Chemistry Review

Properties and Changes

1. Matter is anything that has \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Complete the following Chart & include a description of each and two examples



1. Classify each of the following as an element compound or mixture.

a) Sodium \_\_\_\_\_\_\_\_\_

b) water \_\_\_\_\_\_\_\_\_

c) coffee \_\_\_\_\_\_\_\_\_

d) carbon dioxide \_\_\_\_\_

e) salt water \_\_\_\_\_\_\_\_\_

f) air \_\_\_\_\_\_\_\_\_

g) soil \_\_\_\_\_\_\_\_\_

h) orange juice \_\_\_\_\_\_\_\_\_

1. Matter can be \_\_\_\_\_\_\_\_\_\_\_\_\_ from one form to another. During a \_\_\_\_\_\_\_\_\_\_\_\_\_ change, the \_\_\_\_\_\_\_\_\_\_\_\_\_ do not change permanently and no new substances are formed. Examples of this are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In \_\_\_\_\_\_\_\_\_\_\_\_\_ changes, the particles are rearranged to form \_\_\_\_\_\_\_\_\_\_\_\_\_ substances. Examples of this are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. We can tell that a \_\_\_\_\_\_\_\_\_\_\_ change has taken place if:

a) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , b) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ c) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, d) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or e) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

1. When a chemical change takes place, we say a \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ has occurred.

## Elements and the Periodic Table

1. In nature, there are approximately 100 different \_\_\_\_\_\_\_\_\_ and each one has its own kind of \_\_\_\_\_\_\_\_\_.
2. The symbols for these \_\_\_\_\_\_\_\_\_\_\_\_\_ **are** derived from: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ,or\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_.**
3. These elements can be divided into two major groups, \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_-\_\_\_\_\_\_\_\_.
4. Some common properties of metals are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The properties of \_\_\_\_-\_\_\_\_\_\_\_\_\_ will be almost \_\_\_\_\_\_\_\_\_\_\_\_\_\_ those of metals.
6. When elements join together, they form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . These can be represented by symbols called \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.
7. In a \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ , the subscript besides an element's symbol indicates the number of \_\_\_\_\_\_\_\_\_ of that element in each \_\_\_\_\_\_\_\_\_\_\_\_\_ of the compound. For example, in H2O there are \_\_\_\_ atoms of \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_ atom of \_\_\_\_\_\_\_\_\_\_\_ in each \_\_\_\_\_\_\_\_\_\_ molecule.
8. The number of atoms of each type in a compound depends on the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ of the elements present. For example, the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ of sodium is +1, magnesium is +2, chlorine is -1 and oxygen is -2.
9. When atoms join together, they form \_\_\_\_\_\_\_\_\_\_\_\_\_. If the \_\_\_\_\_\_\_\_\_\_\_\_\_ contains only one kind of atom, then it is an \_\_\_\_\_\_\_\_\_\_. If it contains two or more \_\_\_\_\_\_\_\_\_\_\_ kinds of atoms, then it is a \_\_\_\_\_\_\_\_\_.
10. The rules for writing the name of a simple ionic compound (between a metal & non-metal)are:
11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. The rules for writing the formula of a simple ionic compound are:
15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
17. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
18. Write the name or formula for each of the following:
19. KBr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
20. BaO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
21. Ag2S \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
22. Na3P \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
23. Al2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
24. Calcium chloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
25. Lithium nitride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
26. Zinc Oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
27. Cesium fluoride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
28. Magnesium sulphide \_\_\_\_\_\_\_\_\_\_\_\_\_
29. The rules for writing the names of compounds containing polyatomic ions are:
30. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
32. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
33. The rules for writing the formula for compounds containing polyatomic ions are:
34. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
35. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
36. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
37. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
38. Write the name or formula for each of the following:
39. Na2CO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
40. Mg(OH)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
41. (NH4)2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
42. Ca3(PO4)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
43. ZnSO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
44. Aluminum phosphate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
45. potassium nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
46. barium hydroxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
47. ammonium chloride \_\_\_\_\_\_\_\_\_\_
48. Silver sulphate \_\_\_\_\_\_\_\_\_
49. \_\_\_\_\_\_\_\_\_ metals are elements which have \_\_\_\_\_\_\_\_\_ than one combining capacity. For example, the combining capacity of iron is \_\_\_\_\_ or \_\_\_\_\_ and for copper it is \_\_\_ or \_\_\_.
50. The combining capacity of these elements are shown by the \_\_\_\_\_\_\_\_\_ numeral in the name of the compound. When writing the name of compounds containing these elements, we have to first find the \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ from the formula, then use ­­­\_\_\_\_\_\_\_\_ numerals to indicate it in the name.
51. Write the name or formula for the following:
52. CuI2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
53. Fe2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
54. NiCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
55. copper (I) chloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
56. cobalt (III) bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
57. Lead (IV) cyanide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
58. Another name for combining capacity \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Atomic Theories and the Periodic Table**

1. Dalton’s Atomic Theory was based on the premise that atoms cannot be \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Thompson’s revision focused on \_\_\_\_\_\_\_\_\_\_\_\_\_\_ being very small and having a \_\_\_\_\_\_\_\_\_\_\_\_ charge. Rutherford’s revision focused on the \_\_\_\_\_\_\_\_\_\_\_\_ containing a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge and most of the mass of the atom. Bohr’s revision stated that the \_\_\_\_\_\_\_\_\_\_\_\_\_ were located in specific \_\_\_\_\_\_\_\_\_\_\_ and could only be found there.
2. Bohr stated that \_\_\_\_\_ electrons were found in the 1st orbit, \_\_\_\_ were found in the 2nd and 3rd \_\_\_\_\_\_\_\_\_\_.
3. The 3 parts of an atom are the \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_, which are fond in the nucleus and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_which orbit in \_\_\_\_\_\_\_\_\_\_\_\_ around the nucleus.
4. A neutral \_\_\_\_\_\_\_\_\_\_\_ has an equal number of protons and \_\_\_\_\_\_\_\_\_\_\_\_\_. A charged atom (also called an \_\_\_\_\_\_\_) has different numbers of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Write the standard notation for a sodium atom:
(label the parts)
6. Write the standard notation for a sodium ion:
(label the parts)
7. On the periodic table, the atomic number is also the number of \_\_\_\_\_\_\_\_\_\_\_\_ and the number of \_\_\_\_\_\_\_\_\_\_\_\_\_.
8. To calculate the number of neutrons, you subtract the Atomic \_\_\_\_\_\_\_\_\_\_\_ from the Atomic \_\_\_\_\_\_\_\_\_\_\_.

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| 1. Draw a Bohr Model for a Phosphorus atom (include all the required information)

P | 1. Draw a Bohr Model for a Phosphorus ion (include all the required information)

P-3 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ELEMENT NAME** | **SYMBOL** | **# OF PROTONS** | **# OF ELECTRONS (ATOM)** | **# OF ELECTRONS (ION)** | **ATOMIC MASS** | **MASS #** | **# OF NEUTRONS** | **ION FORM** | **FORMULA WHEN COMBINED WITH…** | **NAME OF COMPOUND** |
| Sodium | Na | 11 | 11 | 10 | 22.99 | 23 | 12 | Na+1 | S-2 | Na2S | Sodium sulphide |
|  | K |  |  |  |  |  |  |  | N-3 |  |  |
| Calcium |  |  |  |  |  |  |  |  | F-1 |  |  |
|  |  | 24 |  |  |  |  |  | Cr+3 | Cl-1 |  |  |
|  | Mg |  |  |  |  |  |  |  |  |  | Magnesium sulphate |
|  |  |  |  |  | 1.008 |  |  |  |  |  | Hydrogen nitrate |
|  |  |  | 28 |  |  |  |  |  | MnO4 -1 |  | Nickel (III) Permanganate |
|  |  | 13 |  |  | 26.98 |  |  |  | OH -1 |  |  |
|  |  |  | 26 |  |  |  |  |  | NO2 -1 |  | Iron (III) nitrite |
| Silver |  |  |  |  |  | 108 |  |  | S-2 |  |  |
| Zinc |  |  |  |  |  |  |  |  |  |  | Zinc Oxide |
| Barium |  |  |  |  |  |  |  |  |  |  | Barium Oxide |
| Lithium |  |  |  |  |  |  |  |  |  |  | Lithium Chloride |