Chemistry: *Solutions*  Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hr \_\_

Use the “Solution Guide” to determine how to mix the following solutions. Acids and bases are purchased in concentrated forms; however, often times we want to use a more dilute concentration of these solutions. Your job is to look at the “Solution Guide” and calculate the volume of acid / base needed.

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| ***Concentrated Solution*** | ***Molarity of Concentrate (M)*** |
| Acetic Acid, Glacial (CH3COOH) | 17.5 |
| Ammonium Hydroxide (NH4OH) | 14.5 |
| Formic Acid (HCOOH) | 23.6 |
| Hydrochloric Acid (HCl) | 12.1 |
| Hydrofluoric Acid (HF) | 28.9 |
| Nitric Acid (HNO3) | 15.9 |
| Perchloric Acid, 60% (HClO4) | 9.1 |
| Perchloric Acid, 70% (HClO4) | 11.7 |
| Phosphoric Acid (H3PO4) | 14.8 |
| Potassium Hydroxide (KOH) | 11.7 |
| Sodium Hydroxide (NaOH) | 19.4 |
| Sulfuric Acid (H2SO4) | 18.0 |

1. What volume of hydrochloric acid is needed to make 3.0 L of 1.0 M HCl?
2. What volume of ammonium hydroxide is needed to make 250 mL of 0.5 M NH4OH?
3. If 300 mL of 6 M HNO3 is required and I only have 40 mL of 15.9 M nitric acid, will I be able

to make 300 mL of 6 MHNO3 acid? Explain

1. How many grams of NaOH are added to make 1.0 L of 1.0 M NaOH solution?
2. The process of solution formation of NaOH in water is extremely exothermic. What special

precautions should I take in mixing this solution? Write down a sequence of steps I should

follow to make a 5.0 M solution of NaOH? [Be specific…type of glassware to use, etc…]

