

Non Sibi High School

Andover's Chem 250: Introductory/Basic Chemistry

Chapter 2, Review Quiz 1 Answers

1

Convert the following:

- 0.040 milligrams neon to number of neon atoms
- 7.43×10^{25} magnesium atoms to kilograms magnesium
- a.

$$0.040 \text{ mg Ne} \left(\frac{1 \text{ g}}{1000 \text{ mg}} \right) \left(\frac{1 \text{ mol}}{20.18 \text{ g}} \right) \left(\frac{6.02 \times 10^{23} \text{ atoms}}{1 \text{ mol}} \right) = 1.2 \times 10^{18} \text{ atoms Ne}$$

b.

$$7.43 \times 10^{25} \text{ atoms Mg} \left(\frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ atoms}} \right) \left(\frac{24.31 \text{ g}}{1 \text{ mol}} \right) \left(\frac{1 \text{ kg}}{1000 \text{ g}} \right) = 3.00 \text{ kg Mg}$$

2

What is the mass in milligrams of 1.24×10^{21} molecules of $\text{C}_2\text{H}_4(\text{NH}_2)_2$?

$$1.24 \times 10^{21} \text{ molecules} \left(\frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molecules}} \right) \left(\frac{60.10 \text{ g}}{1 \text{ mol}} \right) \left(\frac{1000 \text{ mg}}{1 \text{ g}} \right) = 124 \text{ mg}$$

3

How many molecules are in 0.75 kilograms of $\text{C}_{12}\text{H}_{22}\text{O}_{11}$? How many carbon atoms are in this sample?

$$0.75 \text{ kg} \left(\frac{1000 \text{ g}}{1 \text{ kg}} \right) \left(\frac{1 \text{ mol}}{342.3 \text{ g}} \right) \left(\frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} \right) = 1.3 \times 10^{24} \text{ molecules}$$

$$1.3 \times 10^{24} \text{ molecules} \left(\frac{12 \text{ C atoms}}{1 \text{ molecule}} \right) = 1.6 \times 10^{25} \text{ C atoms}$$



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