

Chem Eqn Calculations

Discussion Study Sheet

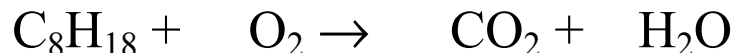
Chem 192
Cañada College

Name: _____

Student ID: _____

Date: _____

1. This equation describes the combustion of octane (C_8H_{18}). Balance the equation before answering the following questions.



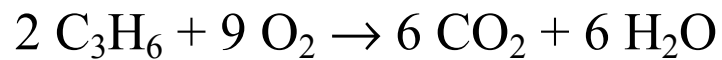
- (a) When two molecules of octane are burned, how many molecules of water are produced?

- (b) When two moles of octane are burned, how many molecules of water are produced?

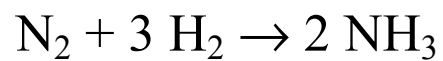
- (c) When two moles of octane are burned, how many moles of carbon dioxide are produced? (don't worry about significant figures on this question)

- (d) When 1.365 moles of octane are burned, how many moles of carbon dioxide are produced?

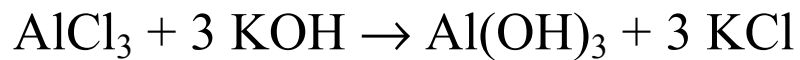
3. How many moles of C_3H_6 will be consumed when 4.11 moles of CO_2 are produced in the following equation?



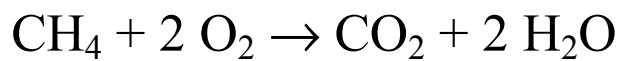
4. What mass of NH_3 is produced when 1.20 moles of H_2 react completely in the following equation?



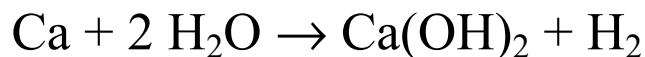
5. How many moles of $\text{Al}(\text{OH})_3$ are produced when 50.0 g of KOH react completely in the following equation?



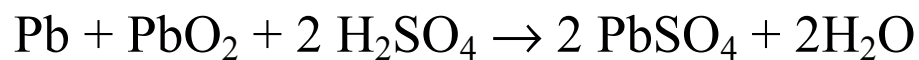
6. How many grams of H_2O is produced when 60.0g of CH_4 reacts completely in the following equation?



7. Which is the limiting reactant when 5.00 moles of calcium are reacted with 8.00 moles of water in the following equation?



8. Which substances are in excess when 3.00 moles of Pb, 1.50 moles of PbO₂, and 5.00 moles of H₂SO₄ are reacted in the following equation?



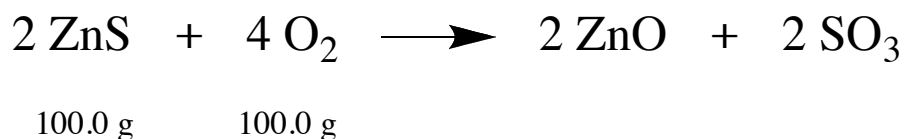
9. In a reaction to produce ammonia, the theoretical yield is 424 g. What is the percent yield if the actual yield is 355 g?

10. Consider the reaction of manganese oxide with hydrogen chloride.



- (a) Is this equation balanced?
- (b) Which is the limiting reactant when 3.00 moles of MnO_2 are reacted with 10.0 moles of HCl ?
- (c) What is the theoretical yield (in grams) of chlorine gas when 3.00 moles of MnO_2 are reacted with 10.0 moles of HCl ?

11. Zinc sulfide is a yellow colored material that glows when it's excited by electricity. It is used to make computer monitors and television screens. If allowed to react with oxygen, zinc sulfide transforms into zinc oxide (the active ingredient in deodorant). One of the reasons television sets get dimmer as they get old, is because oxygen leaks into the sealed television tube and consumes some of the zinc sulfide coating the TV screen. Your TV screen turns to deodorant.



- (a) How many grams of ZnO can be produced from 100.0 grams of ZnS, if we have excess oxygen?
- (b) How many grams of ZnO can be produced from 100.0 grams of oxygen, if we have excess ZnS?
- (c) If we react 100.0 grams of Zn with 100.0 grams of oxygen, which is the limiting reactant?
- (d) If we react 100.0 grams of Zn with 100.0 grams of oxygen, how many grams of ZnO will be produced (theoretical yield)?