Calculate the mass of iron(III) oxide (Fe2O3) that contains a million (1.0x 106) oxygen atoms. Be sure your answer has a unit symbol if necessary, and round it to 2 significant digits.

Step 1:

We have

Number of iron atoms= one million = 1.0x 106

The given compound's chemical formula is Fe2 O3

It is made up of two iron atoms and three oxygen atoms.

In accordance with the mole concept:

Number of particles are present in 1 mole of a chemical.

The number of iron atoms that 1 mole of iron (II) oxide will contain

Step 2:

We know that,

Iron (II) oxide's molecular weight is 159.7 g/mol.

Using the unitary method

Iron (II) oxide weighs 159.7 g according to the number of iron atoms 1.2044\*1024  contains.

Therefore, the mass of iron (II) oxide will be for 1.0\*106 iron atoms.

159.7÷1.2044\*1024 \*1.0\*106=2.6\*10-19g

Step 3:

Hence the mass of iron (II) oxide with one million iron atoms is 2.6\*10-19g