

1. There is a flask with an unknown number of liters of solution. This solution is 4% acid by volume. Write an expression that gives the amount of pure acid in the flask. $x = \text{Amount of solution}$

$$0.04x$$

2. There is another flask with an unknown number of liters of solution. This solution is 12% acid by volume. Write an expression that gives the amount of pure acid in the flask. $y = \text{Amount of solution}$

$$0.12y$$

How many liters of 4% and 12% solution should be mixed together to end up with 20 liters of a solution that is 9% acid?

Liters of Solution $x + y = 20$

Liters of Acid $0.04x + 0.12y = 1.8$

now solve this system of equations using substitution or elimination.

$x = 7.5$ liters of 4% solution
 $y = 12.5$ liters of 12% solution

3. You mix together these two acid solutions to get a total of 20 liters of a solution that is 9% acid by volume. How many liters of pure acid do you have now?

$$(0.09)(20) = 1.8 \text{ liters of pure acid}$$

4. Use the information from these three questions to write an equation.

Liters of
pure acid

$$0.04x + 0.12y = 1.8$$

5. What equation can you write using the fact that there are a total of 20 liters of solution?

Liters of
Solution

$$x + y = 20$$

You want to create 8 gallons of an acid solution that is 12% acid by volume. All you have on the shelf are solutions that are 15% acid and 10% acid by volume.

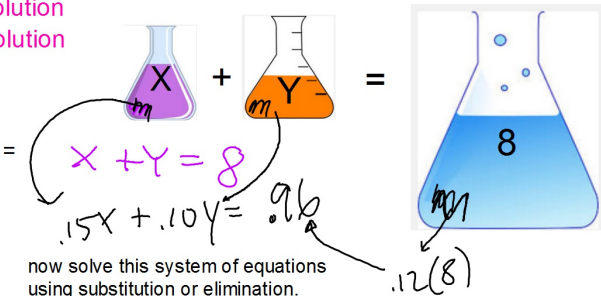
How many gallons of each should you mix together?

$X = \text{gallons of 15\% solution}$
 $Y = \text{gallons of 10\% solution}$

Equations:

Total Gallons of solution =

Total Gallons of Acid =



$x = 3.2$ gallons of 15% solution
 $y = 4.8$ gallons of 10% solution

You are going to mix together two kinds of window cleaner. One of the cleaners has 2% ammonia and the other has 5% ammonia.

How many ounces of each acid solution should you use so that you will end up with 24 ounces of a mixture that is 3% ammonia?

X=ounces of 2% ammonia Y=ounces of 5% ammonia

Equations:

$$\text{Total Ounces of solution} = x + y = 24$$

$$\text{Total Ounces of Ammonia} = 0.02x + 0.05y = 0.03(24)$$

$$0.02x + 0.05y = 0.72$$

now solve this system of equations
using substitution or elimination.

x = 16 ounces of 2% ammonia solution
y = 8 ounces of 3% ammonia solution

You can now finish Hwk #1.

You want to create 36 ounces of a drink that is 18% sugar. All you have available is a drink that is 13% sugar and one that is 21% sugar. How many ounces of each of these should you mix to get the desired result?

$$x + y = 36$$

$$.13x + .21y = 6.48$$

now solve this system of equations
using substitution or elimination.

x = ounces of 13% = 13.5 ounces
y = ounces of 21% = 22.5 ounces

On a shelf you have some bags of bird seed that are 27% sunflower seeds and some that are 37% sunflower seeds. You want to create 50 pounds of a new bird seed for your feeders that is 31% sunflower seeds. How many pounds of each of the mixtures should you combine to get the desired result?

x = lbs of 27% = 30 lbs
y = lbs of 37% = 20 lbs

$$x + y = 50$$

$$.27x + .37y = 15.5$$

now solve this system of equations
using substitution or elimination.