Answer on Question #50410, Chemistry, Other

1. How many moles of water does $6.02 \times 10^{23}$ molecules represent?

2. Convert $3.01 \times 10^{23}$ molecules of $C_2H_6$ to moles.

3. How many moles of glucose does $1.2 \times 10^{24}$ formula units represent?

4. How many moles of CaCl$_2$ does $2.41 \times 10^{24}$ formula units represent?

Solution 1:

$$n = \frac{N}{N_A}$$

$N_A = 6.02 \times 10^{23}$

$$n = \frac{6.02 \times 10^{23}}{6.02 \times 10^{23} \text{ mol}^{-1}} = 1 \text{ mol}$$

Answer 1:

1 mol of water

Solution 2:

$$n = \frac{N}{N_A}$$

$N_A = 6.02 \times 10^{23}$

$$n = \frac{3.01 \times 10^{23}}{6.02 \times 10^{23} \text{ mol}^{-1}} = 0.5 \text{ mol}$$

Answer 2:

0.5 moles of $C_2H_6$

Solution 3:

$$n = \frac{N}{N_A}$$

$N_A = 6.02 \times 10^{23}$

$$n = \frac{1.2 \times 10^{24}}{6.02 \times 10^{23} \text{ mol}^{-1}} = 1.99 \text{ mol}$$

Answer 3:

1.99 moles of glucose

Solution 4:

$$n = \frac{N}{N_A}$$

$N_A = 6.02 \times 10^{23}$

$$n = \frac{2.41 \times 10^{24}}{6.02 \times 10^{23} \text{ mol}^{-1}} = 4 \text{ mol}$$

Answer 4:

4 moles of CaCl$_2$

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