

Exercise 7.4

Predicting Whether or Not a Reaction Occurs

This exercise assumes that you can do Exercises 6.1 to 6.3 and Exercises 7.2 to 7.3.

1. Fill in the blanks.
 - (a) When an element that is a metal reacts with an element that is a nonmetal, the product is a(n) _____.
 - (b) Nonmetal elements that react with all* the Group 1 and 2 metals include _____.
*except possibly beryllium
 - (c) A nonmetal element that reacts with some (but not most) metals is _____.
 - (d) Nonmetal elements that don't react with any metals include _____.
 - (e) When most metals react with most acids, the gas produced is _____.
 - (f) If a metal reacts with water, the gas produced is _____.
 - (g) When most metal oxides react with most acids, _____ is produced.
 - (h) When most metal oxides react with water, _____ is produced.
 - (i) When most carbonates react with most acids, the gas produced is _____.
 - (j) When most carbonates are heated enough to decompose, the gas produced is _____, and the solid produced is _____.

2. Complete the table below. In each cell, either list the product(s) of the reaction between the two reacting species **or** write "no reaction".
Do not fill in the greyed out cells; those combinations are beyond the scope of this course.

| | Cl ₂ (g) | Br ₂ (l) | I ₂ (s) | O ₂ (g) | N ₂ (g) | H ₂ O(l) | H ⁺ (aq) | OH ⁻ (aq) |
|------------------------------------|---------------------|---------------------|--------------------|--------------------|--------------------|---------------------|---------------------|----------------------|
| Li(s) | | | | | | | | |
| Na(s) | | | | | | | | |
| K(s) | | | | | | | | |
| Mg(s) | | | | | | | | |
| Ca(s) | | | | | | | | |
| Al(s) | | | | | | | | |
| Li ₂ O(s) | | | | | | | | |
| BeO | | | | | | | | |
| MgO(s) | | | | | | | | |
| CaO(s) | | | | | | | | |
| Al ₂ O ₃ (s) | | | | | | | | |