

75.0 g of each reactant = ? g of 1st product



$\frac{75\text{g}}{78\text{g/mol}} = 0.96\text{ mol}$
 $\frac{75\text{g}}{18\text{g/mol}} = 4.17\text{ mol}$
 $0.96\text{ mol} \times \frac{1}{2} = 0.48\text{ mol}$
 $4.17\text{ mol} \times \frac{4}{2} = 8.34\text{ mol}$
 $0.48\text{ mol} < 8.34\text{ mol}$ (LR)
 $0.48\text{ mol} \times 5 = 2.4\text{ mol NaOH}$
 $2.4\text{ mol} \times 40\text{g/mol} = 96\text{g NaOH}$
 $0.48\text{ mol} \times 18\text{g/mol} = 8.64\text{g H}_2\text{O}$
 $8.64\text{g} \times 5 = 43.2\text{g H}_2\text{O}$



$\frac{75\text{g}}{27\text{g/mol}} = 2.78\text{ mol}$
 $\frac{75\text{g}}{36.5\text{g/mol}} = 2.05\text{ mol}$
 $2.78\text{ mol} \times \frac{2}{2} = 2.78\text{ mol}$
 $2.05\text{ mol} \times \frac{2}{6} = 0.68\text{ mol}$
 $0.68\text{ mol} < 2.78\text{ mol}$ (LR)
 $0.68\text{ mol} \times 133.5\text{g/mol} = 90.8\text{g AlCl}_3$
 $0.68\text{ mol} \times 27\text{g/mol} = 18.36\text{g Al}$
 $18.36\text{g} \times 5 = 91.8\text{g Al}$



$\frac{75\text{g}}{208.5\text{g/mol}} = 0.36\text{ mol}$
 $\frac{75\text{g}}{18\text{g/mol}} = 4.17\text{ mol}$
 $0.36\text{ mol} \times \frac{4}{4} = 0.36\text{ mol}$
 $4.17\text{ mol} \times \frac{5}{4} = 5.21\text{ mol}$
 $0.36\text{ mol} < 5.21\text{ mol}$ (LR)
 $0.36\text{ mol} \times 36.5\text{g/mol} = 13.14\text{g HCl}$
 $13.14\text{g} \times 5 = 65.7\text{g HCl}$
 $0.36\text{ mol} \times 18\text{g/mol} = 6.48\text{g H}_2\text{O}$
 $6.48\text{g} \times 5 = 32.4\text{g H}_2\text{O}$

