Name:_____Class: _____ Date: _____

CHAPTER 7 REVIEW

Chemical Formulas and Chemical Compounds

Teacher Notes and Answers

Chapter 7
SECTION 1

SHORT ANSWER

1. c
2. c
3. a. 4 elements
   b. 6 oxygen atoms
   c. 21 atoms
   d. 4.2×10^{24} atoms
4. a. 11 atoms
   b. 45 atoms
   c. 10 atoms
   d. 9 atoms
5. a. N_2O_5
   b. iron(II) oxide
   c. H_2SO_3
   d. phosphoric acid
6. a. True
   b. True
7. a. In general, if the anion name ends in -*ate*, the corresponding acid name will end in a suffix of -*ic*. In general, if the anion name ends in -ite, the corresponding acid name will end in a suffix of -*ous*.
   b. In general, if the anion name ends in -*ide*, the corresponding acid name will end in a suffix of -*ic* and begin with a prefix of *hydro*-. The prefix hydro- is never used for anions ending in -*ate* or -*ite*.
8.

Compound name	Formula
Aluminum sulfide	**Al_2S_3**
Cesium carbonate	**Cs_2CO_3**
Lead(II) chloride	$PbCl_2$
Ammonium phosphate	$(NH_4)_3PO_4$
Hydroiodic acid	**HI**

SECTION 2

SHORT ANSWER

1. a. +4
   b. +6
   c. –2
   d. +1
   e. +6
   f. +5
   g. +4
   h. –3
2. a. SCl_2
   b. nitrogen(IV) oxide
3. a. fluorine
   b. 0; F_2
4. a. tin(IV) oxide
   b. SnO
5. a. NO, NO_2
   b. ClO
6. a. N_2O_3
   b. +3
   c. The three oxygen atoms have oxidation states of –6 total, and because the algebraic sum of the oxidation states in a neutral compound must be zero, the two nitrogen atoms must have oxidation states of +6 total, therefore +3 each.
   nitrogen(III) oxide
7. a. Carbon is +4 and each oxygen is –2.
   b. Carbon is –4 and each hydrogen is +1.
   c. Each carbon is 0, each hydrogen is +1, and each oxygen is –2.
   d. Each carbon is –8/3 and each hydrogen is +1.
8. a. Each iron is +3 and each oxygen is –2.
   b. Nitrogen is +4 and each oxygen is –2.
   c. Chromium is +4 and each oxygen is –2.

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SECTION 3

SHORT ANSWER

1. a. True
   b. False
   c. True
2. 10 mol of calcium, 20 mol of nitrogen, 60 mol of oxygen
3. a. 0.250 mol
   b. 1.50×10^{23} molecules
   c. 4.51×10^{23} carbon atoms
   d. 10.1%
4. a. 52.9%
   b. 2100 lb
5. a. 20 g
   b. 0.17 mol
   c. 4.0 mol

SECTION 4

SHORT ANSWER

1. a. CH_3O_2
   b. N_2O_5
   c. HgCl
   d. CH_2
2. C_4H_8
3. a. $Na_2S_2O_3$
   b. neither
4. a. 36%
   b. 5
   c. The second heating is to ensure that all the water in the sample has been driven off. If the mass is less after the second heating, water was still present after the first heating.
5. a. CF_2
   b. C_4F_8
6. a. $CuClO_3$
   b. copper(I) chlorate