How to Solve Ratio Strength Calculations - Part 1

**RxCalculations** 

Knowing **how to solve ratio strength calculations** is an important skill every pharmacy student needs to acquire prior to practicing as a pharmacist. It is one of the common ways a pharmaceutical preparations concentration may be expressed and describes drug concentration in terms of a ratio. Specifically, the drug concentration is defined in terms of one unit of solute contained in a total amount of solution or mixture.

In this blog post, you will learn how to solve three NAPLEX type ratio strength calculations questions. Special emphasis is placed on how to properly analyze ratio strength calculations questions so you can solve them accurately and expeditiously.

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## **Video Transcription**

I'm going to show you how to solve ratio strength calculation questions and we are starting right now.

Hello, this is Dr. Danquah and if this is your first time here and you would like to learn pharmaceutical calculations, tips, tricks and more then start by subscribing and clicking the bell so you don't miss anything.

So this tutorial is part of a series on ratio strength calculations, so be sure to check the other videos out I'll put links the description and the card should be showing pretty shortly, but let's get right to it and start by tackling this question.

### Example 1

The question says calculate the amount of drug in grams required to prepare 120 milliliters of a 1:40 antiseptic solution.

Now the first thing we want to do is recall the definition of ratio strength. So our ratio strength here is 1:40. This is a solution. So it actually means you have one gram in 40 milliliters.

And what you want to figure out is how many grams will be required to prepare 120 milliliters. So you can go ahead and solve for our unknown which is x.

So x is equal to one gram times 120 milliliters divided by 40 milliliters and x is going to be equal to 3 grams.



#### Example 2

Let's take a look at another example.

This question says how many liters of a 1:1000 solution can be prepared from 25 g of drug substance?

So the first thing we want to do is identify the ratio strength in this question it is 1:1000.

And if you recall from the definition 1:1000 actually means you have one gram of drug in a 1000 milliliters of solution. So we now need to set up a proportion. And what we want to do is we want to prepare some quantity or solution from the 25 grams.

So in this instance, the 25 grams goes in the numerator, and we need to figure out how many milliliters that will give us. So we can go ahead and solve for x.

x is going to be equal to 25 grams times 1000 milliliters divided by one gram. The grams cancel out, and you're going to end up with 25,000 milliliters.

But we don't stop here because the question says how many liters and so the next thing we want to do is do a quick conversion.

So we can say that a 1000 milliliters is available in one liter, the milliliters cancels out, the thousand cancels out and now you have 25 liters.



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How many liters of a 1:1,000 solution can be prepared from 25 g of drug substance?  $\frac{1}{9} = \frac{259}{250}$   $= 259 \times 1000 \text{ mL}}$   $\frac{1}{900} \times = 2590 \text{ mL}}{100} \times \frac{1}{100}$  = 25 L

### Example 3

So let's take a look at another question.

This question says how many milliliters of liquefied phenol should be used in compounding the following prescription?

So, we have a prescription with liquefied phenol 1:40 and then we're making a total preparation of 140 milliliters.

So the first thing we want to do is start off with the ratio strength which is 1:40 and that will actually mean that you have one milliliter of liquid phenol in 40 milliliters of preparation.

We want to figure out how many milliliters we will need for the total preparation which will be 140 milliliters.

And so we can solve for x, x is going to be equal to one milliliter times 140 milliliters divided by 40 milliliters, one set of milliliters cancels out and that's going to be equal to 3.5 milliliters.



So I hope you found this tutorial useful. If you have any questions, put them in the comments and I will address them as soon as I see them. And also if you want to learn more pharmaceutical calculations, tips and tricks, be sure to subscribe so you don't miss anything. Thank you so much for watching. Enjoy your life and I will see you next time.



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Our top quality products include affordable courses, personal consults, books, video tutorials, timed quizzes and apps designed to make you an expert in solving any pharmaceutical calculations question. We also have the largest pharmaceutical calculations online question bank which has over 1000 questions covering every important calculations topic as well as step-by-step video solutions. With all these resources at your disposal we have all you need to not only master pharmacy calculations but ace every test as well as passing your board exams.