Answer on Question #56066 - *Chemistry - General chemistry*

Question:

Sodium hydroxide, NaOH, is a strong base that is sometimes used as a cleaning agent since it can be used to dissolve proteins, grease, oils, and fats.

Rank the following in increasing order of their molarity.

Rank from lowest to highest. To rank items as equivalent, overlap them.

1. 6.625 g of NaOH dissolved in 250 mL of water

2. 8.00 g of NaOH dissolved in 500 mL of water

3. 0.530 g of NaOH dissolved in 100 mL of water

4. 63.0 g of NaOH dissolved in 1.00 L of water

Solution:

In general the molarity (C) can be calculated from the formula:

C(NaOH)=n(NaOH)/V(water), where V is a Volume of water in L (1L=1000mL)

n - is mole number of NaOH, and can be calculated as follows:

n(NaOH)=m(NaOH)/M(NaOH), where M – is molar mass of NaOH which is 40 g/mol

So the combined formula is:

C(NaOH)=[m(NaOH)/M(NaOH)]/V(water)

C_1(NaOH)=[6.625/40]/0.25=0.663 mol/L

C_2(NaOH)=[8/40]/0.5=0.4 mol/L

C_3(NaOH)=[0.53/40]/0.1=0.133 mol/L

C_4(NaOH)=[63/40]/1=1.575 mol/L

Answer:

C	0.133 mol/L	0.4 mol/L	0.663 mol/L	1.575 mol/L
Number	3	2	1	4