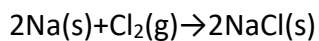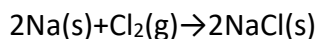Answer on Question #69092 - Chemistry – General Chemistry

For the reaction, calculate how many grams of the product form when 2.8 g of Cl_2 completely reacts.
Assume that there is more than enough of the other reactant.
$2Na(s)+Cl_2(g) \rightarrow 2NaCl(s)$

Solution:
$2Na(s)+Cl_2(g) \rightarrow 2NaCl(s)$
m(Cl_2) = 2.8 g
n(Cl_2) = $\frac{m(Cl_2)}{M(Cl_2)} = \frac{2.8}{2 \cdot 35.5} = \frac{2.8}{71}$

The Cl_2 refers to NaCl as 1 to 2 (proceeding from equation): $\frac{n(Cl_2)}{n(NaCl)} = \frac{1}{2}$; n(NaCl)=2·n($Cl_2$)

n(NaCl) = $2 \cdot \frac{2.8}{71} = \frac{5.6}{71}$

m(NaCl) = n(NaCl)·M(NaCl) = $\frac{5.6}{71} \cdot 58.5 = \frac{327.6}{71} = 4.61$ g

Answer: 4.61 g of NaCl

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