Topic: Chemical compounds

Question: Find molecular mass.

If Beryllium Fluoride is given by the chemical symbol BeF_2 and has a molecular mass of about 47 g, and if the atomic mass of one Beryllium atom is 9 g and the atomic mass of one Fluorine atom is 19 g, find the molecular mass of a molecule containing 228 g of Fluorine.

Answer choices:

A 210 g

B 242 g

C 182 g

D 282 g

Solution: D

Based on its chemical symbol, Beryllium Fluoride contains 1 Beryllium atom and 2 Fluorine atoms. Since one Fluorine atom as a mass of 19 g, that means that a single molecule of Beryllium Fluoride contains

$$(19\text{ g})(2)$$

$$38\text{ g}$$

of Fluorine. Therefore, since the molecular mass of Beryllium Fluorine is 47 g, we can say that the mass of the Fluorine is

$$\frac{38\text{ g}}{47\text{ g}}$$

of the total mass of one molecule of Beryllium Fluorine. If we want to total molecular mass when the molecule contains 228 g of Fluorine, we can set up the proportion.

$$\frac{38\text{ g}}{47\text{ g}} = \frac{228\text{ g}}{x}$$

$$\frac{38}{47} = \frac{228\text{ g}}{x}$$

Cross multiplying, we get

$$38x = (228\text{ g})(47)$$

$$38x = 10{,}716\text{ g}$$

$$x = 282\text{ g}$$