

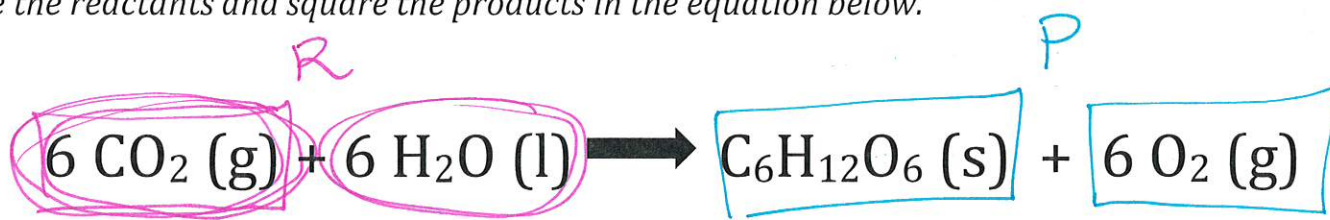
## Changes in Matter

Physical Change	Chemical Change
<ul style="list-style-type: none"> <li>● A change in the form of a substance but not in its chemical composition</li> <li>● The <u>identity</u> of the substance DOES NOT change</li> <li>● Change in:               <ul style="list-style-type: none"> <li>○ <u>size / shape</u></li> <li>○ <u>form / state (of matter)</u></li> <li>○ <u>dissolve / filter</u></li> </ul> </li> <li>● Reactants = Products</li> <li>● Examples:               <ul style="list-style-type: none"> <li>○ Expected <u>color change</u></li> <li>○ <u>cut</u></li> <li>○ <u>phase change (ex: s → l)</u></li> <li>○ <u>malleable (bend)</u></li> <li>○ <u>break</u></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● The change of one or more substances into another substance</li> <li>● The <u>identity</u> of the substance DOES change</li> <li>● <u>Signs of a chemical change:</u> <span style="color: purple;">new!</span> <ul style="list-style-type: none"> <li>P <u>recipitate (2 l's → s)</u></li> <li>E <u>nergy (temperature)</u></li> <li>C <u>olor change (unexpected)</u></li> <li>B <u>ubbles (new gas)</u></li> </ul> </li> <li>● Happens when a reaction occurs</li> <li>● Reactants ≠ Products</li> <li>● Examples:               <ul style="list-style-type: none"> <li>○ <u>burn</u></li> <li style="margin-left: 40px;">↓      ↓</li> <li>○ <u>heat      light</u></li> <li>○ <u>decomposition (break down)</u></li> <li>○ <u>oxidizing (ex: rust)</u></li> <li>○ <u>temperature = hot / cold</u></li> </ul> </li> </ul>

### Changes in Matter Written in Equation Form

- A reactant is a substance before a change. It's on the left side of the yield arrow.
- A product is a substance after a change. It's on the right side of the yield arrow.

Circle the reactants and square the products in the equation below.



chemical change!

### Changes in Matter Guided Practice

Identify each of the following as a physical change or a chemical change. Then, explain why each is a chemical or physical change using complete sentences. Put a circle around the reactants and a square around the products if applicable.

1. A popsicle (water + sugar) melts in the heat of the Texas summer. <span style="float: right;">SAME!</span>		
$\text{H}_2\text{O (s)} + \text{C}_6\text{H}_{12}\text{O}_6 \text{ (aq)} \rightarrow \text{H}_2\text{O (l)} + \text{C}_6\text{H}_{12}\text{O}_6 \text{ (aq)}$		
Does the <u>identity</u> of the substance change?	Is this a physical or chemical change?	Explain!!! <i>melts, phase change, s → l</i>
Yes / <u>No</u>	<u>Physical</u> / Chemical	This is a <del>_____</del> change, because the identity of the popsicle <del>_____</del> change. The popsicle melts, going from a solid to a liquid which is a change in _____.

2. You burn magnesium in oxygen using a Bunsen burner flame to form magnesium oxide. <span style="float: right;">← new substance</span>		
$2 \text{ Mg (s)} + \text{O}_2 \text{ (g)} \rightarrow 2 \text{ MgO (s)}$		
Does the <u>identity</u> of the substance change?	Is this a physical or chemical change?	Explain!!! <i>burn, heat, light, new substance</i>
<u>Yes</u> / No	Physical / <u>Chemical</u>	This is a <del>_____</del> change, because the identity of the magnesium and oxygen <del>_____</del> change. The sign of a chemical change observed is _____ when _____.

### Changes in Matter Independent Practice

1. Water was frozen to create ice.		
Does the identity of the substance change?	Is this a physical or chemical change?	Explain!!!
Yes / No	Physical / Chemical	

2. Leaves changing color in the fall.		
Does the identity of the substance change?	Is this a physical or chemical change?	Explain!!!
Yes / No	Physical / Chemical	