

Chapter 12 Review

“Stoichiometry”

30 Questions on this test, due to calculations taking more time;
be sure to bring your **CALCULATOR**

Pre-AP Chemistry
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Chapter 12 Review

- The first step in most stoichiometry problems is to _____.
- How many liters of hydrogen gas are needed to react with CS₂ to produce 2.50 L of CH₄ at STP:
 $4\text{H}_{2(g)} + \text{CS}_{2(l)} \rightarrow \text{CH}_{4(g)} + 2\text{H}_2\text{S}_{(g)}$?
- In a chemical reaction, the mass of the products _____.

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- In the following reaction:
 $2\text{CO}_{(g)} + \text{O}_{2(g)} \rightarrow 2\text{CO}_{2(g)}$, what is the ratio of moles of oxygen used to moles of CO₂ produced?
- When iron rusts in air, iron (III) oxide is produced. How many moles of oxygen react with 2.4 mol of iron in the rusting reaction:
 $4\text{Fe}_{(s)} + 3\text{O}_{2(g)} \rightarrow 2\text{Fe}_2\text{O}_{3(s)}$

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- Which of the following is true for:
 $\text{C}_5\text{H}_{12(l)} + 8\text{O}_{2(g)} \rightarrow 5\text{CO}_{2(g)} + 6\text{H}_2\text{O}_{(l)}$
a) 9 moles of reactants chemically change into 11 moles of product, or
b) 9 atoms of reactants chemically change into 11 atoms of product?
- How many moles of aluminum react with 1.2 mol of FeO:
 $2\text{Al}_{(s)} + 3\text{FeO}_{(s)} \rightarrow 3\text{Fe}_{(s)} + \text{Al}_2\text{O}_{3(s)}$?

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- Which of the following is NOT true about limiting and excess reagents?
a) the reactant that has the smallest given mass is the limiting reagent, or
b) some of the excess reagent is left over after the reaction is complete
- In every chemical reaction, _____ are conserved.

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- Which of the following is an incorrect interpretation of the equation
 $2\text{S}_{(s)} + 3\text{O}_{2(g)} \rightarrow 2\text{SO}_{3(g)}$:
a) 2 atoms S + 3 molecules O₂ → 2 molecules SO₃,
or b) 2 g S + 3 g O₂ → 2 g SO₃?
- The calculation of quantities in chemical equations is called _____.
- What is conserved in this reaction:
 $\text{N}_{2(g)} + 3\text{F}_{2(g)} \rightarrow 2\text{NF}_{3(g)}$?

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- When 0.1 mol of Ca reacts with 880 g water, 2.24 L of hydrogen gas forms (at STP). How would the amount of hydrogen produced change if the volume of water was decreased to 440 mL (440 g)?
- When two substances react to form products, the reactant which is used up is called the _____.

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- Which of the following is NOT true about “yield”?
a) the value of actual yield must be known to calculate percent yield, or b) the actual yield may be different from the theoretical yield because insufficient limiting reagent was used?

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- If 1 egg and 1/3 cup of oil are needed for each bag of brownie mix, how many bags of brownie mix do you need if you want to use up a total of 3 eggs and 1 cup of oil?
- In a reaction between copper metal and silver nitrate, 12.7 g Cu produced 38.1 g Ag. What is the percent yield of silver in this reaction?

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- Which of the following is true about $3\text{NaHCO}_3 + \text{C}_6\text{H}_8\text{O}_7 \rightarrow 3\text{CO}_2 + 3\text{H}_2\text{O} + \text{Na}_3\text{C}_6\text{H}_5\text{O}_7$
a) 22.4 L CO_2 are produced for every liter of $\text{C}_6\text{H}_8\text{O}_7$ reacted, or b) 1 mole of water is produced for every mole of carbon dioxide produced?
- Which type of stoichiometric calculation does not require the use of the molar mass?

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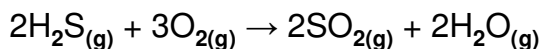
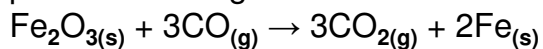
- Which of the following is NOT a reason why actual yield is less than theoretical yield: a) impure reactant present, or b) conservation of mass?
- What is conserved in this reaction:
 $\text{H}_{2(g)} + \text{Cl}_{2(g)} \rightarrow 2\text{HCl}_{(g)}$?
- In any chemical reaction, the quantities that are preserved are _____.

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- When an equation is used to calculate the amount of product that will form during a reaction, then the value obtained is called the _____.
- How many grams of NaCl could be produced from 103.0 g Na reacting with 13.0 L of Cl_2 at STP?

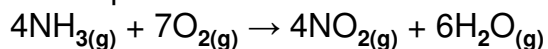
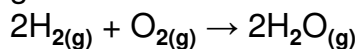
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- How many grams of CO are needed to react with an excess of Fe₂O₃ to produce 209.7 g Fe?
- How many liters of O₂ are needed to react completely with 45.0 L of H₂S at STP?



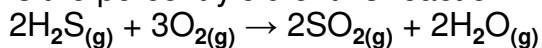
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- If 8.6 L of H₂ reacted with 4.3 L of O₂ at STP, what is the volume of the gaseous water collected?
- If 8.00 mol of NH₃ reacted with 14.0 mol of O₂, how many moles of H₂O will be produced?



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- If a tricycle factory ordered 33,432 wheels in 2002 and used all of them, how many tricycles did the factory produce? (Assume all wheels are identical)
- If O₂ was the excess reagent, 8.3 mol of H₂S were consumed, and 137.1 g of water were collected, what is the percent yield of this reaction?



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End of Chapter 12 Review