

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) Solve mixture problems using substitution or elimination.

You should have already previewed the video for today's lesson.

You do NOT have to copy the video solution to your handout.

You need to understand how to write proper "let" statements, and be able to create 2 equations based on the given information.

Collect homework on Elimination

Please submit **Tuesday's** homework, with your name on the top.

(Just the "elimination" part of the homework.)

p. 40 #1bd*, 2a, 4a

*only show a check for 1d

p. 448 #3c

First preview mixture problem using beakers in the pod?



p.46

1. Leanne works at a greenhouse. She needs to plant a total of 32 bulbs. Two types of bulbs are available. She is asked to plant three times as many crocus bulbs as tulip bulbs. How many of each should she plant?

Let c represent the number of crocus bulbs.

Let t represent the number of tulip bulbs.

$$c + t = 32$$

$$c = 3t$$

$$(3t) + t = 32$$

$$4t = 32$$

$$t = 8$$

$$\begin{array}{r} c \quad t \\ \hline c = 3t \\ \hline \end{array}$$

p.46

4. Rehman invests his summer earnings of \$3050. He invests part of the money at 8%/year, and the rest at 7.5%/year. After 1 year, these investments earn \$242 in simple interest. How much did he invest at each rate?

Let x represent the amount invested at 8%, in dollars
 Let y represent the amount invested at 7.5% in dollars

$$x + y = 3050 \rightarrow x = 3050 - y$$

$$0.08x + 0.075y = 242$$

$$1000^* \left\{ \begin{array}{l} 80x + 75y = 242000 \end{array} \right.$$

$$80(3050 - y) + 75y = 242000$$

$$244000 - 80y + 75y = 242000$$

$$-5y = 242000 - 244000$$

$$-5y = -2000$$

$$y = \frac{-2000}{-5}$$

$$= 400$$

p.47

16. A class trip is being planned. For one option, each student will pay \$630. This includes two meals a day and accommodation for the 9-day trip. The other option offers three meals a day and accommodation for the 9 days. This second option costs \$720. What is the cost per meal? What is the cost per day for accommodation?

Let m represent the cost per meal in dollars.
Let a represent the cost for accommodations in dollars.

$$18m + 9a = 630$$

$$27m + 9a = 720$$

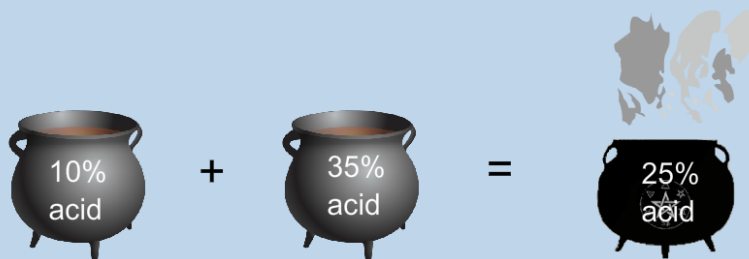
Mixture Problems - Solutions



Example 2 Magic Potion Solution

MathWiz needs to make 5 litres of a magic potion that is 25% acid to add some sizzle in the upcoming Magic Show. He has one acid solution in his lab that is 10% acid and another that is 35% acid.

Determine the volume of each acid solution that he needs to mix in order to make 5 litres of the magic potion?



Mixture Problems - Solutions



Example 2 Magic Potion Solution

An acid solution is a mixture of water and pure acid.

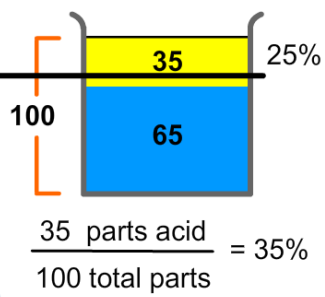
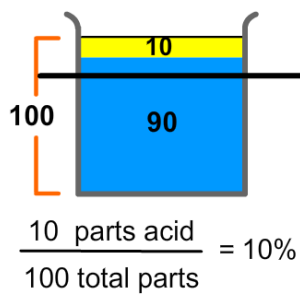
10% acid solution

- 10 parts acid
- 90 parts water



35% acid solution

- 35 parts acid
- 65 parts water



Mixture Problems - Solutions

Math/Wiz

Example 2 Magic Potion Solution

Determine the volume of each solution that he needs to mix in order to make 5 litres of the new magic potion?

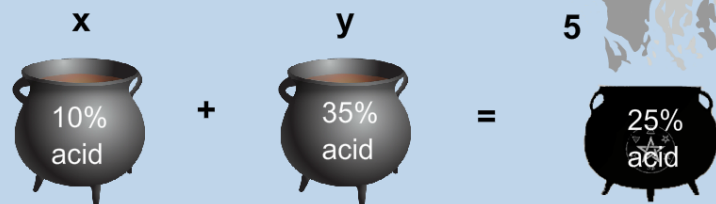
Let x be the volume of the **10% acid** solution needed.

Let y be the volume of the **35% acid** solution needed.

Total litres

of the solution → ① $x + y = 5$

Pure acid only → ② $0.10x + 0.35y = 0.25(5)$



Mixture Problems - Solutions



Example 2 Magic Potion Solution

$$\textcircled{1} \quad x + y = 5 \quad \longrightarrow \quad x = 5 - y$$

$$\textcircled{2} \quad 0.10x + 0.35y = 0.25(5) \quad \longrightarrow \quad 0.1x + 0.35y = 1.25$$

Sub $\textcircled{1}$ into $\textcircled{2}$ to solve for y. Sub in $\textcircled{1}$ to solve for x.

$$\begin{array}{l}
 0.1(5 - y) + 0.35y = 1.25 \\
 0.50 - 0.1y + 0.35y = 1.25 \\
 0.25y = 1.25 - 0.50 \\
 0.25y = 0.75 \\
 y = 0.75 / 0.25 \\
 \underline{y = 3 \text{ Litres}} \quad \text{(35\% acid)}
 \end{array}$$

$$\begin{array}{l}
 x + y = 5 \\
 x + 3 = 5 \\
 x = 5 - 3 \\
 \underline{x = 2 \text{ Litres}}
 \end{array}$$

(10% acid)

∴ 2 L of the 10% acid solution and 3L of the 35% acid solution are needed to make 5L of the 25% acid Magic Potion.

TODAY'S Pracce:
p. 47 #9, 10, 13, 14

OPTIONAL Mixture Challenge p. 47 #20