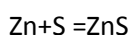**22092, Chemistry, Other | Completed**

Powdered zinc metal reacts with sulphur (S8) when heated to produce zinc sulphide.

 a.)What mass of product can be produced with 25 g of zinc?

 b.) What is the actual yield if the percentage yield was 80%?

Solution:

The equation of the reaction is:

Zn+S =ZnS

Begin by determining the molar mass of each compound involved in the reaction.
Using atomic masses from the periodic table, we will find the following:
M(ZnS) = 97.43 g/mol;
Ar(Zn) = 65.37 g/mol.
a) The mass of product determine from the equation of the reaction:

$$\underset{65.37}{\overset{25}{Zn}}+S=\underset{97.43}{\overset{x}{ZnS}}$$

$$m(ZnS)=\frac{97.43\cdot25}{65.37}=37.26\,g$$

b) The actyal yield of ZnS is:
m(ZnS)=37.26×0.8=29.81 g.

Answer:
   a) The theoretical mass of ZnS is 37.26 g;
   b) The actual yield of ZnS is: 29.81 g.