Answer on Question#39261 - Chemistry - Inorganic Chemistry

Question:

How to balance MnS+HCl+HNO3 → MnCl2+NO+S+H2O

Answer:

Write the electron balance for this equation:

S-2 – 2e- → S0 | 2 | 3

N+5 + 3e- → N+2 | 3 | 2

Hence the coefficients near sulfur-containing substance is 3, and the one near nitrogen compounds is 2:

$3MnS + ?HCl + 2HNO_3 \rightarrow 3MnCl_2 + 2NO + 3S + ?H_2O$

Now we can find the coefficients near H_2O and HCl via oxygen and hydrogen balance. Then check the correctness via chlorine balance.

$3MnS + 6HCl + 2HNO_3 \rightarrow 3MnCl_2 + 2NO + 3S + 4H_2O$