

## Gas Laws - Ideal Gas Law. (2) ~~And Applications.~~

1) What is the pressure exerted by 0.508 mol  $O_2$  in a 15.0 L container at 303 K?

$$PV = nRT \quad P = \frac{nRT}{V} = \frac{0.508 \text{ mol} \times 0.0821 \frac{\text{L atm}}{\text{mol K}} \times 303 \text{ K}}{15.0 \text{ L}}$$
$$= \boxed{0.842 \text{ atm}}$$

2) What is the Volume occupied by 16.0 g ethane gas ( $C_2H_6$ ) at 720 Torr and 18°C?

$$PV = nRT \quad P = 720 \text{ Torr} \times \frac{1 \text{ atm}}{760 \text{ Torr}} = 0.947 \text{ atm}$$

$$V = \frac{nRT}{P} \quad n = 16.0 \text{ g } C_2H_6 \times \frac{1 \text{ mol } C_2H_6}{30.07 \text{ g } C_2H_6} = 0.532 \text{ mol}$$

$$T = 18^\circ\text{C} + 273 = 291 \text{ K}$$

$$V = \frac{0.532 \text{ mol} \times 0.0821 \frac{\text{L atm}}{\text{mol K}} \times 291 \text{ K}}{0.947 \text{ atm}}$$
$$= \boxed{13.4 \text{ L}}$$