

# Answers to Avogadro's Law Sheet

1)  $16 \text{ g SO}_2 \times 1 \text{ mol SO}_2 / 64.07 \text{ g SO}_2 = 0.25 \text{ mol SO}_2$

$0.25 \text{ mol He} \times 4.00 \text{ g He} / 1 \text{ mol He} = 1.0 \text{ g He}$

2)  $2100 \text{ g CO}_2 \times 1 \text{ mol CO}_2 / 44.01 \text{ g CO}_2 = 47.72 \text{ mol CO}_2$

$47.72 \text{ mol O}_2 \times 32.00 \text{ g O}_2 / 1 \text{ mol O}_2 = 1526.4 \text{ g O}_2$

3)  $220 \text{ g Cl}_2 \times 1 \text{ mol Cl}_2 / 70.9 \text{ g Cl}_2 = 3.10 \text{ mol Cl}_2$

3.10 mol Ne in 10 L so 6.20 mol Ne in 20 L.

$6.20 \text{ mol Ne} \times 20.18 \text{ g Ne} / 1 \text{ mol Ne} = 125 \text{ g Ne}$

4) Cylinder 1:  $537.2 \text{ g (container + NH}_3) - 524.3 \text{ g (container)} = 12.9 \text{ g of NH}_3$

$12.9 \text{ g NH}_3 \times 1 \text{ mol NH}_3 / 17.03 \text{ g NH}_3 = 0.76 \text{ mol NH}_3$

$0.76 \text{ mol NH}_3 \times 38 \text{ g F}_2 / 1 \text{ mol NH}_3 = 28.8 \text{ g F}_2$

Cylinder 2 :  $487.6 \text{ g (container)} + 28.8 \text{ g (F}_2) = 516.4 \text{ g total}$