Name:_____
Blk:_____Date:_____

Chemistry 11
STOICHIOMETRY Calculations Involving MOLAR CONCENTRATION

Recall that MOLARITY =

IMPT: the only time that you can use the value _____ is when the question states specifically that you have a **gas @ STP**!!!

Example 1. Tums® is an antacid tablet that is made up primarily of $CaCO_3$ (s). It works to neutralize stomach acid (HCl (aq)) to produce solid calcium chloride , carbon dioxide gas and liquid water.
a. If a single tablet has a mass of 0.750 g, what *volume* of stomach acid, having a [HCl] = 0.0010 M, is neutralized by a single tablet?
Step 1. Write out the balanced equation:

Step 2. Use last lesson's diagram + your knowledge of MOLARITY to identify the unknown, the initial and the conversion factors and solve:

b. What *volume of CO_2 (g) at STP* is produced if 1.25 L OF 0.0055 M HCl reacts with an excess of $CaCO_3$?
Step 1. Write out the balanced equation:

Step 2. Use last lesson's diagram + your knowledge of MOLARITY to identify the unknown, the initial and the conversion factors and solve:

Ex: 17 - 20

17. A flask containing 450 mL of 0.500 M HBr was accidentally knocked to the floor. How many grams of K_2CO_3 would you need to put on the spill to completely neutralize the acid?

18. The acetic acid in a 2.5 mol/L sample of a solution of a kettle scale remover is reacted with an excess of a lead(II) nitrate solution to form a precipitate, which is then filtered and dried. The mass of the precipitate is 8.64 g. What volume of the solution was required to produce that mass?

19. How many milliliters of a 0.610 M NaOH solution are needed to completely neutralize 25.0 mL of a 0.356 M phosphoric acid solution?

20. What volume of hydrogen gas is formed at STP by the reaction of excess zinc metal with 150 mL of 0.185 mol/L hydroiodic acid?