

## Answer on Question #76718, Chemistry / Organic Chemistry

### Question:

0.36 g of triatomic X occupies 168 ml at STP. What will be the atomic mass of X?

### Solution:

At STP:

1 mole of any gas occupies 22.4 l = 22400 ml

n moles of triatomic X occupy 168 ml

Solving the proportion:

$$n = (168 \cdot 1) / 22400 = 0.0075 \text{ mol}$$

So, the molecular mass of triatomic X:

$$M = 0.36 / 0.0075 = 48 \text{ g/mol}$$

Atomic mass of X:

$$A = 48 / 3 = 16 \text{ g/mol}$$

(This is oxygen and the triatomic X is ozone).

### Answer:

Atomic mass of X: 16 g/mol