#76500 Chemistry, Other

When 84.8 g of iron (III) oxide reacts with 53.0 g of CO how many grams of Fe are produced?

Fe_2O_3 + 3CO -> 2Fe + 3CO_2

Answer:

According to this reaction, n (Fe) = 2 n (Fe_2O_3) = 2/3 (CO)
n = m/M
M (Fe_2O_3) = 160 g/mol M (CO) = 26 g/mol M (Fe) = 55.9 g/mol
n (Fe_2O_3) = 84.8/160 = 0.53 mol n (CO) = 53.0 / 26 = 2.0 mol
Fe_2O_3 is a limiting reagent here. Therefore:
n (Fe) = 2 n (Fe_2O_3) = 2 · 0.53 = 1.06 mol
m (Fe) = 1.06 · 55.9 = 59.3 g