

Many problems with 2 unknowns can be solved using a system of 2 linear equations. To solve these types of problems you should:

- 1) Assign variables to each of the unknowns
- 2) Write 2 equations showing the relationships between the variables. Each equation should include both variables.
- 3) Solve the system of equations using any method (graphing, substitution, elimination)
- 4) Check your solution
- 5) Clearly communicate your final answer

Example 1: Find the value of two numbers if their sum is 13 and their difference is 5.

Example 2: The Sports Shop sells Nike running shoes for \$82 a pair and Air Jensen basketball shoes for \$95 a pair. One day, the Sports Shop sells 75 pairs of Nike and Air Jensen shoes totaling \$6241 in sales. How many pairs of each shoe were sold?

Example 3: A blue spruce tree grows an average of 15 cm per year. An eastern hemlock grows an average of 10 cm per year. When they were planted, a blue spruce was 120 cm tall and an eastern hemlock was 180 cm tall. How many years after planting will the trees reach the same height? How tall will that be?

Example 4: Tia had \$10 000 to invest. She invested part of it in a term deposit paying 4% per annum and the remainder in bonds paying 5% per annum. If the total interest earned after one year was \$440, how much did she invest in each account?

Example 5: A chemistry teacher needs to make 10L of 42% sulfuric acid solution. The acid solutions available are 30% sulfuric acid and 50% sulfuric acid, by volume. How many liters of each solution must be mixed to make the 42% solution?

Example 6: A riverboat took 2 hours to travel 24km, down a river with the current and 3 hours to make the return trip against the current. Find the speed of the boat in still water and the speed of the current.

Note:

Speed travelling with current = boat speed + current speed
Speed travelling against current = boat speed - current speed

Remember:

distance = speed \times time