

## Section 4.3

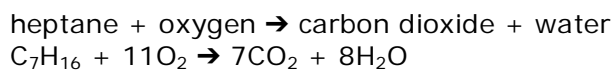
# Chemical Equations

## Check Your Understanding



### Checking Concepts

1. Most commercial trucks use diesel fuel. Consider the following reaction that occurs during the combustion of diesel fuel.



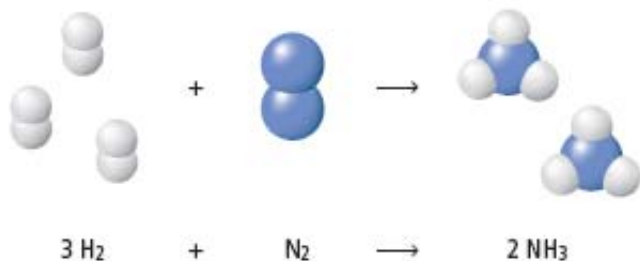
(a) List the names of the reactants.

(b) Give the formulas of the products.

(c) What is the coefficient of the carbon dioxide?

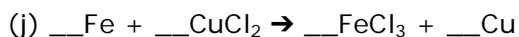
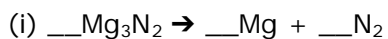
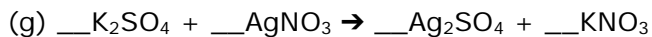
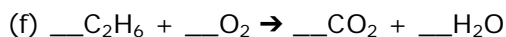
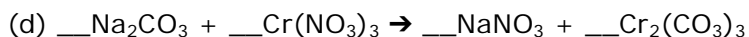
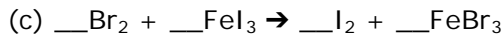
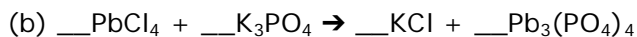
(d) What is the meaning of the + symbol on the left side of the equation?

2. Study the following diagram, and then write a skeleton equation for the reaction it represents. A white circle represents an H atom. A blue circle represents an N atom.

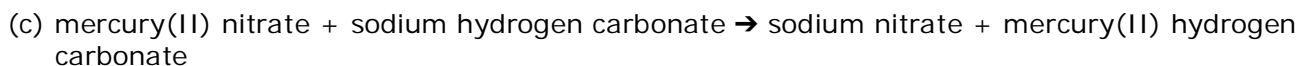
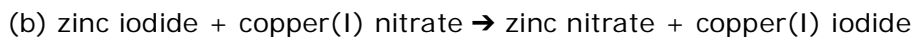
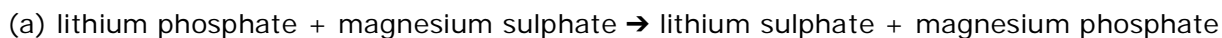


## Understanding Key Ideas

3. Balance the following skeleton equations.



4. Write skeleton equations for the following chemical reactions and then balance them. Be sure to check your formulas carefully before you begin to balance.



(d) nickel(III) iodide and iron(II) sulphide → nickel(III) sulphide + iron(II) iodide

(e) aluminum hydroxide + hydrogen fluoride → aluminum fluoride + water

(f) hydrogen chloride + barium hydroxide → barium chloride + water

(g) calcium bromide + potassium carbonate → calcium carbonate + potassium bromide

(h) titanium(III) fluoride + cesium sulphite → cesium fluoride + titanium(III) sulphite

(i) barium sulphate + sodium hydroxide → sodium sulphate + barium hydroxide

(j) calcium chloride + potassium → potassium chloride + calcium

(k) hydrogen nitrate + strontium carbonate → strontium nitrate

### ***Pause and Reflect***

The law of conservation of mass was developed after many experiments consistently showed that mass is neither gained nor lost during a chemical reaction. How does our understanding of atoms help explain why mass does not change during chemical reactions?