Bonding & Reactions Review - KEY

## **Part 1** | For each of the following boxes, fill in the symbol that fits the listed clue:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Alkaline Earth Metal in the 3rd period | **Mg** |  | As an ion, it has  18 electrons and  a charge of -2 | **S** |
| Has 3 valence electrons in the 3rd energy level | **Al** |  | The most reactive halogen gas | **F** |
| Has a mass of 119 when it has 69 neutrons | **Sn** |  | Phosphate | **PO4** |

## **Part 2** | For each of the combinations, write in the compound formula and name:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Al** | **+** | **S** | **=** | **Al2S3** |
| **Name** | Aluminum Sulfide | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Mg** | **+** | **PO4** | **=** | **Mg3(PO4)2** |
| **Name** | Magnesium Phosphate | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sn** | **+** | **F** | **=** | **SnF4** |
| **Name** | Tin (IV) Fluoride | | | |

## **Part 3** | For each of the example, identify the reaction type, predict the products, and balance the equation

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | Reaction Type: Double Replacement | | | | | | | | | | |
|  | **Al2S3** | **+** |  | **Mg3(PO4)2** | **🡪** | **2** | **AlPO4** | **+** | **3** | **MgS** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2** | Reaction Type: Single Replacement | | | | | | | | | | |
| **2** | **Mg** | **+** |  | **SnF4** | **🡪** |  | **Sn** | **+** | **2** | **MgF2** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **3** | Reaction Type: Decomposition | | | | | | | | |
|  | **SnF4** | **🡪** |  | **Sn** | **+** | **2** | **F2** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **4** | Reaction Type: Single Replacement | | | | | | |
|  | **Sn** | **+** |  | **Al2S3** | **🡪** | No Reaction |

## **Part 4** | For each of the problem, use the balanced equations from part 3 and the periodic table to solve

How many moles Magnesium Fluoride are created when 5 moles of Tin (IV) Fluoride are reacted with excess Magnesium? (Reaction 2)

How many grams of Aluminum Sulfide are needed to produce 3.2 moles of Magnesium Sulfide? (Reaction 1)

How many moles of Tin (IV) Fluoride are needed to produce 30 liters of F2 gas? (Reaction 3)

How many grams of Aluminum Phosphate are created when 319.4 g of Aluminum Sulfide react? (Reaction 1)

How many atoms of Tin are produced when 30 moles of Tin (IV) Fluoride are reacted with excess Magnesium? (Reaction 2)