LAST SNOW PACKET-Phy. Science & Chemistry

The formula Al2(CO3)3 contains \_\_\_\_\_\_ oxygen atoms,

Which is a Covalent Compound: Na2S CoCl2 NH3 Fe(OH)3

Ionic Compound, which one? CO2 NH3 AlCl3 C4H10

Which is a transition metal? He C Fr Pt

Balance the following:

Al2(CO3)3 + Sb2(SO4)5 🡪 Al2(SO4)3 + Sb2(CO3)5

120.0 g of NaOH is the same as \_\_\_\_\_\_\_\_\_\_\_\_\_\_ mol NaOH

List the symbol for the element in each case below:

The largest Alkali Metal:\_\_\_\_\_\_\_\_\_

The smallest Chalcogen:\_\_\_\_\_\_\_\_\_\_\_\_\_

The metalloid in the following: Al Cu Sb C

Consider: Al 🡪 Al+3 Has Al been oxidized or reduced??

Basic Chem & Phy Sci. Vocabulary

Anything that has mass & occupies space is \_\_\_\_\_\_\_\_\_\_\_\_.

The starting materials in a reaction are called \_\_\_\_\_\_\_\_\_\_\_\_.

Reduction means loss of electrons gain of electrons sharing electrons

In balancing a chemical equation you may change the \_\_\_\_\_\_\_\_\_\_\_\_\_.

A vertical column of elements is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Any reaction that releases heat/energy is a(n)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A solid to gas phase change is called :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A liquid to gas phase change is called: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will speed up the rate of a chemical reaction.

The nitrogen family is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please choose a term from the following to use above.

Reactants Products Catalyst Yields Halogens

Matter Pnictogens Exothermic Sublimation Family

Chalcogens Coefficients Subscripts Evaporation Pepsi

BALANCE & CLASSIFY THE FOLLOWING REACTIONS:

Al2(CO3)3  🡪 Al2O3  + CO2

Sb + Cl2 🡪 SbCl5

KCl + O2  🡪 KClO3

C7H14 + O2 🡪 CO2  + H2O

N2  + H2  🡪 NH3

Pb(NO3)2  + KI 🡪 PbCl2 + KNO3

Cu + AgNO3 🡪 Ag + Cu(NO3)3

(NH4)2CO3 🡪 NH3 + CO2  + H2O

Equation Types: Synthesis, Decomposition, Combustion, Single Replacement & Double Replacement

PERIODIC TABLE SCAVENGER SEARCH

Use a table of elements to determine the identity of element. Write the symbol of the element after the clue.

A transition metal with a rounded mass of 55.85.\_\_\_\_\_\_\_

The only liquid metal, once used in thermometers \_\_\_\_\_\_\_

This heavy weight metal has 82 protons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I am a strong light weight transition metal with a mass of a little less than four dozen\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I am a 6th Period, Alkaline Earth Metal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When I get with Chlorine, we make SALT\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

With 98 protons, I was named after a west coast state\_\_\_\_\_\_\_\_\_

A 6th Period Chalcogen & the native country of Madam Curie \_\_\_\_\_\_

I am a Period 4 member of the Boron Family \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A Period 3, Alkaline Earth Metal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

With 29 protons I am the nick name of a policeman\_\_\_\_\_\_\_\_\_\_\_\_\_

With 90 protons, I am named after the God of Thunder\_\_\_\_\_\_\_\_\_\_

Being the only liquid ***nonmetal*** , I am in Period 4, Group VII-A \_\_\_\_\_\_

I am a precious metal with 1 less proton than mercury \_\_\_\_\_\_\_\_\_\_\_\_

With a dozen & a half protons, I am of noble blood\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Symbol | Mass # | Protons | Neutrons | Charge | Electrons |
|  |  | 1 | 2 | 0 |  |
|  |  | 6 | 8 |  | 6 |
|  |  | 20 | 22 |  | 18 |
| Pb |  |  | 128 | +2 |  |
|  |  | 25 | 30 |  | 18 |
| Fe | 58 |  |  | +3 |  |
|  |  | 24 | 28 | +6 |  |
|  |  | 33 | 45 |  | 36 |
|  | 80 | 34 |  | -2 |  |
|  | 18 | 8 |  | 0 |  |
| Ba+2 |  |  | 84 |  |  |

Use a periodic table to aid in completing the above table.

Remember. Mass = protons + neutrons

Neutrons = Mass – Protons

Charge = Protons – Electrons

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protons** | **Electrons** | **Charge** | **Symbol &**  **Charge** | **Neutral (N)**  **Cation (C)**  **Anion (A)** |
| 7 | 10 |  |  |  |
| 12 | 10 |  |  |  |
| 30 | 30 |  |  |  |
| 19 |  | +1 |  |  |
|  |  |  | P-3 |  |
| 38 |  | +2 |  |  |
| 8 |  | 0 |  |  |
| 35 | 36 |  |  |  |
| 55 |  | +1 |  |  |
|  |  |  | Mn+7 |  |
| 19 |  | +1 |  |  |
|  | 18 | 0 |  |  |
| 31 |  |  | Ga |  |

Remember Charge is Protons minus electrons

The Atomic Number = # of protons

If the charge = 0, then the # of protons = the number of Electrons

Balance the following chemical equations:

Sb + O2 🡪 Sb2O5

Na2S + W3P5 🡪 Na3P + W2S5

C6H12 + O2 🡪 CO2 + H2O

Al + HCl 🡪 AlCl3 + H2

AlP + SbCl5 🡪 AlCl3 + Sb3P5

NO2 + H2O 🡪 NH3 + O2

NH3 + O2 🡪 N2O5 + H2O

Mn2O7 + Sb4C5 🡪 Mn4C7 + Sb2O5

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Symbol** | Atomic # | Neutrons | Protons | Electrons | Mass # |
| B |  | 6 |  |  |  |
| Pb |  |  |  |  | 207 |
|  |  | 39 |  | 31 |  |
|  | 18 | 22 |  |  |  |
| Ca |  |  |  |  | 42 |
| S |  | 16 |  |  |  |
|  | 17 |  |  |  | 36 |
|  |  | 8 | 6 |  |  |
|  |  |  |  | 34 | 80 |
| Rb |  |  |  |  | 87 |

Complete the above table. Use the given Mass Numbers on this worksheet. Remember: Neutrons = Mass # minus Atomic #. Assume that all substance are electrically neutral atoms, which means that two subatomic particles are equal. Yes, you will need a periodic table.

Easy Chemical Reactions to Balance:

Al + N2 🡪 AlN

Ba + HCl 🡪 BaCl2 + H2

H2 + N2 🡪 NH3

C15H30 + O2 🡪 CO2 + H2O

C12H22O11 🡪 C + H2O

Zn + HCl 🡪 ZnCl2 + H2

C8H16 + O2 🡪 CO2 + H2O

HCl + NaOH 🡪 NaCl + H2O

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ATOM or ION** | **ATOMIC**  **Number** | **MASS NUMBER** | **Electrons** | **Protons** | **Neutrons** |
| 25Na |  |  |  |  |  |
| C |  | 14 |  |  |  |
| 18O-2 |  |  | 10 |  |  |
| 60Mn+7 |  |  |  | 25 |  |
| P-3 |  | 35 |  |  |  |
| Na+1 |  |  |  | 11 | 14 |
| 3H+1 | 1 |  |  |  |  |
| Al+3 |  | 29 | 10 |  |  |

Again, use the given Mass Number on the above worksheet. Use a table of elements to get an atomic number.