

Name: _____

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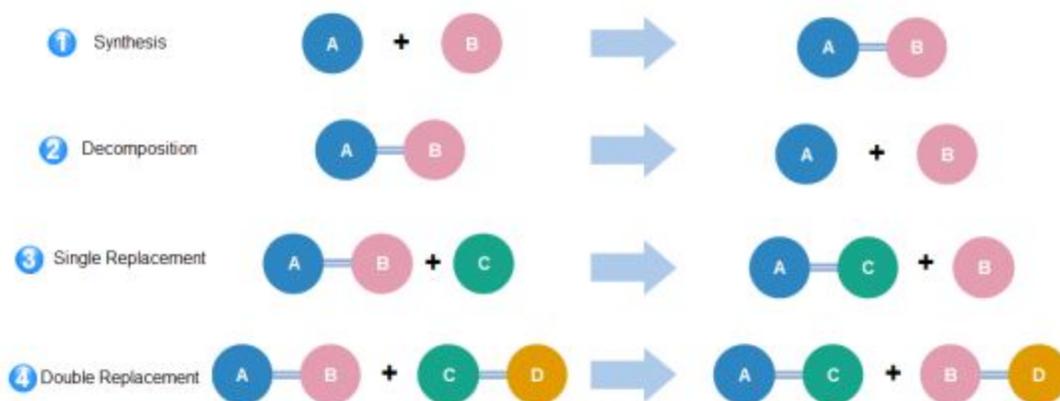
Project/Unit: Natural to Synthetic

Lesson: Define, 4 Types of Reaction

Chemical reactions start with **reactants** and end with a new **product**, but the process that shapes the reactants can be quite different. Below is an infographic that shows the 4 different process that reactants go through. Study the infographic and talk it over with a classmate what you think those 4 examples means.

4 Basic Chemical Reaction

Four Basic Types of Chemical Reaction



Types	Description	Example
Synthesis Reactions	Elements are joined together.	$2H_2 + O_2 \rightarrow 2H_2O$
Decomposition Reactions	A compound breaks into parts.	$2H_2O \rightarrow 2H_2 + O_2$
Single Displacement Reactions	A single element replaces an element in a compound.	$Zn + 2HCl \rightarrow H_2 + ZnCl_2$
Double Displacement Reactions	An element from each of two compounds switch places.	$H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$

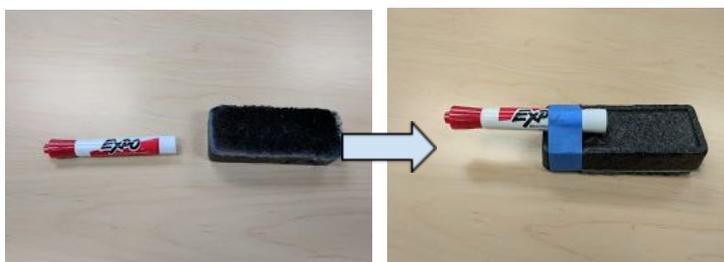
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Using materials from around classroom and makerspace, your challenge is to create a new product using the **Synthesis** chemical reaction type. Materials used to connect your objects will not be counted as reactants for this exercise.

Example:



Synthesis Reaction

Example:

List the two reactants (or objects) you started with:

1.

2.

What new product did you create?

Use this area to draw out your design and explain how this is an example of synthesis chemical reaction:

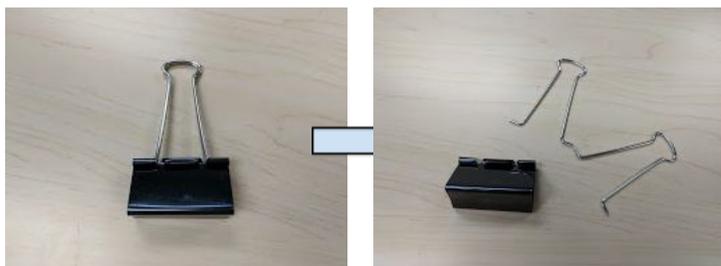
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Using materials from around classroom and makerspace, your challenge is create a new product using the **Decomposition** chemical reaction type. Because decomposition chemical reaction only breaks things apart, you will not need any materials used to connect.

Example:



Decomposition Reaction

What is the reactant (or object) you started with?

What parts did you disassemble your reactant into?

Use this area to draw out your design and explain how this is an example of a decomposition:

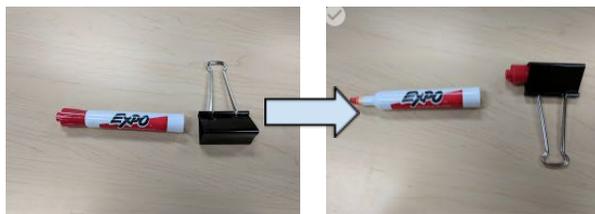
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Name: _____

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Using materials from around classroom and makerspace, your challenge is to create a new product using the **Single Replacement** chemical reaction type. Materials used to connect two objects will not be counted as reactants.

Example:



Single Replacement Reaction

List the reactants (or materials) you started with:

- 1.
- 2.
- 3.

What is your new product?

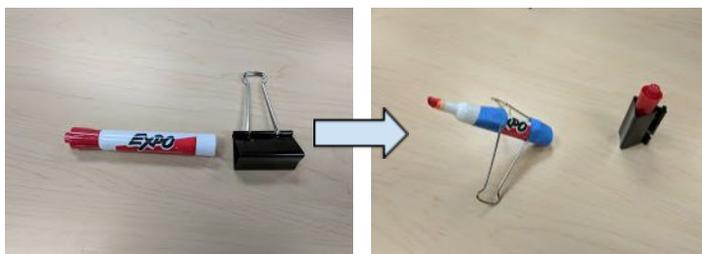
Use this area to draw out your design and explain how this is an example of a single replacement reaction:

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Using materials from around classroom and makerspace, your challenge is create a new product using the **Double Replacement** chemical reaction type. Materials used to bind, tape, and glue will not be counted in the example.



Double Replacement Reaction

List the reactants (or materials) you started with:

- 1.
- 2.
- 3.
- 4.

What is your new product?

Use this area to draw out your design and explain how this is an example of double replacement: