

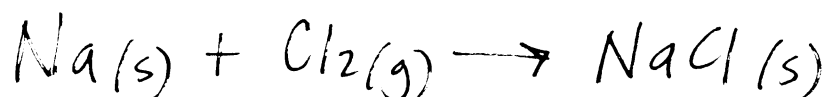
Quiz #4

Chemistry, 7th ed., Zumdahl & Zumdahl, sections 3.1-3.4 & 3.7-3.8

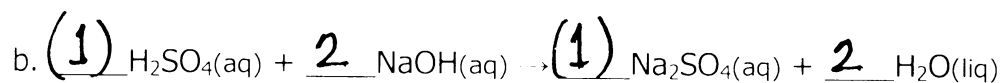
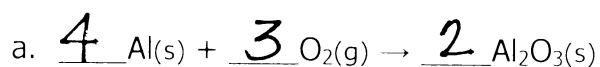
Unless otherwise specified, each question is worth 4 points.

Note that there is a Periodic Table of the Elements and some other possibly helpful information on the last page of this quiz.

1. When solid sodium is exposed to chlorine gas, solid sodium chloride (table salt) is formed. Write an unbalanced chemical equation that completely describes this reaction.



2. Balance each of the following chemical reactions: (2 points each)



3. What is the molar mass (g/mol) for each of the following: (2 points each)

a. nickel

$$\boxed{58.69} \text{ g/mol}$$

(MISSING UNITS O.K. -
UNITS IMPLIED)

b. NH₃

$$14.01 + 3 \times 1.01$$

$$= \boxed{17.04} \text{ g/mol}$$

Unless otherwise specified, each "blank" is worth 1 point.

4. Perform each of the following conversions (2 points each)

a. How many moles of magnesium are in 5.046 g of magnesium?

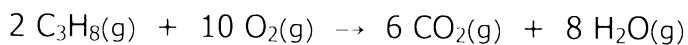
$$5.046 \text{ g} \times \frac{1 \text{ mol Mg}}{24.31 \text{ g Mg}} = \frac{\cancel{0.27}}{0.2076 \text{ mol}}$$

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b. What is the mass (in grams) of 0.102 mol of FeCl₂? (55.85 + 2 × 35.45)

$$0.102 \text{ mol} \times \frac{\cancel{\text{mol}}}{1} \times \frac{126.75 \text{ g}}{\text{mol}} = 12.9 \text{ g}$$

5. Per the following (balanced) chemical reaction, how many moles of oxygen are required to react with 10.5 moles of propane (C₃H₈)? (There are about 10.5 moles of propane in one canister that is typically used for camping stoves and lanterns.)



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$$10.5 \text{ mol C}_3\text{H}_8 \times \frac{10 \text{ mol O}_2}{2 \text{ mol C}_3\text{H}_8} =$$

$$52.5 \text{ mol O}_2$$