HW 7.26 Theoretical, Actual, & Percent Yield (25pts)

1. Define theoretical yield: ____________________________________________________________

2. Define actual yield: ______________________________________________________________

3. Why must you start all stoichiometric problems with the limiting reactant and not the excess reactant? _______________
   ______________________________________________________________________________

Directions: Show all work including problem set-up with conversion factors, units, and unrounded and rounded answers. Box or circle the final answers.

Answer the questions below based on the following balanced equation: (10pts)

\[ \text{Mg} + 2 \text{HNO}_3 \rightarrow \text{Mg(NO}_3)_2 + \text{H}_2 \]

4. If 15.32 mol Mg reacts with 18.00 mol HNO₃, what is the limiting reactant and what is the excess reactant?
   LR = ________________
   ER = ________________
   a. What is the theoretical yield of Mg(NO₃)₂ in moles?
   b. If the actual yield of Mg(NO₃)₂ is 7.02 moles, what is the percent yield of Mg(NO₃)₂?
   c. What is the theoretical yield of H₂ in moles?
   d. If the percent yield of H₂ is 89.5%, what is the actual yield of H₂ in moles?
Answer the questions below based on the following balanced equation: (10pts)

\[ 2 \text{NaBr} + \text{CaF}_2 \rightarrow 2 \text{NaF} + \text{CaBr}_2 \]

5. If 20.51 g NaBr is reacted with 9.44 g CaF\(_2\), what is the limiting reactant and what is the excess reactant?

LR = _________________

ER = _________________

a. What is the theoretical yield of CaBr\(_2\) in grams?

b. If the actual yield of CaBr\(_2\) is 13.16 grams, what is the percent yield of CaBr\(_2\)?

c. What is the theoretical yield of NaF in grams?

d. If the percent yield of NaF is 72.5%, what is the actual yield of NaF in grams?