

Simultaneous equations - word problems

Set up simultaneous equations for each of the following problems, then solve them.

1. The length of a rectangle is twice its width. The perimeter is 30. Find its dimensions
2. The difference of two numbers is 3, and the sum of three times the larger one and twice the smaller one is 19. Find the two numbers.
3. The sum of four times the first number and three times the second number is 15. The difference of three times the first number and twice the second number is 7. Find the numbers.
4. 9 pens and five pencils cost \$3.2, and 7pens and 8 pencils cost \$2.9. Find the unit price for each pen and pencil.
5. Two runners start from the same point at the same time. They will be 4 miles apart at the end of two hours if running in the same direction, and they will be 16 miles apart at the end of one hour if running in opposite directions. Find their speeds.
6. A solution containing 12% alcohol is to be mixed with a solution containing 4% alcohol to make 20 gallons of solution containing 9% alcohol. How much of each solution should be used?
7. If sum of two numbers be 45 and their difference being 15, find the numbers.
8. If twice the son's age in years is added to the father's age, the sum is ~~70~~⁹⁵. But if the father's age is added to the son's age, the sum is ~~95~~₇₀. Find the ages of father and son.
9. 2 tables and 3 chairs together cost 2000 dollars whereas 3 tables and 2 chairs together cost 2500 dollars. Find the cost of a table and a chair.

10. 3 bags and 4 pens together cost 257 dollars whereas 4 bags and 3 pens together cost 324 dollars. Find the cost of a bag and 10 pens
11. The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by 3, the fraction becomes $\frac{1}{2}$. Find the fraction