

General Chemistry  
Mr. MacGillivray  
Practice Problems: Molar Conversions

- 1) 15 apples to doz of apples
- 2) 15 dozen apples to apples
- 3) 20.0 mol of C to atoms of C
- 4) 20 atoms of C to mol of C
- 5) 10.0 lbs of apples to apples, if each apple has a weight of 0.500 lbs.
- 6) 25 apples to lbs of apples, if each apple has a weight of 0.500 lbs.
- 7) What is the molar mass of glucose,  $C_6H_{12}O_6$ , in g/mol?
- 8) Convert 10.0 g of glucose to mol.
- 9) Convert 10.0 mol of glucose to g.
- 10) Which has a greater mass, 1 mol of  $CO_2$  or 25 g of  $CO_2$ ?
- 11) Convert 10.0 g of glucose to molecules of glucose. (Two steps!)

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- 1) 15 apples to doz of apples

$$15 \text{ apples} \times \frac{1 \text{ doz}}{12 \text{ apples}} = 1.25 \text{ doz}$$

- 2) 15 dozen apples to apples

$$15 \text{ doz} \times \frac{12 \text{ apples}}{1 \text{ doz}} = 180 \text{ apples}$$

- 3) 20.0 mol of C to atoms of C

$$20.0 \text{ mol C} \times \frac{6.02 \times 10^{23} \text{ atoms}}{1 \text{ mol}} = 1.20 \times 10^{25} \text{ atoms}$$

- 4) 20 atoms of C to mol of C

$$20 \text{ atoms C} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ atoms}} = 3.32 \times 10^{-23} \text{ mol}$$

- 5) 10.0 lbs of apples to apples, if each apple has a weight of 0.500 lbs.

$$10.0 \text{ lbs apples} \times \frac{1 \text{ apples}}{0.500 \text{ lb}} = 20.0 \text{ apples}$$

- 6) 25 apples to lbs of apples, if each apple has a weight of 0.500 lbs.

$$25 \text{ apples} \times \frac{0.500 \text{ lbs}}{1 \text{ apples}} = 12.5 \text{ lbs}$$

- 7) What is the molar mass of glucose,  $\text{C}_6\text{H}_{12}\text{O}_6$ , in g/mol?

$$\text{C: } (6 \times 12.0) = 72.0, \text{ H: } (12 \times 1.01) = 12.12, \text{ O: } (6 \times 16.0) = 96.0$$

$$180.12 \text{ g/mol} \leftarrow$$

- 8) Convert 10.0 g of glucose to mol.

$$10.0 \text{ g} \times \frac{1 \text{ mol}}{180 \text{ g}} = 0.0555 \text{ mol}$$

- 9) Convert 10.0 mol of glucose to g.

$$10.0 \text{ mol} \times \frac{180 \text{ g}}{1 \text{ mol}} = 1800 \text{ g} = 1.80 \times 10^3 \text{ g}$$

- 10) Which has a greater mass, 1 mol of  $\text{CO}_2$  or 25 g of  $\text{CO}_2$ ?

→  $1 \text{ mol CO}_2 = 44 \text{ g/mol}$  // since 1 mol weighs 44g, 1 mol has a greater mass than 25g

- 11) Convert 10.0 g of glucose to molecules of glucose. (Two steps)

$$10.0 \text{ g C}_6\text{H}_{12}\text{O}_6 \times \frac{1 \text{ mol}}{180 \text{ g}} \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} = 3.34 \times 10^{22} \text{ molecules}$$