

# 24.1 Classifying Reactions

Chemistry

Summarize main points from each video.

Video Title / topic \_\_\_\_\_

Video Title / topic \_\_\_\_\_

Video Title / topic \_\_\_\_\_

# Topic Introduction



**Summarize your understanding of each paragraph.**

For the purposes of this topic, students need to recall five types of reactions: **combination**, **decomposition**, **substitution**, **double-substitution**, and **combustion**. In our textbook and other sources, the expression “displacement” is used rather than “substitution.”

***There are many alternative ways to classify reactions.*** Most classification methods are similar, however. An important distinction in addition to the list provided above is “precipitation reaction” vs. “acid-base reaction” – each, a subcategory of double-replacement.

***Three of the five categories listed in the first paragraph can additionally be described as “Oxidation-Reduction” reactions.*** Sometimes this is shortened to the expression of “Redox.” in a redox reaction, one species is reduced and another is oxidized.

Reduction involves a gain of electrons and oxidation involves a loss, so a redox reaction is one in which electrons are transferred between species. (Note, the word **“oxidation” is not the same as the word “oxygen”** – a potentially confusing expression to students.)

# Read/Summarize Text



1. Read the passage.
2. Underline key expressions in each sentence.
3. Re-write each word (or expression) you underlined.
4. Summarize the passage.

## *Organic Reactions*

NOTE: Organic reactions occur between organic molecules (molecules containing carbon and hydrogen). Since there is a virtually unlimited number of organic molecules, the scope of organic reactions is very large. However, many of the characteristics of organic molecules are determined by functional groups—small groups of atoms that react in predictable ways. Another key concept in organic reactions is Lewis basicity. Parts of organic molecules can be electrophilic (electron-loving) or nucleophilic (nucleus, or positive loving). Nucleophilic regions have an excess of electrons—they act as Lewis bases—whereas electrophilic areas are electron deficient and act as Lewis acids. The nucleophilic and electrophilic regions attract and react with each other. Organic reactions are beyond the scope of this topic, and are covered in more detail in Organic Chemistry.

[https://en.wikibooks.org/wiki/General\\_Chemistry/Types\\_of\\_chemical\\_reactions](https://en.wikibooks.org/wiki/General_Chemistry/Types_of_chemical_reactions)

## *Re-write words you underlined*

\_\_\_\_\_

\_\_\_\_\_

## *Using a complete sentence, summarize or rephrase the passage*

\_\_\_\_\_

# Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

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Some of the examples of ionic compounds are listed below:

1. Magnesium chloride  $\rightarrow MgCl_2$
2. Barium fluoride  $\rightarrow BaF_2$
3. Calcium phosphate  $\rightarrow Ca_3(PO_4)_2$
4. Lithium phosphate  $\rightarrow Li_3PO_4$
5. Sodium nitride  $\rightarrow Na_3N$
6. Aluminum phosphide  $\rightarrow AlP$
7. Aluminum nitride  $\rightarrow AlN$
8. Barium oxide  $\rightarrow BaO$
9. Calcium bromide  $\rightarrow CaBr_2$
10. Sodium fluoride  $\rightarrow NaF$
11. Sodium hydroxide  $\rightarrow NaOH$
12. Calcium chloride  $\rightarrow CaCl_2$
13. Calcium hydroxide  $\rightarrow Ca(OH)_2$
14. Potassium iodide  $\rightarrow KI$
15. Sodium sulfide  $\rightarrow Na_2S$
16. Aluminum sulfide  $\rightarrow Al_2S_3$
17. Potassium sulfide  $\rightarrow K_2S$
18. Lithium nitrate  $\rightarrow LiNO_3$
19. Sodium carbonate  $\rightarrow Na_2CO_3$
20. Strontium fluoride  $\rightarrow SrF_2$
21. Sodium iodide  $\rightarrow NaI$
22. Aluminum bromide  $\rightarrow AlBr_3$
23. Calcium oxide  $\rightarrow CaO$
24. Magnesium sulfide  $\rightarrow MgS$
25. Calcium nitrate  $\rightarrow Ca(NO_3)_2$
26. Sodium hydroxide  $\rightarrow NaOH$
27. Magnesium sulfate  $\rightarrow MgSO_4$

So we can say that ionic compounds are formed by combination of cation and anions which are bonded through electrostatic force of attraction. The charges of ions are always balance with opposite charges and form a neutral ionic compound.



# Draw Illustration



Copy and Label the Illustration in the Space Provided

*Redox types*

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- 1 Synthesis Reactions
- 2 Decomposition Reactions
- 3 Single Displacement Reactions
- 4 Double Displacement Reactions
  - 4.1 Precipitation
  - 4.2 Acid-Base Neutralization
- 5 Combustion
- 6 Organic Reactions
- 7 Redox

See previous page ... →

**Read/Summarize Text**

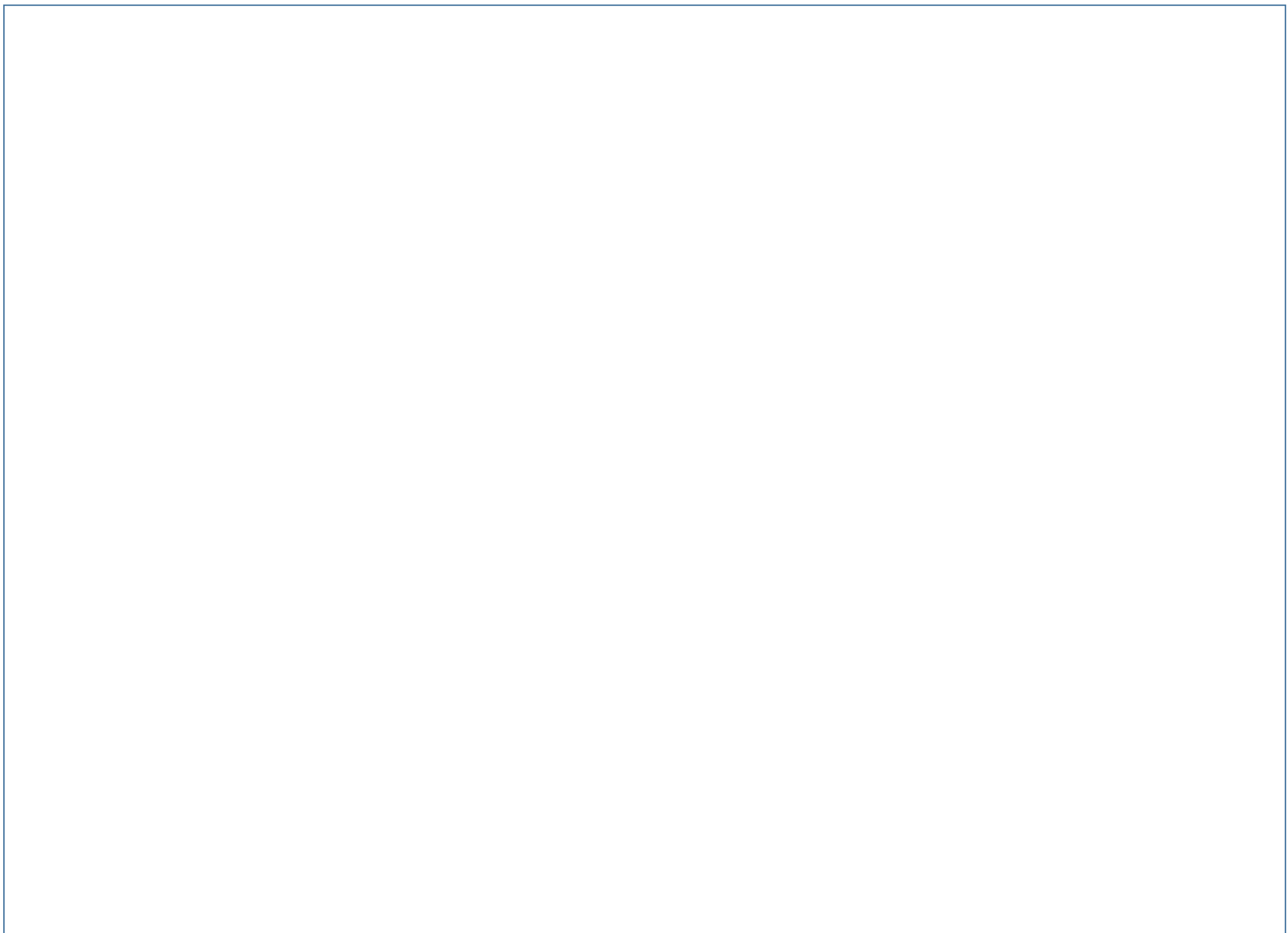
1. Read the passage.
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*Organic Reactions*

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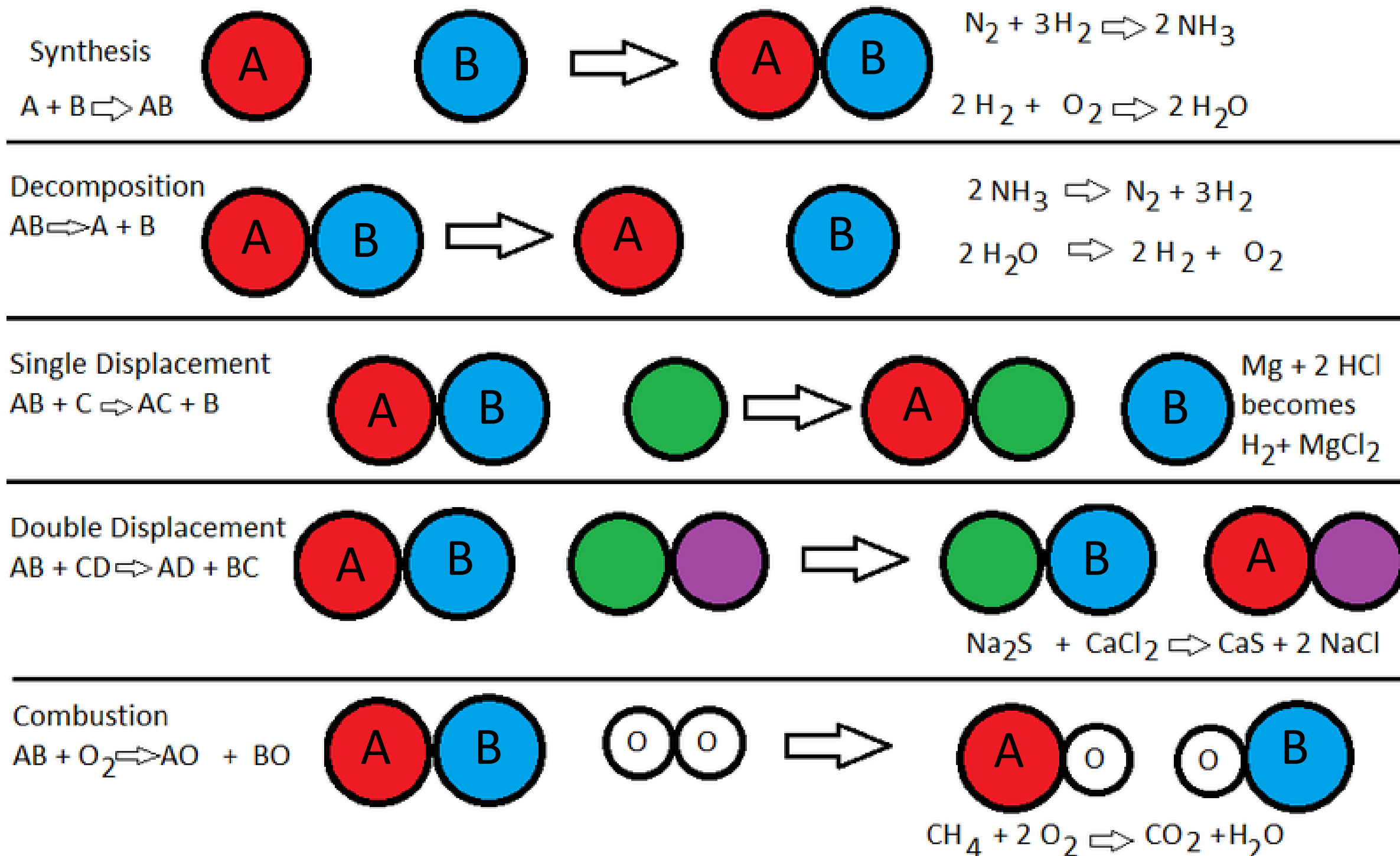
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# Draw Illustration



Copy and Label the Illustration in the Space Provided



<https://sites.google.com/site/beckerscience/assignments/homeworknovember9-132015>

# Show-Off Your Smarts!



## Instructions

- Complete as an individual or small group.
- Discuss your ideas/answers/responses in a small group.
- Select one person to present your responses to the class.

**Q1. How can this information be applied to a young-person's life?**

**Q2. How does this information apply to (or impact) communities?**

**Q3. When do scientists need to apply this information? How?**

**Q4. How would a person from 100 years ago view this information?**

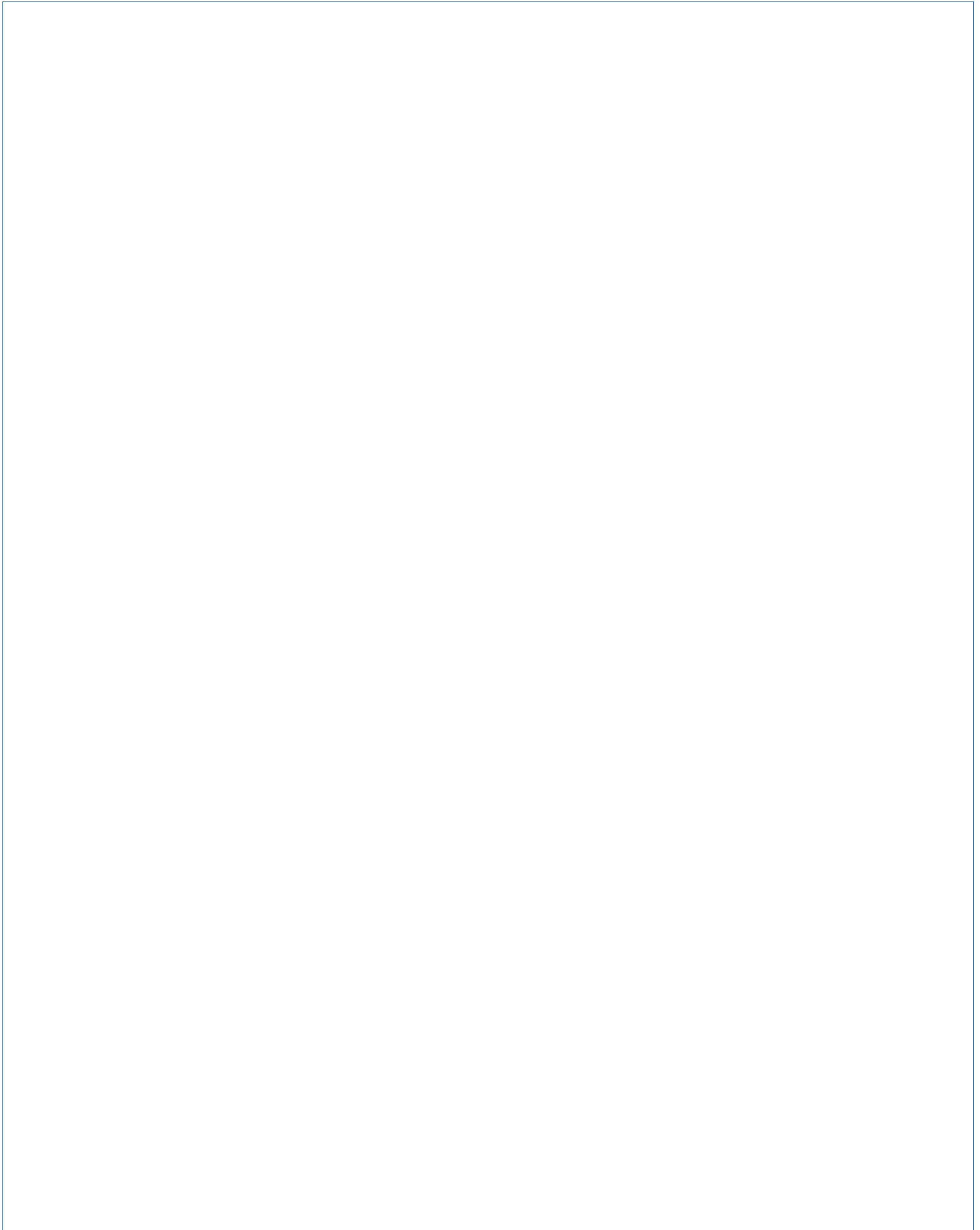
**Q5. How does this topic connect to other science topics or math?**

*Write down at least three words introduced or covered by this topic.*

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

# Make a Poster

In the space provided here, create/draw a poster which conveys the concepts you have learned on this topic.

A large, empty rectangular box with a thin blue border, intended for the student to create a poster. The box occupies the majority of the page below the instructions.