Answer on Question #63215 - Chemistry - General Chemistry

What's the concentration (in molarity) of a sodium hydroxide solution containing 120 grams of NaOH in a total volume of 1200 mL? (Remember there are 1000 mL in 1 L!)

Molarity problem, so get our your periodic table and use the equation:

Molarity = moles of solute / Liters of solution

A.
2.5 M

B.
400 M

C.
0.4 M

D.
0.0025 M

Solution

$$v(NaOH) = \frac{v(NaOH)}{V} = \frac{m(NaOH)}{M(NaOH) \times V} = \frac{120g}{40\frac{g}{mol} \times 1.2\,L} = 2.5\frac{mol}{L} = 2.5M$$

Answer: A. 2.5M