CP Chem329 Finding M With Grams Solute And Volume Of Solution - Example Of Work

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CP Example of Work - Finding M with grams solute, volume solution

Answer the following question using appropriate work.

What is the Molarity of a Calcium bromide (Ca_1Br_2) solution that contains 32.7g of the solute and has a solution volume of 691mL?

$$mm\ Ca_1Br_2 : 1(40.g) + 2(80.g) = \frac{200.g\ Ca_1Br_2}{1\ mole\ Ca_1Br_2}$$

$$V = 691ml\left(\frac{1L}{1000ml}\right) = 0.691\ l_{solution}$$

$$32.7g\ Ca_1Br_2$$

$$n_{Ca_1Br_2} = n\ \frac{g}{\frac{g}{mole}} = \frac{32.7g\ Ca_1Br_2}{\frac{200.g\ Ca_1Br_2}{1\ mole\ Ca_1Br_2}} = 0.1635\ mole\ Ca_1Br_2$$

$$M = \frac{n_{solute}}{V_{solution}} = \frac{0.1635\ mole\ Ca_1Br_2}{0.691\ l_{solution}}$$

$$= 0.2366M = 0.237M$$

$$D.A.\quad (32.7g\ Ca_1Br_2)\left(\frac{1\ mole\ Ca_1Br_2}{200.g\ Ca_1Br_2}\right)\left(\frac{1}{691ml}\right)\left(\frac{1000ml}{1L}\right) =$$

$$0.2366\ M$$
$$= 0.237M$$