Answer on Question #37663 - Chemistry - Inorganic Chemistry

Solution:

The balanced equation is

$Mg(s) + 2HCl(aq) \longrightarrow MgCl_2(aq) + H_2(g)$
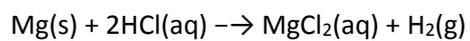
This means that 1 mole of magnesium reacts with 2 moles of HCl. So, 1.69 moles will react with $1.69 \cdot 2 = 3.38$ moles of HCl.

The mass of hydrochloric acid would be $3.38 \cdot (1.01 + 35.45) = 123$ grams.

The mass of $MgCl_2$ is $1.69 \cdot (24.31 + 2 \cdot 35.45) = 161$ grams.

The mass of hydrogen is $1.69 \cdot 2 \cdot 1.008 = 3.41$ grams.