Answer on Question #72654, Chemistry / General Chemistry :

How many moles of H_2O react if 0.48 moles of HCl is formed?

A. 0.10 mol H_2O

B. 0.20 mol H_2O

C. 0.30 mol H_2O

D. 0.40 mol H_2O

E. 0.50 mol H_2O

use the following: Chlorine is used to bleach cloth. Excess Chlorine is destroyed by its reaction with Sodium Thiosulfate ($Na_2S_2O_3$) according to the unbalanced equation $Na_2S_2O_3 + Cl_2 + H_2O \rightarrow NaHSO_4 + HCl$.

Solution.

$$Na_2S_2O_3 + Cl_2 + H_2O \rightarrow NaHSO_4 + HCl$$
$$n(HCl) = 0.48mol$$

$$n(H_2O) - ?$$

Balanced equation:

$$2Na_2S_2O_3 + 8Cl_2 + 10H_2O \rightarrow 4NaHSO_4 + 16HCl$$

And:

$$n(HCl) = 0.48mol$$
$$n(H_2O) = \frac{n(HCl)}{8} \cdot 10 = \frac{0,48}{8} \cdot 10 = 0.60mol$$
$$n(H_2O) = 0.60mol$$

Answer: $n(H_2O) = 0.60mol$ **.**