

Name: \_\_\_\_\_

Date: \_\_\_\_\_



# THE PERIODIC TABLE

## Review of Terms and Concepts Worksheet

1. Fill in the blanks with the terms and words most appropriate to complete each sentence.

- a) In the mid-nineteenth century, only sixty or so elements had been discovered. In \_\_\_\_\_ (a year) a Russian chemist and inventor named \_\_\_\_\_ created a chart called the \_\_\_\_\_ that predicted the properties of elements that had not yet been discovered. He did this by arranging the elements according to their increasing atomic \_\_\_\_\_, and by their physical and chemical \_\_\_\_\_.
- b) Each element in the periodic table is represented by an element box. In this box there is the following information: two numbers, one is a whole number called the \_\_\_\_\_; and the other number is larger and contains a decimal, and this one is called the \_\_\_\_\_. In the box, there is also the short form of the element called the \_\_\_\_\_ and then the full identity of the element which is written using the \_\_\_\_\_.
- c) Today the modern periodic table is arranged into columns and rows. The columns are called \_\_\_\_\_ and there are \_\_\_\_\_ (a number) of them. The rows are called \_\_\_\_\_ and there are \_\_\_\_\_ (a number) of them. The periodic table is divided by a zigzag line also known as the \_\_\_\_\_ that separates the \_\_\_\_\_, found on the left of it, from the \_\_\_\_\_, found on the right of it. Directly around the zigzag line are eight elements called \_\_\_\_\_.
- d) All the metals, except for \_\_\_\_\_ which is a liquid, are found as solids at room temperature. The metals are also mostly \_\_\_\_\_ in color, are ductile, malleable, conduct \_\_\_\_\_ and some are attracted to \_\_\_\_\_.
- e) At room temperature, most of the non-metals are found in the \_\_\_\_\_ state except for \_\_\_\_\_ which is a liquid, and \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ which are all found as solids. These elements are \_\_\_\_\_ or come in various colors, are not \_\_\_\_\_, not \_\_\_\_\_ and do not conduct \_\_\_\_\_ nor are they attracted to \_\_\_\_\_.
- f) \_\_\_\_\_ are elements that have some properties of metals and some properties of non-metals. They are all found in the \_\_\_\_\_ state. Most have a silvery metallic luster, they are brittle and are medium to good \_\_\_\_\_.
- g) \_\_\_\_\_ are groups on the periodic table that contain elements that share similar properties.
- h) Group 1 elements are called the \_\_\_\_\_ and they contain the most \_\_\_\_\_ group of all the metals. They react very violently with \_\_\_\_\_ and therefore must be stored under \_\_\_\_\_ oil so that the water vapor in the air cannot react with these elements. These metals get more reactive as you go \_\_\_\_\_ (up or down) the group and the most reactive of all the elements in this group is \_\_\_\_\_.
- i) Group 2 elements are called the \_\_\_\_\_ and they contain the second most reactive group of all the metals. They also react with water and get more reactive as you go \_\_\_\_\_ (up or down) the group.

- j) Group 17 elements are called the \_\_\_\_\_ and they contain the only group of elements found in all three \_\_\_\_\_ of matter. Fluorine and chlorine are found in the \_\_\_\_\_ state, bromine is found in the \_\_\_\_\_ state and iodine and astatine are found in the \_\_\_\_\_ state. This group of elements gets more reactive as you go \_\_\_\_\_ (up or down) the group and the most reactive of all of the elements in this group is \_\_\_\_\_.
- k) Group 18 contain elements called \_\_\_\_\_ and they are special because they are the least \_\_\_\_\_ of all the elements. They are so stable that they do not \_\_\_\_\_ with other elements and therefore do not form any \_\_\_\_\_. The first two elements in group 18 are \_\_\_\_\_ and \_\_\_\_\_.
- l) Groups 3 to 12 contain elements called the \_\_\_\_\_. This group of elements are all solids (except for \_\_\_\_\_, which is a liquid) and contain many of the most well known of all the metals like \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ to name three.
- m) Below the main body of the periodic table, you have two additional rows. One row stems from period number 6 and this collection of elements are called the \_\_\_\_\_. They are all solid metals and used to be called the \_\_\_\_\_. The other row stems from period number 7 and this collection of elements are called the \_\_\_\_\_. Like uranium and plutonium, all the rest of the members of this collection are \_\_\_\_\_.

2. On the diagram below, and using different colored pencil crayons, shade in and then label the following elements.

metals  
non-metals  
metalloids

alkali metals  
alkaline earth metals  
halogens

noble gases  
transition metals  
lanthanides

actinides

|         |                               |                                |                                 |                                     |                                |                                  |                                |                                 |                                  |                                 |                              |                               |                                |                                |                                |                                 |                               |                              |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
|---------|-------------------------------|--------------------------------|---------------------------------|-------------------------------------|--------------------------------|----------------------------------|--------------------------------|---------------------------------|----------------------------------|---------------------------------|------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------------|---------------------------------|---------------------------------|--------------------------------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|----------------------------------|-------------------------------|-----------------------------------|---------------------------------|----------------------------------|
| 1<br>1A | 1<br>H<br>Hydrogen<br>1.01    | 2<br>2A                        |                                 |                                     |                                |                                  |                                |                                 |                                  |                                 |                              |                               | 13<br>3A                       | 14<br>4A                       | 15<br>5A                       | 16<br>6A                        | 17<br>7A                      | 18<br>8A                     |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
| 2       | 3<br>Li<br>Lithium<br>6.94    | 4<br>Be<br>Beryllium<br>9.01   |                                 |                                     |                                |                                  |                                |                                 |                                  |                                 |                              |                               | 5<br>B<br>Boron<br>10.81       | 6<br>C<br>Carbon<br>12.01      | 7<br>N<br>Nitrogen<br>14.01    | 8<br>O<br>Oxygen<br>16.00       | 9<br>F<br>Fluorine<br>19.00   | 10<br>Ne<br>Neon<br>20.18    |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
| 3       | 11<br>Na<br>Sodium<br>22.99   | 12<br>Mg<br>Magnesium<br>24.31 | 3<br>3B                         | 4<br>4B                             | 5<br>5B                        | 6<br>6B                          | 7<br>7B                        | 8<br>8B                         | 9<br>9B                          | 10<br>10B                       | 11<br>11B                    | 12<br>12B                     | 13<br>Al<br>Aluminum<br>26.98  | 14<br>Si<br>Silicon<br>28.09   | 15<br>P<br>Phosphorus<br>30.97 | 16<br>S<br>Sulfur<br>32.07      | 17<br>Cl<br>Chlorine<br>35.45 | 18<br>Ar<br>Argon<br>39.95   |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
| 4       | 19<br>K<br>Potassium<br>39.10 | 20<br>Ca<br>Calcium<br>40.08   | 21<br>Sc<br>Scandium<br>44.96   | 22<br>Ti<br>Titanium<br>47.87       | 23<br>V<br>Vanadium<br>50.94   | 24<br>Cr<br>Chromium<br>52.00    | 25<br>Mn<br>Manganese<br>54.94 | 26<br>Fe<br>Iron<br>55.85       | 27<br>Co<br>Cobalt<br>58.93      | 28<br>Ni<br>Nickel<br>58.69     | 29<br>Cu<br>Copper<br>63.55  | 30<br>Zn<br>Zinc<br>65.39     | 31<br>Ga<br>Gallium<br>69.72   | 32<br>Ge<br>Germanium<br>72.61 | 33<br>As<br>Arsenic<br>74.92   | 34<br>Se<br>Selenium<br>78.96   | 35<br>Br<br>Bromine<br>79.90  | 36<br>Kr<br>Krypton<br>83.80 |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
| 5       | 37<br>Rb<br>Rubidium<br>85.47 | 38<br>Sr<br>Strontium<br>87.62 | 39<br>Y<br>Yttrium<br>88.91     | 40<br>Zr<br>Zirconium<br>91.22      | 41<br>Nb<br>Niobium<br>92.91   | 42<br>Mo<br>Molybdenum<br>95.94  | 43<br>Tc<br>Technetium<br>(98) | 44<br>Ru<br>Ruthenium<br>101.07 | 45<br>Rh<br>Rhodium<br>102.91    | 46<br>Pd<br>Palladium<br>106.42 | 47<br>Ag<br>Silver<br>107.87 | 48<br>Cd<br>Cadmium<br>112.41 | 49<br>In<br>Indium<br>114.82   | 50<br>Sn<br>Tin<br>118.71      | 51<br>Sb<br>Antimony<br>121.76 | 52<br>Te<br>Tellurium<br>127.60 | 53<br>I<br>Iodine<br>126.90   | 54<br>Xe<br>Xenon<br>131.29  |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
| 6       | 55<br>Cs<br>Cesium<br>132.91  | 56<br>Ba<br>Barium<br>137.33   | 57<br>La<br>Lanthanum<br>138.91 | 72<br>Hf<br>Hafnium<br>178.49       | 73<br>Ta<br>Tantalum<br>180.95 | 74<br>W<br>Tungsten<br>183.84    | 75<br>Re<br>Rhenium<br>186.21  | 76<br>Os<br>Osmium<br>190.23    | 77<br>Ir<br>Iridium<br>192.22    | 78<br>Pt<br>Platinum<br>195.08  | 79<br>Au<br>Gold<br>196.97   | 80<br>Hg<br>Mercury<br>200.59 | 81<br>Tl<br>Thallium<br>204.38 | 82<br>Pb<br>Lead<br>207.2      | 83<br>Bi<br>Bismuth<br>208.98  | 84<br>Po<br>Polonium<br>(209)   | 85<br>At<br>Astatine<br>(210) | 86<br>Rn<br>Radon<br>(222)   |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
| 7       | 87<br>Fr<br>Francium<br>(223) | 88<br>Ra<br>Radium<br>(226)    | 89<br>Ac<br>Actinium<br>(227)   | 104<br>Rf<br>Rutherfordium<br>(261) | 105<br>Db<br>Dubnium<br>(262)  | 106<br>Sg<br>Seaborgium<br>(266) | 107<br>Bh<br>Bohrium<br>(264)  | 108<br>Hs<br>Hassium<br>(269)   | 109<br>Mt<br>Meitnerium<br>(268) |                                 |                              |                               |                                |                                |                                |                                 |                               |                              |                               |                                    |                                 |                                 |                                |                                |                                  |                                |                                  |                                  |                               |                                   |                                 |                                  |
|         |                               |                                |                                 |                                     |                                |                                  |                                |                                 |                                  |                                 |                              |                               |                                |                                |                                |                                 |                               |                              | 58<br>Ce<br>Cerium<br>140.12  | 59<br>Pr<br>Praseodymium<br>140.91 | 60<br>Nd<br>Neodymium<br>144.24 | 61<br>Pm<br>Promethium<br>(145) | 62<br>Sm<br>Samarium<br>150.36 | 63<br>Eu<br>Europium<br>151.96 | 64<br>Gd<br>Gadolinium<br>157.25 | 65<br>Tb<br>Terbium<br>158.93  | 66<br>Dy<br>Dysprosium<br>162.50 | 67<br>Ho<br>Holmium<br>164.93    | 68<br>Er<br>Erbium<br>167.26  | 69<br>Tm<br>Thulium<br>168.93     | 70<br>Yb<br>Ytterbium<br>173.04 | 71<br>Lu<br>Lutetium<br>174.97   |
|         |                               |                                |                                 |                                     |                                |                                  |                                |                                 |                                  |                                 |                              |                               |                                |                                |                                |                                 |                               |                              | 90<br>Th<br>Thorium<br>232.04 | 91<br>Pa<br>Protactinium<br>231.04 | 92<br>U<br>Uranium<br>238.03    | 93<br>Np<br>Neptunium<br>(237)  | 94<br>Pu<br>Plutonium<br>(244) | 95<br>Am<br>Americium<br>(243) | 96<br>Cm<br>Curium<br>(247)      | 97<br>Bk<br>Berkelium<br>(247) | 98<br>Cf<br>Californium<br>(251) | 99<br>Es<br>Einsteinium<br>(252) | 100<br>Fm<br>Fermium<br>(257) | 101<br>Md<br>Mendelevium<br>(268) | 102<br>No<br>Nobelium<br>(269)  | 103<br>Lr<br>Lawrencium<br>(262) |



# THE PERIODIC TABLE

## Review of Terms and Concepts Worksheet

1. Fill in the blanks with the terms and words most appropriate to complete each sentence.

- a) In the mid-nineteenth century, only sixty or so elements had been discovered. In 1869 (a year) a Russian chemist and inventor named Dmitri Mendeleev created a chart called the periodic table that predicted the properties of elements that had not yet been discovered. He did this by arranging the elements according to their increasing atomic numbers, and by their physical and chemical properties.
- b) Each element in the periodic table is represented by an element box. In this box there is the following information: two numbers, one is a whole number which is called the atomic number; and the other number is larger and contains a decimal, and this one is called the atomic mass. In the box, there is also the short form of the element called the element symbol and then the full identity of the element which is written using the element name.
- c) Today the modern periodic table is arranged into columns and rows. The columns are called groups and there are 18 (a number) of them. The rows are called periods and there are 7 (a number) of them. The periodic table is divided by a zigzag line also known as the staircase that separates the metals, found on the left of it, from the non-metals, found on the right of it. Directly around the zigzag line are eight elements called metalloids.
- d) All the metals, except for mercury which is a liquid, are found as solids at room temperature. The metals are also mostly silvery in color, are ductile, malleable, conduct electricity and some are attracted to magnets.
- e) At room temperature, most of the non-metals are found in the gas state except for bromine which is a liquid, and iodine, selenium, carbon, phosphorus and sulfur which are all found as solids. These elements are colorless or come in various colors, are not ductile, not malleable and do not conduct electricity nor are they attracted to magnets.
- f) Metalloids are elements that have some properties of metals and some properties of non-metals. They are all found in the solid state. Most have a silvery metallic luster, they are brittle and are medium to good electrical conductors.
- g) Chemical families are groups on the periodic table that contain elements that share similar properties.
- h) Group 1 elements are called the alkali metals and they contain the most reactive group of all the metals. They react very violently with water and therefore must be stored under mineral oil so that the water vapor in the air cannot react with these elements. These metals get more reactive as you go down (up or down) the group and the most reactive of all the elements in this group is francium.
- i) Group 2 elements are called the alkaline earth metals and they contain the second most reactive group of all the metals. They also react with water and get more reactive as you go down (up or down) the group.

- j) Group 17 elements are called the **halogens** and they contain the only group of elements found in all three **states** of matter. Fluorine and chlorine are found in the **gas** state, bromine is found in the **liquid** state and iodine and astatine are found in the **solid** state. This group of elements gets more reactive as you go **up** (up or down) the group and the most reactive of all of the elements in this group is **fluorine**.
- k) Group 18 contain elements called **noble gases** and they are special because they are the least **reactive** of all the elements. They are so stable that they do not **bond** with other elements and therefore do not form any **compounds**. The first two elements in group 18 are **helium** and **neon**.
- l) Groups 3 to 12 contain elements called the **transition metals**. This group of elements are all solids (except for **mercury**, which is a liquid) and contain many of the most well known of all the metals like **gold**, **iron** and **copper** to name three.
- m) Below the main body of the periodic table, you have two additional rows. One row stems from period number 6 and this collection of elements are called the **lanthanides**. They are all solid metals and used to be called the **rare earth metals**. The other row stems from period number 7 and this collection of elements are called the **actinides**. Like uranium and plutonium, all the rest of the members of this collection are **radioactive**.

2. On the diagram below, and using different colored pencil crayons, shade in and then label the following elements.

metals

alkali metals

noble gases

actinides

non-metals

alkaline earth metals

transition metals

metalloids

halogens

lanthanides

alkali metals

noble gases

|                              |                                |                                 |                                     |                                    |                                  |                                 |                                 |                                  |                                  |                                |                                  |                                  |                                |                                   |                                 |                                  |                              |
|------------------------------|--------------------------------|---------------------------------|-------------------------------------|------------------------------------|----------------------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|--------------------------------|----------------------------------|----------------------------------|--------------------------------|-----------------------------------|---------------------------------|----------------------------------|------------------------------|
| 1<br>1A                      | 2<br>2A                        |                                 |                                     |                                    |                                  |                                 |                                 |                                  |                                  |                                |                                  | 13<br>3A                         | 14<br>4A                       | 15<br>5A                          | 16<br>6A                        | 17<br>7A                         | 18<br>8A                     |
| 1<br>H<br>Hydrogen<br>1.0    |                                |                                 |                                     |                                    |                                  |                                 |                                 |                                  |                                  |                                |                                  |                                  |                                |                                   |                                 |                                  | He<br>Helium<br>4.00         |
| 2<br>Li<br>Lithium<br>6.94   | 4<br>Be<br>Beryllium<br>9.01   |                                 |                                     |                                    |                                  |                                 |                                 |                                  |                                  |                                |                                  | 5<br>B<br>Boron<br>10.81         | 6<br>C<br>Carbon<br>12.01      | 7<br>N<br>Nitrogen<br>14          | 8<br>O<br>Oxygen<br>16          | 9<br>F<br>Fluorine<br>18.998     | 10<br>Ne<br>Neon<br>20.18    |
| 3<br>Na<br>Sodium<br>22.99   | 12<br>Mg<br>Magnesium<br>24.31 | 3<br>B<br>Boron<br>10.81        | 4<br>C<br>Carbon<br>12.01           | 5<br>N<br>Nitrogen<br>14           | 6<br>O<br>Oxygen<br>16           | 7<br>F<br>Fluorine<br>18.998    | 8<br>Ne<br>Neon<br>20.18        | 9<br>Ar<br>Argon<br>39.95        | 10<br>Kr<br>Krypton<br>83.80     | 11<br>Xe<br>Xenon<br>131.29    | 12<br>Rn<br>Radon<br>222         | 13<br>Al<br>Aluminum<br>26.98    | 14<br>Si<br>Silicon<br>28.09   | 15<br>P<br>Phosphorus<br>30.97    | 16<br>S<br>Sulfur<br>32.07      | 17<br>Cl<br>Chlorine<br>35.45    | 18<br>Ar<br>Argon<br>39.95   |
| 4<br>K<br>Potassium<br>39.10 | 20<br>Ca<br>Calcium<br>40.08   | Scandium<br>44.96               | 22<br>Ti<br>Titanium<br>47.87       | 23<br>V<br>Vanadium<br>50.94       | 24<br>Cr<br>Chromium<br>52.00    | 25<br>Mn<br>Manganese<br>54.94  | 26<br>Fe<br>Iron<br>55.85       | 27<br>Co<br>Cobalt<br>58.93      | 28<br>Ni<br>Nickel<br>58.69      | 29<br>Cu<br>Copper<br>63.55    | 30<br>Zn<br>Zinc<br>65.39        | 31<br>Ga<br>Gallium<br>69.72     | 32<br>Ge<br>Germanium<br>72.61 | 33<br>As<br>Arsenic<br>74.92      | 34<br>Se<br>Selenium<br>78.96   | 35<br>Br<br>Bromine<br>79.90     | 36<br>Kr<br>Krypton<br>83.80 |
| 5<br>Rb<br>Rubidium<br>85.47 | 38<br>Sr<br>Strontium<br>87.62 | 39<br>Y<br>Yttrium<br>88.91     | 40<br>Zr<br>Zirconium<br>91.22      | 41<br>Nb<br>Niobium<br>92.91       | 42<br>Mo<br>Molybdenum<br>95.94  | 43<br>Tc<br>Technetium<br>98    | 44<br>Ru<br>Ruthenium<br>101.07 | 45<br>Rh<br>Rhodium<br>102.91    | 46<br>Pd<br>Palladium<br>106.37  | 47<br>Ag<br>Silver<br>107.87   | 48<br>Cd<br>Cadmium<br>112.41    | 49<br>In<br>Indium<br>114.82     | 50<br>Sn<br>Tin<br>118.71      | 51<br>Sb<br>Antimony<br>121.76    | 52<br>Te<br>Tellurium<br>127.60 | 53<br>I<br>Iodine<br>126.90      | 54<br>Xe<br>Xenon<br>131.29  |
| 6<br>Cs<br>Cesium<br>132.91  | 56<br>Ba<br>Barium<br>137.33   | 57<br>La<br>Lanthanum<br>138.91 | 72<br>Hf<br>Hafnium<br>178.49       | 73<br>Ta<br>Tantalum<br>180.95     | 74<br>W<br>Tungsten<br>183.84    | 75<br>Re<br>Rhenium<br>186.21   | 76<br>Os<br>Osmium<br>190.23    | 77<br>Ir<br>Iridium<br>192.22    | 78<br>Pt<br>Platinum<br>195.08   | 79<br>Au<br>Gold<br>196.97     | 80<br>Hg<br>Mercury<br>200.59    | 81<br>Tl<br>Thallium<br>204.38   | 82<br>Pb<br>Lead<br>207.2      | 83<br>Bi<br>Bismuth<br>208.98     | 84<br>Po<br>Polonium<br>(209)   | 85<br>At<br>Astatine<br>(210)    | 86<br>Rn<br>Radon<br>(222)   |
| 7<br>Fr<br>Francium<br>(223) | 88<br>Ra<br>Radium<br>(226)    | 89<br>Ac<br>Actinium<br>(227)   | 104<br>Rf<br>Rutherfordium<br>(261) | 105<br>Db<br>Dubnium<br>(262)      | 106<br>Sg<br>Seaborgium<br>(266) | 107<br>Bh<br>Bohrium<br>(264)   | 108<br>Hs<br>Hassium<br>(269)   | 109<br>Mt<br>Meitnerium<br>(268) |                                  |                                |                                  |                                  |                                |                                   |                                 |                                  |                              |
|                              |                                |                                 | 58<br>Ce<br>Cerium<br>140.12        | 59<br>Pr<br>Praseodymium<br>140.91 | 60<br>Nd<br>Neodymium<br>144.24  | 61<br>Pm<br>Promethium<br>(145) | 62<br>Sm<br>Samarium<br>150.36  | 63<br>Eu<br>Europium<br>151.96   | 64<br>Gd<br>Gadolinium<br>157.25 | 65<br>Tb<br>Terbium<br>158.93  | 66<br>Dy<br>Dysprosium<br>162.50 | 67<br>Ho<br>Holmium<br>164.93    | 68<br>Er<br>Erbium<br>167.26   | 69<br>Tm<br>Thulium<br>168.93     | 70<br>Yb<br>Ytterbium<br>173.04 | 71<br>Lu<br>Lutetium<br>174.97   |                              |
|                              |                                |                                 | 90<br>Th<br>Thorium<br>232.04       | 91<br>Pa<br>Protactinium<br>231.04 | 92<br>U<br>Uranium<br>238.03     | 93<br>Np<br>Neptunium<br>(237)  | 94<br>Pu<br>Plutonium<br>(244)  | 95<br>Am<br>Americium<br>(243)   | 96<br>Cm<br>Curium<br>(247)      | 97<br>Bk<br>Berkelium<br>(247) | 98<br>Cf<br>Californium<br>(251) | 99<br>Es<br>Einsteinium<br>(252) | 100<br>Fm<br>Fermium<br>(257)  | 101<br>Md<br>Mendelevium<br>(258) | 102<br>No<br>Nobelium<br>(259)  | 103<br>Lr<br>Lawrencium<br>(262) |                              |

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