ALLIGATIONS PRACTICE PROBLEM ANSWERS

PRACTICE PROBLEM 1

A prescription is brought in for 300 g of 5% coal tar ointment. The pharmacy has in stock 3% coal tar ointment and coal tar.

i. What is the total desired quantity of the new product?

Answer = c

a. 300 grains
b. 300%
c. 300 grams

A prescription is brought in for **300 g** of 5% coal tar ointment.

ii. What strengths of coal tar does the pharmacy have in stock?

Answer = b

a. 5%; 100%
b. 3%; 100%
c. 3%; 5%

The pharmacy has in stock 3% coal tar ointment and coal tar.
Remember, a pure product has a strength of 100%. In this case, coal tar is a pure product.

iii. What is the desired strength of the requested new preparation?

Answer = b

a. 3%
b. 5%
c. 100%

A prescription is brought in for 300 g of **5% coal tar ointment**.

PRACTICE PROBLEM 2

ii. The pharmacy receives an order for 76% Isopropyl Alcohol, 1L. In stock, the pharmacy has 91% Isopropyl Alcohol, 70% Isopropyl Alcohol, 50% Isopropyl Alcohol, and Distilled Water.

i. What is the desired strength of the new product?

Answer = c

a. 50%

b. 70%
c. 76%
d. 91%

The pharmacy receives an order for **76% Isopropyl Alcohol**, 1L.

ii. What strengths of isopropyl alcohol does the pharmacy have in stock?

Answer = d

a. 70%, 76%, 91%
b. 50%; 70%; 76%
c. 50%; 76%; 91%
d. 50%; 70%; 91%

In stock, the pharmacy has **91% Isopropyl Alcohol, 70% Isopropyl Alcohol, 50% Isopropyl Alcohol, and Distilled Water**.

iii. What is the desired quantity of the requested new preparation?
Answer = a

a. 1L
b. 1kL
c. 1dL
d. 1gal.

The pharmacy receives an order for 76% Isopropyl Alcohol, **1L**.

PRACTICE PROBLEM 3

A prescription for Ammoniated Mercury Ointment 7%, 450g, with a signa of *apply ud bid*, is received at your pharmacy. The pharmacy only has 3% and 10% Ammoniated Mercury available. Using alligation, calculate the amount of each available product needed to prepare this prescription.

R. Scott Peterson, MD
1215 Main Street (555)555-7600, Office
Austin, TX 78701 (555) 555-7688, Fax

Patient: Jason Glover Date: 07/29/05
Address: 7437 Stonegate Ave, Austin, 78759

Rx:

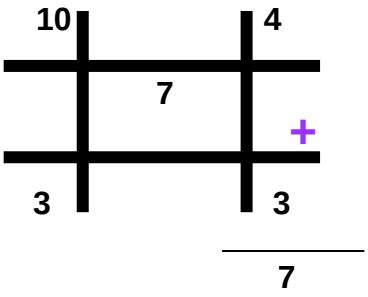
Ammoniated Mercury
Ointment 7%, 450g
Apply UD BID

No Refills.

R. Scott Peterson

Correct Answer = c

a. 192.86g of 10% and 257.14g of 3%
b. 225g of 10% and 225g of 3%
c. 257.14g of 10% and 192.86g of 3%
d. 200g of 10% and 250g of 3%



10% Ammoniated Mercury Answer = 4/7 x 450 g = 257.14 g
3% Ammoniated Mercury Answer = 3/7 x 450 g = 192.86 g

To check your work, add the final quantities. 257.14 g + 192.86 g = 450 g

Remember, if they do not add up, re-evaluate your matrix setup to make sure you have placed the correct strengths in the correct position.

PRACTICE PROBLEM 4

R. Scott Peterson, MD
1215 Main Street (555)555-7600, Office
Austin, TX 78701 (555) 555-7688, Fax

Patient: Katie Whitfield Date: 07/29/05
Address: 8932 Plaza Court, Round Rock, 78684

Rx:

Coal Tar Gel 4.5%
Disp. 2 oz
Apply to nose UD
seborrheic dermatitis.

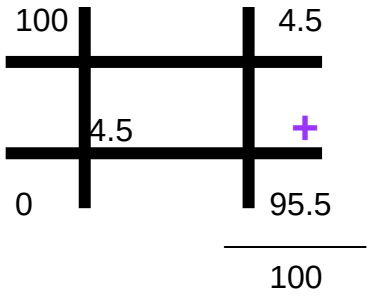
PRN Refills.

R. Scott Peterson

A pharmacy receives a prescription for Coal Tar 4.5% Gel, 2 ounces. The signa reads *Apply to nose UD for seborrheic dermatitis*. In stock, the pharmacy has coal tar and clear gel-base. How many grams of each are needed to prepare this prescription?

Correct Answer = d

a. 37g of Coal Tar and 23g of Clear gel base
b. 23g of Coal Tar and 37g of Clear gel base
c. 57.3g of Coal Tar and 2.7g of Clear gel base
d. 2.7g of Coal Tar and 57.3g of Clear gel base



Remember, 2 ounces = 60g

Coal Tar Answer = 4.5/100 x 60 g = 2.7 g
Clear gel base Answer = 95.5/100 x 60 g = 57.3 g

Use equation Parts of each strength/Total number of parts x Final required volume.

To check your work, add the final quantities. If the sum of the two numbers is equal to the total desired volume, then you have calculated the appropriate volume of each product needed to prepare the prescription. If they do not, re-evaluate your matrix setup to make sure you have placed the correct strengths in the correct position, recheck your math and verify your calculations.
2.7 g + 57.3 g = 60 g

PRACTICE PROBLEM 5

Caduceus Trauma and Medical Center | **PATIENT INFORMATION**
157 North 11th Street — Austin, TX 78701 | *Travis Gagner — ID: 564775830394*
(555)555-7600, Main | *Room 522, Height: 6ft 1in, Weight 86kg*

Start IV Fluids STAT:

1L D_5W with 16% Sodium Chloride

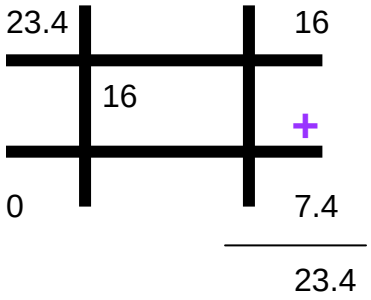
125mL/hr @ 60gtts/min

Voice Order by MD Sunita Chandari/Alex Jackson, RN

pharmacy has a 1 L bag of D_5W and 500mL of 23.4% Concentrated Sodium Chloride. How many milliliters of each are needed to prepare this order?

Answer = b

a. 316.2mL of 23.4% sodium chloride and 683.8mL of Dextrose 5%
b. 683.8mL of 23.4% sodium chloride and 316.2mL of Dextrose 5%
c. 600mL of 23.4% sodium chloride and 400mL of Dextrose 5%
d. 400mL of 23.4% sodium chloride and 600mL of Dextrose 5%



Use equation Parts of each strength/Total number of parts x Final required volume.

Sodium Chloride 23.4% Answer = 16/23.4 x 1000 mL = 683.8 mL
Dextrose 5% Answer = 7.4/ 23.4 x 1000 mL = 316.2 mL
Dextrose 5% is treated as water (0%) in this problem because it is acting as a diluent – it will not effect the sodium chloride concentration since it does not have sodium chloride in it.

To check your work, add the final quantities. If the sum of the two numbers is equal to the total desired volume, then you have calculated the appropriate volume of each product needed to prepare the prescription. If they do not, re-evaluate your matrix setup to make sure you have placed the correct strengths in the correct position, recheck your math and verify your calculations.

Answer = 683.8 mL + 316.2 mL = 1000 mL