

Chemistry 20	Science 10 Review
Lesson 5+6: Formation, decomposition and combustion Equations	84 mins

Law of Conservation of Mass

- Matter **CANNOT** be created or destroyed
- Matter CAN (and will) transform

Formation Reactions

<ul style="list-style-type: none"> - ELEMENTS become 1 COMPOUND - Reactants → Products - MUST be balanced (WHOLE number only) - Remember your binary elements and others...(by themselves... not in compounds) - N₂ O₂ F₂ Cl₂ Br₂ I₂ At₂ - P₄ S₈ and O₃ (ozone) - If using a transition metal and the charge is NOT given then you use the most common charge. Ie... the first. <p>PRACTICE: 1a-d 2a-e</p>	<p>A + B → AB</p> <p>Ex. Solid calcium combines with solid Iodine to become solid calcium iodide.</p> <p>Word equation Calcium + Iodine → Calcium Iodide</p> <p>Reaction Formula $\text{Ca}_{(s)} + \text{I}_{2(s)} \rightarrow \text{CaI}_{2(s)}$</p> <p>Example Word equation Scandium + sulphur → scandium sulphide Formula $(16)\text{Sc}_{(s)} + (3)\text{S}_{8(s)} \rightarrow (8)\text{Sc}_2\text{S}_{3(s)}$</p> <p>$(6)\text{Sr}_{(s)} + \text{P}_{4(s)} \rightarrow (2)\text{Sr}_3\text{P}_{2(s)}$</p> <p>$\text{Ti}_{(s)} + (2)\text{Br}_{2(l)} \rightarrow \text{TiBr}_{4(s)}$</p>
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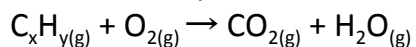
Simple Decomposition

<ul style="list-style-type: none"> - 1 compound becomes elements <ul style="list-style-type: none"> - Opposite of formation - 	<p>AB → A + B</p> <p>$(8)\text{V}_2\text{S}_{5(s)} \rightarrow (16)\text{V}_{(s)} + (5)\text{S}_{8(s)}$</p> <p>$(4)(\text{NH}_4)_3\text{PO}_{4(aq)} \rightarrow (6)\text{N}_{2(g)} + (24)\text{H}_{2(g)} + \text{P}_{4(s)} + (8)\text{O}_{2(g)}$</p> <p>$\text{Sc}_2(\text{OOCOO})_{3(s)} \rightarrow (2)\text{Sc}_{(s)} + (6)\text{O}_{2(g)} + (6)\text{C}_{(s)}$</p>
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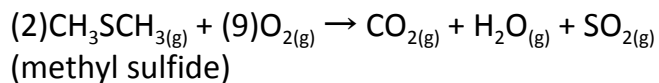
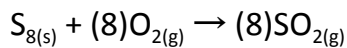
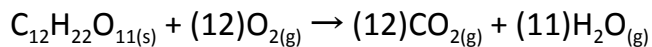
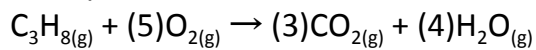
Complete Combustion (Burning)

- The burning of a fuel
- ALWAYS uses oxygen ($O_{2(g)}$)
- TIP: Balance Oxygen LAST
- Hydrocarbons become $CO_{2(g)}$ and $H_2O_{(g)}$
- Other elements in combustion
 - $C \rightarrow CO_{2(g)}$
 - $H \rightarrow H_2O_{(g)}$
 - $S \rightarrow SO_{2(g)}$
 - $N \rightarrow NO_{2(g)}$

Basic form (hydrocarbons)



Examples



Practice FINISH

Chemistry 20 - Science 10 Review - Formation, Decomposition, and Complete Combustion

Name: _____

Ensure that your chemical equations are balanced. Ensure that your symbolic equations are properly *balanced* using coefficients.

1. Complete each of the following word equations. You may need to look up some chemical formulas using your textbook.

a. sodium plus fluorine gas produces

b. barium plus selenium produces

c. calcium plus iodine produces

d. strontium plus nitrogen produces

e. hydrogen fluoride decomposes to

f. magnesium phosphate decomposes to

g. iron (III) hydroxide decomposes to

h. vanadium (V) sulfide decomposes to

i. methane burned in oxygen produces

j. glucose burned in oxygen produces

k. propane burned in oxygen produces

l. nitrogen monoxide burned in oxygen produces

2. Write balanced symbolic chemical equations for each of the following reactions. Use the most common charge for ambiguous multivalent ions.

a. sodium mixed with fluorine gas.

b. barium mixed with selenium.

c. calcium mixed with iodine.

d. strontium mixed with nitrogen.

e. vanadium mixed with astatine.

f. the decomposition of hydrogen fluoride.

g. the decomposition of magnesium phosphate.

h. the decomposition of iron (III) hydroxide.

i. the decomposition of vanadium (V) sulfide.

j. the complete combustion of methane.

k. the complete combustion of glucose.

l. the complete combustion of propane.

m. the complete combustion of sucrose.

n. the complete combustion of nitrogen.

o. the complete combustion of carbon disulfide.
