1. A chemist needs 20ml of a 40% solution. She only has 15% and 65% solutions available in her lab. The chemist decides to mix some 15% with some 65% to create her own 40% solution.

How much of each solution does she need to use?

1. You are a lab worker for a large chemical company. You need a 15% acid solution for a certain test, but your supplier only ships a 10% solution and a 30% solution.

Rather than pay the hefty surcharge to have the supplier make a 15% solution, you decide to mix 10% solution with 30% solution, to make your own 15% solution. You need 10 liters of the 15% acid solution.

How many liters of 10% solution and 30% solution should you use?

1. How many liters of a 70% alcohol solution must be added to 50 liters of a 40% alcohol solution to produce a 50% alcohol solution?
2. How many ounces of pure water must be evaporated from 50 ounces of a 15% saline solution to yield a saline solution that is 10% salt?
3. How many ounces of pure water must be evaporated from 90 ounces of a 25% saline solution to make a saline solution that is 15% salt?
4. Find the selling price per pound of a coffee mixture made from 8 pounds of coffee that sells for $9.20 per pound and 12 pounds of coffee that costs $5.50 per pound.
5. How many pounds of lima beans which cost $0.90 per pound must be mixed with 16 pounds of corn which costs $0.50 per pound, to make a mixture of vegetables that costs $0.65 per pound?
6. Two hundred liters of a punch that contains 45% fruit juice is mixed with 300 liters (L) of another punch. The resulting fruit punch is 25% fruit juice. Find the percent of fruit juice in the 300 liters of punch.
7. Ten grams of sugar are added to a 40-g serving of a breakfast cereal that is already 30% sugar. What is the percent concentration of sugar in the resulting mixture?
8. Your school is holding a "family friendly" event this weekend. Students have been pre-selling tickets to the event; adult tickets are $5.00, and child tickets (for kids six years old and under) are $2.50. From past experience, you expect about 13,000 people to attend the event. But this is the first year in which tickets prices have been reduced for the younger children, so you really don't know how many child tickets and how many adult tickets you can expect to sell. Your boss wants you to estimate the expected ticket revenue. You decide to use the information from the pre-sold tickets to estimate the ratio of adults to children, and figure the expected revenue from this information.

You consult with your student ticket-sellers, and discover that they have not been keeping track of how many child tickets they have sold. The tickets are identical, until the ticket-seller punches a hole in the ticket, indicating that it is a child ticket. But they don't remember how many holes they've punched. They only know that they've sold 548 tickets for $2460. How much revenue from each of child and adult tickets can you expect?

Reflection and Extension:

How do you feel about these types of problems? How does the strategy you use to solve these types of problems relate to chemical mixture or percent composition problems?

|  |
| --- |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

Draw the diagram(s) you might use for the mixture problems:

CHALLENGE Problems:

Coin Problem1-

Paul has $31.15 from paper route collections. He has 5 more nickels than quarters and 7 fewer dimes than quarters. How many of each coin does Paul have?

Coin Problem 2-

Bobbie has $1.54 in quarters, dimes, nickels, and pennies. He has twice as many dimes as quarters and three times as many nickels as dimes. The number of pennies is the same as the number of dimes. How many of each coin does he have?