Balancing Questions

1. Balance the equations.
a) $Na + Cl_2 \rightarrow NaCl$

b) $H_2 + O_2 \rightarrow H_2O$

c) $N_2 + H_2 \rightarrow NH_3$

d) $Al + Br_2 \rightarrow AlBr_3$

e) $K + O_2 \rightarrow K_2O$

f) $H_2 + Cl_2 \rightarrow HCl$

g) $CO + O_2 \rightarrow CO_2$

h) $N_2H_4 + O_2 \rightarrow H_2O + N_2$
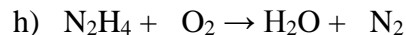
2. Write a balanced chemical equation for each of the following:
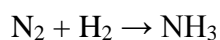a) copper(II) oxide + hydrogen à copper + water

b) lead(II) nitrate + potassium iodide à lead(II) iodide + potassium nitrate
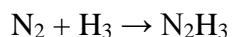
c) calcium + water à calcium hydroxide + hydrogen gas

d) lead(II) sulfide + oxygen à lead + sulfur dioxide

e) hydrogen sulfide à hydrogen + sulfur

3. a) Why is the following equation not balanced?
$N_2 + H_2 \rightarrow NH_3$
b) Imagine a friend tried to balance the equation as shown below. What would you say is wrong with the way it is balanced?
$N_2 + H_3 \rightarrow N_2H_3$

4. Imagine that you are an engineer trying to determine how much air had to be supplied to burn gasoline in a car engine. Assuming that gasoline is heptane (C_7H_{16}), the word equation is
heptane + oxygen →carbon dioxide + water vapour
a) Write the skeleton equation for the reaction.
b) Balance the equation by adding coefficients as necessary.
c) How many molecules of oxygen are required for every molecule of heptane that burns?