers are unknown. Three times the first number plus the second number plus twice the third number is 5. If 3 times the second number is subtracted from the sum of the first number and 3 times the third number, the result is 2. If the third is subtracted from 2 times the first number and 3 times the second number, the result is 1. Find the numbers.

Find the values of x and y in the following triangle:

