Molarity Review

$$\text{Molarity} = \frac{moles}{Liters}$$

Examples:

1. What is the molarity of 350.0 mL solution that contains 50.00 grams of sodium hydroxide?

   To solve:

   Turn 350.0 mL to L:

   (x) L = 350.0 mL | 1 L | = 0.3500 L

   1000 mL

   Turn 50.00 g of sodium hydroxide into moles:

   (x) mol = 50.00 g NaOH | 1 mol | = 1.250 mol

   40.00 g

   Now calculate molarity:

   M = mol   = 1.250 mol   = 3.571 M
       L   0.3500 L

2. How many grams of sodium hydroxide are needed to make 50.00 mL of a 0.40 M solution?
   (*Remember that 0.40 M =* $\frac{0.40\ mol}{1\ L}$; *which has 2 SF*)

   To solve:

   One problem method:

   (x) g = 50.00 mL | 1 L | 0.40 mol | 40.00 g | = 0.80 g

   1000 mL | 1L | 1 mol

   Another method:

   Solve for moles:

   M = mol   0.40 M = X mol   X mol = 0.020 mol
       L   0.0500 L

   Now solve for g:

   (x) g = 0.020 mol | 40.00 g | = 0.80 g

   1 mol