Pharmacy Technician Basic Math Overview

INTRODUCTION

It's important to be careful and precise in pharmacy calculations, because the wrong math can mean the wrong dose, and that can mean serious trouble for the patient!

You are allowed to bring a simple four-function calculator with you to use in class and while taking the pharmacy technician certification exam. It is important and recommended that you choose a calculator that is easy to use and sits on the desk top. Choose a calculator with larger buttons and a display that is slightly tilted with numbers that are easy to read. This type of basic calculator can be purchased from your local office supply store for around $4.00 - $7.00.

This worksheet is not to deter you from taking the pharmacy technician class, but rather to inform you of calculations that will be part of your studies. The course will include instruction on how to solve these problems, but Community Education wishes for you to be informed of the content.

Addition

Please add the following:

1.50 + 10.08 + 129.49 + 1458.43=

A. 1599.50

56 mL
123 mL
+2756 mL

A. 2935 mL

Subtraction

Please subtract:

758,927oz – 276,754 oz =

A. 482,176 oz

42,634oz – 35,940oz =

A. 6,694 oz

Multiplication of Whole Numbers

Please multiply:

$$\begin{array}{r} 5687 \\ \times\ 564 \\ \hline \end{array}$$

A. 3,207,468

Division of Whole Numbers

Divide:

$$3\overline{)975}$$

A. 325

Setting Up Word Problems

In pharmacy, most problems are word problems. Here are a few examples:

> A vial of anesthetic contains 10 mL. The pharmacist asks that you add 30 mL of distilled water to the compound for mouth ulcers. How many milliliters (mL) will there be in the bottle of medication?

A. 40 mL

> The manufacturer's label tells you to add 375 mL of water to a medication for reconstitution. You have a container that holds 125 mL. How many times will you need to fill the container to reconstitute the medication correctly?

375 mL ÷ 125 mL = X

375 ÷ 125 = 3

A. You will need to fill the container 3 times to reconstitute the medication correctly.

Fractions

Fractions are parts of numbers, not whole numbers. It's very important to use fractions correctly in working with pharmacy prescriptions. These are the parts of common fractions:

Please solve: $\frac{1/2}{3/4}$

A. $2/3$

Mixed Numbers and Fractions

Please turn this improper fraction into a mixed number (whole number & fraction)

$40/15$ is equivalent to =

A. $2\frac{2}{3}$

Adding Fractions

$3/6$ and $5/8$ =

(You will need to find a common denominator to solve)

A. $1\frac{1}{8}$

Subtracting Fractions

$3/8 - 1/4$ =

(Again, you will find a common denominator before solving)

A. $\frac{1}{8}$

Multiplying Fractions

$2/3 \times 5/9$ =

A. $\frac{10}{27}$

Dividing Fractions

$$^1/_3 \div {}^1/_2 =$$

A. $\frac{2}{3}$

$$^3/_4 \div {}^1/_8 =$$

A. 6

Adding Decimals

It is important to line up the decimal points. Add zeros as place holders as needed.

Add 2.35 + 3.1 + 4.678.

2.350
3.100
+4.678

A. 10.128

Subtracting Decimals

Follow basically the same steps as with whole numbers again lining up the decimal points. Subtract 10.5 mg from 12.5 mg.

12.5 mg
-10.5 mg

A. 2.0 mg

Multiplying Decimals

37.25 (2 decimal places)
X 1.5 (1 decimal place)

A. 55.875

Dividing Decimals

Try these:

$0.4\sqrt{0.28}$

A. 0.7

Let's do a question in a word problem form.

A stock bottle of medication contains 500 mg of drug that can be used in compounding medications. You used 125 mg for one prescription and 62.5 mg for a second prescription, while the third prescription was for a child and only 25.25 mg was necessary. How much medication has been used? How much medication is left of the original medication?

A: There will be 287.25 mg of the drug left in the bottle.

The amount of the drug used is 125 + 62.5 + 25.25 = 212.75 mg

Next, subtract that amount from the total amount contained in the stock bottle

500 mg – 212.75 mg = 287.25 mg

Percentages

Converting Percentage into Fractions

Convert 12% to a fraction:

A. $^{3}/_{25}$

Converting Fractions into Percentages

Convert $^{1}/_{2}$ into a percentage.

A. 50%

Percentage Exercises

Convert the following fractions into a percentage:

1. $^{1}/_{6}$ =

   A. 16.67%

2. $^{2}/_{5}$ =

   A. 40%

FYI: You will learn about Basic Conversions

- 5ml = 1 teaspoon (tsp.)
- 15ml = 1 tablespoon (tbsp.)
- 30 ml = 1 ounce
- 1000 ml = 1 liter
- 480 ml = 1 pint = 16 ounces
  2 pints = 1 quart = 32 ounces
- 3840 ml = 8 pints = 4 quarts = 1 gallon = 128 ounces
- 1 grain = 65 mg (5gr aspirin = 325 mg)
- 1 grain = 60 mg (thyroid, codeine, nitroglycerin, Phenobarbital) (0.5gr = 30mg)
- 1 Kg = 2.2 pounds
- 1 gram = 1000 mg
- 20 gtt = 1 mL
- 9°C = 5°F - 160

FYI: You will also use Roman Numerals

Common roman numerals found in pharmacy are:

SS = ½
I = 1
V = 5
X = 10
L = 50
C = 100
M = 1000

Need MATH help? Free services are available from CR's Adult Education program. Please call Margaret Talcott in Adult Education at 476-4521 to set up math help.