

more mass problems.



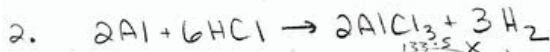
a)  $1.00 \text{ mol NO}_2 \left( \frac{2 \text{ mol HNO}_3}{3 \text{ mol NO}_2} \right) \left( \frac{63.0 \text{ g}}{1 \text{ mol HNO}_3} \right) = 42.0 \text{ g HNO}_3$

b)  $9.20 \text{ g NO}_2 \left( \frac{1 \text{ mol NO}_2}{46.0 \text{ g}} \right) \left( \frac{1 \text{ mol H}_2\text{O}}{3 \text{ mol NO}_2} \right) = 0.067 \text{ mol H}_2\text{O}$

c)  $25.0 \text{ mol NO} \left( \frac{3 \text{ mol NO}_2}{1 \text{ mol NO}} \right) \left( \frac{46.0 \text{ g}}{1 \text{ mol NO}_2} \right) = 3.45 \times 10^3 \text{ g}$

d)  $7.20 \text{ g H}_2\text{O} \left( \frac{1 \text{ mol H}_2\text{O}}{18.0 \text{ g}} \right) \left( \frac{2 \text{ mol HNO}_3}{1 \text{ mol H}_2\text{O}} \right) \left( \frac{63.0 \text{ g}}{1 \text{ mol HNO}_3} \right) = 50.4 \text{ g}$

e)  $126 \text{ g HNO}_3 \left( \frac{1 \text{ mol HNO}_3}{63.0 \text{ g HNO}_3} \right) \left( \frac{3 \text{ mol NO}_2}{2 \text{ mol HNO}_3} \right) \left( \frac{46.0 \text{ g}}{1 \text{ mol NO}_2} \right) = 138 \text{ g NO}_2$



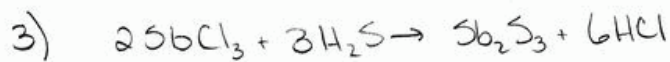
a)  $6.00 \text{ mol Al} \left( \frac{2 \text{ mol AlCl}_3}{2 \text{ mol Al}} \right) \left( \frac{133.5 \text{ g}}{1 \text{ mol AlCl}_3} \right) = 801 \text{ g AlCl}_3$

b)  $2.16 \text{ g Al} \left( \frac{1 \text{ mol Al}}{27 \text{ g Al}} \right) \left( \frac{3 \text{ mol H}_2}{2 \text{ mol Al}} \right) \left( \frac{2.0 \text{ g H}_2}{1 \text{ mol H}_2} \right) = 0.24 \text{ g}$

c)  $642 \text{ g AlCl}_3 \left( \frac{1 \text{ mol AlCl}_3}{133.5 \text{ g AlCl}_3} \right) \left( \frac{2 \text{ mol Al}}{2 \text{ mol AlCl}_3} \right) \left( \frac{27.0 \text{ g Al}}{1 \text{ mol Al}} \right) = 130 \text{ g}$

d)  $146 \text{ g HCl} \left( \frac{1 \text{ mol HCl}}{36.5 \text{ g}} \right) \left( \frac{2 \text{ mol AlCl}_3}{6 \text{ mol HCl}} \right) = 1.33 \text{ mol AlCl}_3$

$$1) 32.1 \text{ g AlCl}_3 \left( \frac{1 \text{ mol AlCl}_3}{133.5 \text{ g AlCl}_3} \right) \left( \frac{3 \text{ mol H}_2}{2 \text{ mol AlCl}_3} \right) \left( \frac{2.0 \text{ g H}_2}{1 \text{ mol H}_2} \right) = \boxed{572 \text{ g H}_2}$$



$$a) 17.0 \text{ mol SbCl}_3 \left( \frac{1 \text{ mol Sb}_2\text{S}_3}{2 \text{ mol SbCl}_3} \right) \left( \frac{339.9 \text{ g Sb}_2\text{S}_3}{1 \text{ mol Sb}_2\text{S}_3} \right) = \boxed{2.89 \times 10^3 \text{ g Sb}_2\text{S}_3}$$

$$b) 457 \text{ g SbCl}_3 \left( \frac{1 \text{ mol SbCl}_3}{228.3 \text{ g}} \right) \left( \frac{3 \text{ mol H}_2\text{S}}{2 \text{ mol SbCl}_3} \right) \left( \frac{34.1 \text{ g}}{1 \text{ mol H}_2\text{S}} \right) = \boxed{102 \text{ g H}_2\text{S}}$$

$$c) 1.00 \text{ mol H}_2\text{S} \left( \frac{1 \text{ mol Sb}_2\text{S}_3}{3 \text{ mol H}_2\text{S}} \right) \left( \frac{339.9 \text{ g}}{1 \text{ mol Sb}_2\text{S}_3} \right) = \boxed{113 \text{ g Sb}_2\text{S}_3}$$

$$d) 680 \text{ g Sb}_2\text{S}_3 \left( \frac{1 \text{ mol Sb}_2\text{S}_3}{339.9 \text{ g Sb}_2\text{S}_3} \right) \left( \frac{2 \text{ mol SbCl}_3}{1 \text{ mol Sb}_2\text{S}_3} \right) = \boxed{4.0 \text{ mol SbCl}_3}$$

$$e) 13.6 \text{ g Sb}_2\text{S}_3 \left( \frac{1 \text{ mol Sb}_2\text{S}_3}{339.9 \text{ g Sb}_2\text{S}_3} \right) \left( \frac{3 \text{ mol H}_2\text{S}}{1 \text{ mol Sb}_2\text{S}_3} \right) = \boxed{0.120 \text{ mol H}_2\text{S}}$$

$$f) 334.0 \text{ g Sb}_2\text{S}_3 \left( \frac{1 \text{ mol Sb}_2\text{S}_3}{339.9 \text{ g Sb}_2\text{S}_3} \right) \left( \frac{3 \text{ mol H}_2\text{S}}{1 \text{ mol Sb}_2\text{S}_3} \right) \left( \frac{34.1 \text{ g}}{1 \text{ mol H}_2\text{S}} \right) = \boxed{100. \text{ g H}_2\text{S}}$$