1. Calculate the normality \( N = \frac{\text{eq}}{\text{L}} \text{ or } \frac{\text{mg}}{\text{mL}} \) of 20 mL of an acid solution that required 8.0 mL of 0.02 N base to neutralize (i.e., turn pink).

2. Exchangeable K is measured by extracting 4.0 g soil with 50 mL of salt solution. The solution contained 0.09 mg Mg/L. Calculate mg Mg/100 g.

3. A soil contains the following exchangeable cations:
   
   acitivity (H+AI) = 3.1 Ca = 1.9, Mg = 0.7, K = 0.4, Na = 0.1 (all in mg/100g). Calculate CEC and EBS.

4. Calculate the milliequivalent wt's (mg/meg) for Ca, K and AI (atomic wts (g/mole): AI = 27, Ca = 40, K = 39).

5. A soil contains 0.22 meg K/100g. Convert to lbs/acre.

6. A soil contains 1.7 meg acidity/100g. How much CaCO_3 would be needed to neutralize this acid?

7. Exchangeable acidity is measured by extracting 3.0 g soil with 60 mL of salt solution. 27 mL of the solution is titrated to the end point with 7.2 mL of 0.008 N base.

**Answers:**
1. 20 \( \times \) 8 = 0.02, \( x = 0.008 \) N
   \( 2. (\frac{0.09 \text{ mg}}{\text{L}} \times \frac{0.05 \text{ L}}{\text{X}} \times 100 = \frac{0.11 \text{ mg}}{\text{100 g}} \)

2. 6.2 = CEC

3. \% BS = \frac{3.1}{6.2} = 50%

4. Ca = 20, K = 39, Al = 9 mg/meg

5. 0.22 mg/100g \times \frac{39 \text{ mg}}{\text{meg}} \times \frac{1000 \text{ g}}{\text{kg}} = 86 \text{ ppm} \times 2 = 172 \text{ lbs/acre}

6. \text{mg wts of } \text{CaCO}_3 = \frac{100}{2} = 50 \text{ mg/meg}

7. Need 1.7 meg CaCO_3/100g \times \frac{50 \text{ mg}}{\text{meg}} = 85 \text{ ppm} \times 2 = 170 \text{ lbs lime/acre}

8. \( 27 \times \frac{7.2}{0.008} \times \frac{100}{\text{meg/mL acid}} = 0.0081 \text{ meg/mL acid} \times \frac{100}{3} \text{ mg/meg}

(sorry about the coffee spill...)}