Problem Solving and Business Applications Using System of Equations

Two Investments with Simple Interest

Ex 1.

Let's say you decide to invest $50,000 in two accounts: one that earns 5% interest annually and one that earns 8% interest annually. To earn $3400 per year in interest, how much would you need to invest in each account?

Mixtures

Ex 2.

Suppose you were a bartender and wanted to mix Kahlua (which has 20% alcohol content) and Vodka (which has about 40% alcohol content) to make a 4 gallon drink that had 25% alcohol content. How many gallons of each would you need to mix?

Ex 3.

You're working for a company called Jrader Toes, and want to come up with a healthy snack mix. You decide to mix golden raisins (which are $2.00 per pound) and almonds (which are $3.50 per pound). How many pounds of raisins and how many pounds of almonds do you need to make a 9-pound mixture that would cost $3.00 per pound?

Motion

distance = rate × time

Ex 4.

When an airplane flies with the wind, it can travel 450 miles in 3 hours. When the same airplane flies in the opposite direction against the wind, it takes 5 hours to fly the same distance. Find the average rate of the plane in still air and the average rate of the wind.
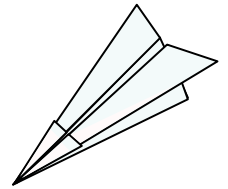
Practice

1. You invest $11,000 in bonds and stocks. The bonds earn 5% annual interest, and the stocks earn 8% annual interest. If the total interest earned for the year is $730, how much did you invest in bonds and how much did you invest in stocks?

2. A grocer needs to mix raisins at $2.00 per pound with granola at $3.25 per pound to obtain 10 pounds of a mixture that costs $2.50 per pound. How many pounds of raisins and how many pounds of granola must be used?

3. 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 rate of the plane in still air and the rate of the wind.

4. A coin purse contains a mixture of 15 coins in dimes and quarters. The coins have a total value of $3.30. Determine the number of dimes and the number of quarters in the purse.

Q: What five-letter word becomes shorter when you add two letters to it?