

Possible Pairs of Reactants

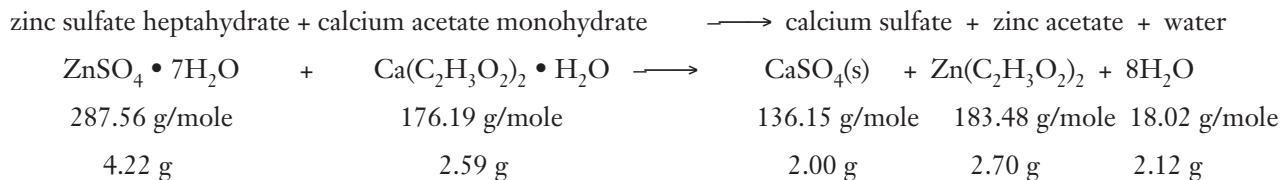
**Directions:** Use a scissors to cut apart the possible pairs of assigned reactants. Have each lab group draw a card to determine which pair they will use for their experiment.

<p><b>#1</b>  <b>A. zinc sulfate heptahydrate</b>            +  <b>B. calcium acetate monohydrate</b></p>	<p><b>#2</b>  <b>A. zinc sulfate heptahydrate</b>            +  <b>B. sodium carbonate</b></p>
<p><b>#3</b>  <b>A. zinc sulfate heptahydrate</b>            +  <b>B. calcium chloride dihydrate</b></p>	<p><b>#4</b>  <b>A. zinc sulfate heptahydrate</b>            +  <b>B. potassium carbonate</b></p>
<p><b>#5</b>  <b>A. magnesium sulfate heptahydrate</b>            +  <b>B. calcium acetate monohydrate</b></p>	<p><b>#6</b>  <b>A. magnesium sulfate heptahydrate</b>            +  <b>B. sodium carbonate</b></p>
<p><b>#7</b>  <b>A. magnesium sulfate heptahydrate</b>            +  <b>B. calcium chloride dihydrate</b></p>	<p><b>#8</b>  <b>A. magnesium sulfate heptahydrate</b>            +  <b>B. potassium carbonate</b></p>
<p><b>#9</b>  <b>A. calcium acetate monohydrate</b>            +  <b>B. sodium carbonate</b></p>	<p><b>#10</b>  <b>A. calcium acetate monohydrate</b>            +  <b>B. potassium carbonate</b></p>
<p><b>#11</b>  <b>A. sodium carbonate</b>            +  <b>B. calcium chloride dihydrate</b></p>	<p><b>#12</b>  <b>A. calcium chloride dihydrate</b>            +  <b>B. potassium carbonate</b></p>

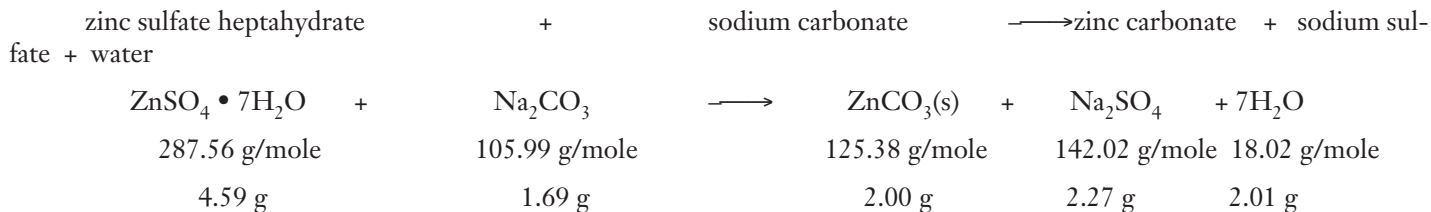
## Theoretical Results

For each pair of reactants below there is a complete word equation, balanced formula equation, molar mass values and grams of reactants needed and products formed.

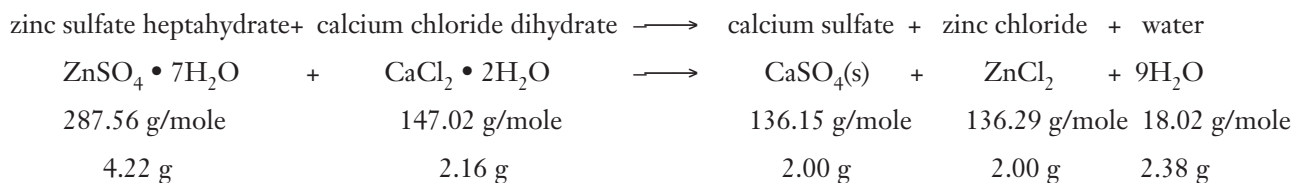
### Reactant Pair #1



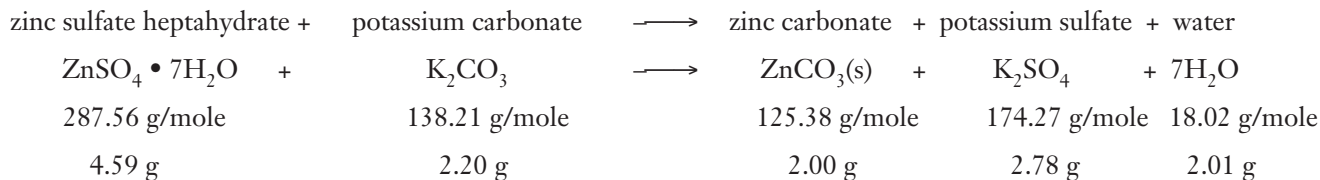
### Reactant Pair #2



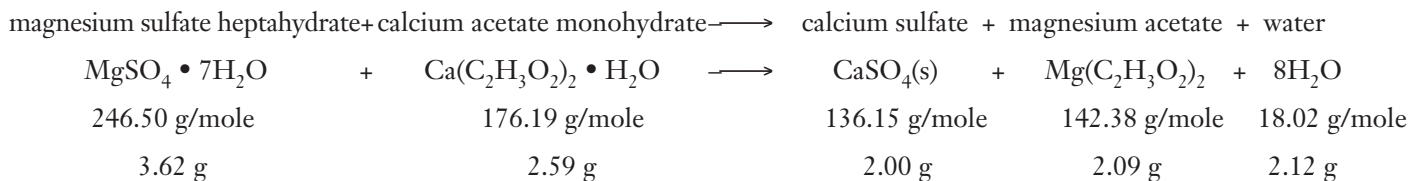
### Reactant Pair #3



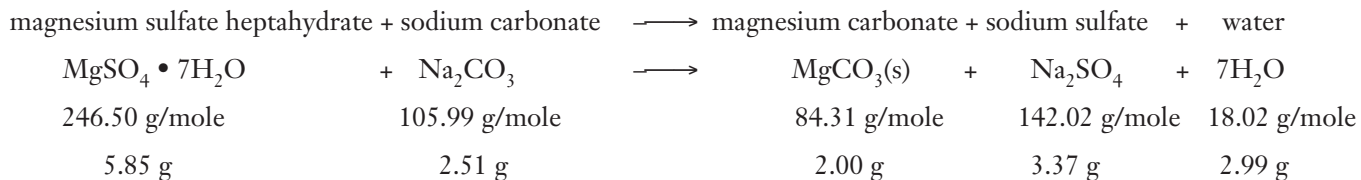
### Reactant Pair #4

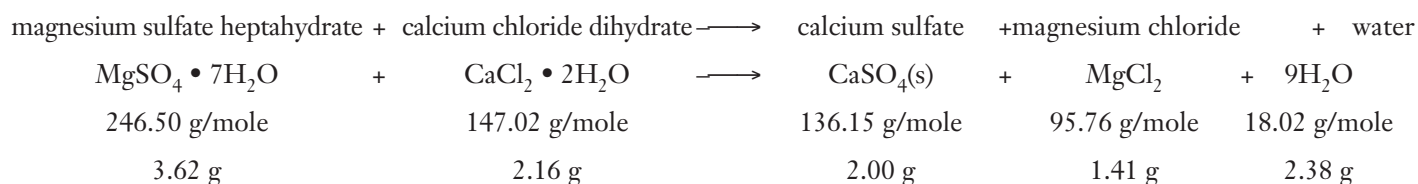
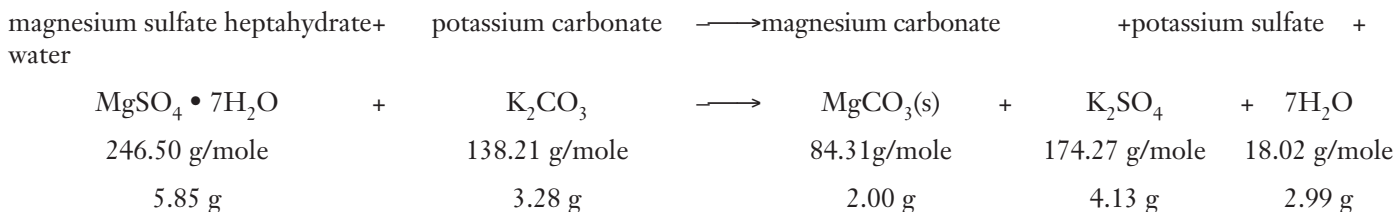
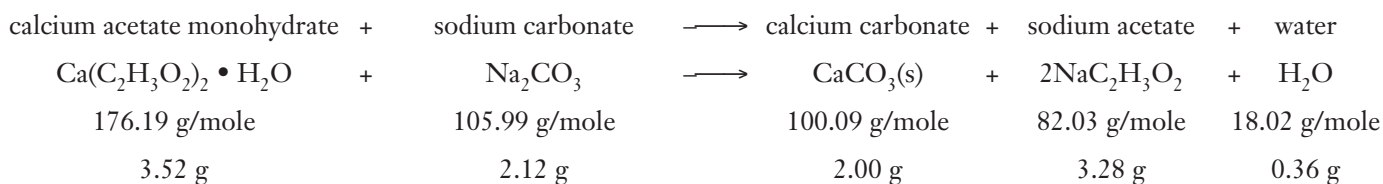
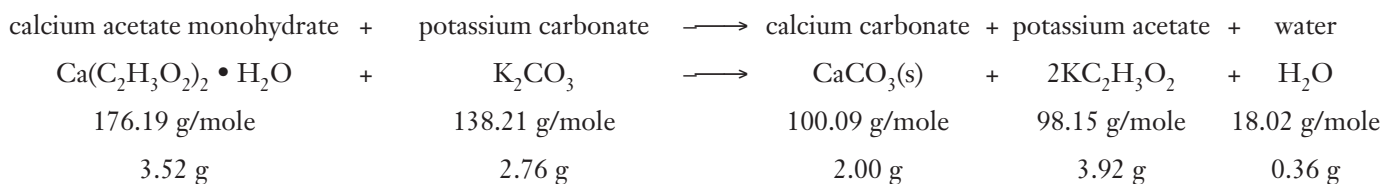
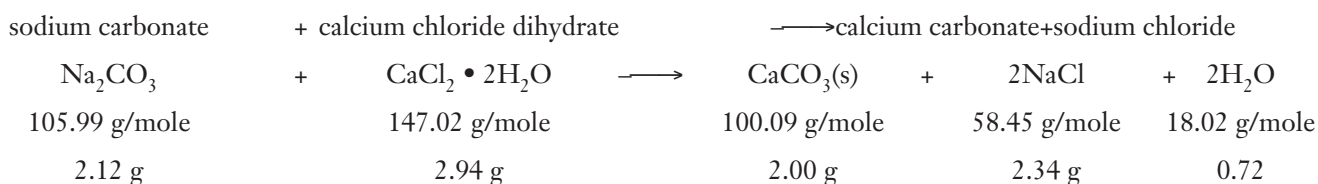
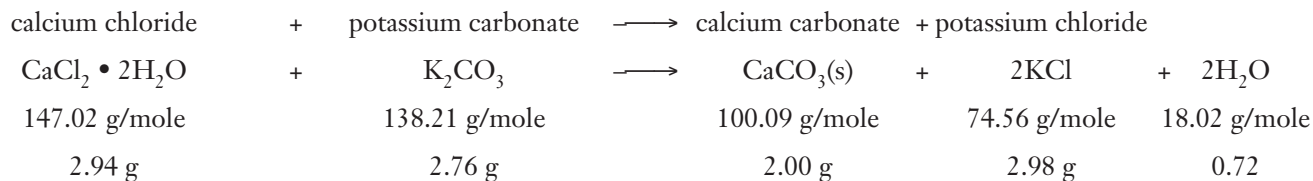


### Reactant Pair #5



### Reactant Pair #6



**Reactant Pair #7****Reactant Pair #8****Reactant Pair #9****Reactant Pair #10****Reactant Pair #11****Reactant Pair #12**

The steps used to determine the above values are the same as those described in the background section of the experiment. The total masses of reactants needed for a class with 12 lab groups to complete the experiment are 17.62 g  $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ ; 18.94 g  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ ; 12.22 g  $\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$ ; 8.44 g  $\text{Na}_2\text{CO}_3$ ; 10.2; and 11.00 g  $\text{K}_2\text{CO}_3$ . There are enough chemicals included in this kit for five sets of experiments. They are also common laboratory chemicals that have applications in many other experiments.