

Name \_\_\_\_\_  
Teacher \_\_\_\_\_  
Class \_\_\_\_\_ Block \_\_\_\_\_  
Date \_\_\_\_\_

## Welcome Back

Key  
Skip 5-9  
14-16

What do you remember from first semester?

1. Name the families on the periodic table.  
alkali metals, alkaline earth metals, transition metals,  
metalloids, halogens, noble gases, lanthanides,  
actinides

2. What are the charges for the families?  
1+, 2+, 3+, skip, 3-, 2-, 1- skip

3. What does the Roman numeral mean?  
the charge

4. Is it positive or negative?  
positive

5. What is the 4-shape?  
P, S, As, Se, Te

6. What is significant about "4" for elements in  
the 4-shape?

They have 4 oxygens inside or 3 oxygens outside.

7. What changes from -ate to -ite?  
one less oxygen

a. from -ite to hypo-\_\_\_-ite?

one less oxygen

b. from -ate to per-\_\_\_-ate?

one more oxygen

8. What are the elements in the zigzag?  
C, N, P, S, Cl

9. What is the charge pattern for the polyatomic  
ions?

2-, 1-, 3-, 2-, 1-

10. What goes first in a compound (positives or  
negatives)?

positives

11. What happens to the total charge in a  
compound?

zero

12. What must you do to a polyatomic ion to show  
more than 1 of them is in the formula?

use parentheses

13. Give the formula for ammonium phosphite.  
(NH<sub>4</sub>)<sub>3</sub>PO<sub>3</sub>

a. for lead (II) cyanide

Pb(CN)<sub>2</sub>

b. for mercury (I) hydroxide

Hg<sub>2</sub>(OH)<sub>2</sub>

c. for calcium bicarbonate

Ca(HCO<sub>3</sub>)<sub>2</sub>

d. for sulfur tetroxide

SO<sub>4</sub>

e. for zinc peroxide

ZnO<sub>2</sub>

14. Give the electron configuration for lithium.  
1s<sup>2</sup> 2s<sup>1</sup>

a. for fluorine

1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>5</sup>

b. for nickel

1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> 3s<sup>2</sup> 3p<sup>6</sup> 4s<sup>2</sup> 3d<sup>8</sup>

c. for calcium

1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> 3s<sup>2</sup> 3p<sup>6</sup> 4s<sup>2</sup>

15. Give the noble gas configuration for lithium.  
[He] 2s<sup>1</sup>

a. for fluorine

[He] 2s<sup>2</sup> 2p<sup>5</sup>

b. for nickel

[Ar] 4s<sup>2</sup> 3d<sup>8</sup>

c. for calcium

[Ar] 4s<sup>2</sup>

d. for lead

[Xe] 6s<sup>2</sup> 5d<sup>1</sup> 4f<sup>14</sup> 5d<sup>9</sup> 6p<sup>2</sup>

16. Give the orbital notation for vanadium.

↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↑ ↑↑  
1s 2s 2p<sub>2p<sub>2p</sub></sub> 3s 3p<sub>3p<sub>3p</sub></sub> 4s 3d<sub>3d<sub>3d<sub>3d</sub></sub></sub>

a. for sodium

↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑  
1s 2s 2p<sub>2p<sub>2p</sub></sub> 3s

All these are not new material.

17. What is a binary acid?  
2 elements: H and an anion
18. Binary acids always start with what prefix?  
hydro-
19. Binary acids always end with what suffix?  
-ic acid
20. What is an oxyacid?  
acid with oxygen in it
21. What is the anion in an -ic acid?  
an -ate
22. What is the anion in an -ous acid?  
an -ite
23. Write the formula for hydrochloric acid?  
HCl  
a. Is it binary or an oxyacid?  
binary
24. Write the formula for hydroiodic acid?  
HI  
a. Is it binary or an oxyacid?  
binary
25. Write the formula for hydrocyanic acid?  
HCN  
a. Is it binary or an oxyacid?  
binary
26. Write the formula for hydrosulfuric acid?  
H<sub>2</sub>S  
a. Is it binary or an oxyacid?  
binary
27. Write the formula for chloric acid?  
HClO<sub>3</sub>  
a. Is it binary or an oxyacid?  
oxyacid
28. Write the formula for chlorous acid?  
HClO<sub>2</sub>  
a. Is it binary or an oxyacid?  
oxyacid
29. Write the formula for sulfuric acid?  
H<sub>2</sub>SO<sub>4</sub>  
a. Is it binary or an oxyacid?  
oxyacid
30. Write the formula for sulfurous acid?  
H<sub>2</sub>SO<sub>3</sub>  
a. Is it binary or an oxyacid?  
oxyacid
31. Write the formula for acetic acid?  
HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub>  
a. Is it binary or an oxyacid?  
oxyacid
32. Calculate the molar mass of calcium chloride.  
CaCl<sub>2</sub> Ca 1 x 40.08  
Cl 2 x 35.45  
= 110.98 g

- a. for ammonium phosphite.  
(NH<sub>4</sub>)<sub>3</sub>PO<sub>3</sub> N 3 x 14.01  
H 12 x 1.008  
P 1 x 30.97  
O 3 x 16.00  
= 133.096 g = 133.10 g
- b. for lead (II) cyanide  
Pb(CN)<sub>2</sub> Pb 1 x 207.2  
C 2 x 12.01  
N 2 x 14.01  
= 259.24 g = 259.2 g
- c. for mercury (I) hydroxide  
Hg<sub>2</sub>(OH)<sub>2</sub> Hg 2 x 200.6  
O 2 x 16.00  
H 2 x 1.008  
= 435.216 g = 435.2 g
- d. for calcium bicarbonate  
Ca(HCO<sub>3</sub>)<sub>2</sub> Ca 1 x 40.08  
H 2 x 1.008  
C 2 x 12.01  
O 6 x 16.00  
= 162.116 g = 162.12 g
- e. for sulfur tetroxide  
SO<sub>4</sub> S 1 x 32.07  
O 4 x 16.00  
= 96.00 g
- f. for zinc peroxide  
ZnO<sub>2</sub> Zn 1 x 65.38  
O 2 x 16.00  
= 97.38 g
33. Convert 2.3 g C to mol C.  
 $2.3 \text{ g C} \times \frac{1 \text{ mol C}}{12.01 \text{ g C}} = 0.19 \text{ mol C}$
34. Convert 2.3 g C to atoms C.  
 $2.3 \text{ g C} \times \frac{1 \text{ mol C}}{12.01 \text{ g C}} \times \frac{6.022 \times 10^{23} \text{ atoms C}}{1 \text{ mol C}} = 1.2 \times 10^{23} \text{ atoms C}$
35. Convert 2.3 mol C to g C.  
 $2.3 \text{ mol C} \times \frac{12.01 \text{ g C}}{1 \text{ mol C}} = 28 \text{ g C}$
36. Convert 2.3 mol C to atoms C.  
 $2.3 \text{ mol C} \times \frac{6.022 \times 10^{23} \text{ atoms C}}{1 \text{ mol C}} = 1.4 \times 10^{24} \text{ atoms C}$
37. Convert  $2.3 \times 10^3$  atoms C to mol C.  
 $2.3 \times 10^3 \text{ atoms C} \times \frac{1 \text{ mol C}}{6.022 \times 10^{23} \text{ atoms C}} = 3.8 \times 10^{-21} \text{ mol C}$
38. Convert  $2.3 \times 10^3$  atoms C to g C.  
 $2.3 \times 10^3 \text{ atoms C} \times \frac{1 \text{ mol C}}{6.022 \times 10^{23} \text{ atoms C}} \times \frac{12.01 \text{ g C}}{1 \text{ mol C}} = 4.6 \times 10^{-20} \text{ g C}$