

Physical and Chemical Changes



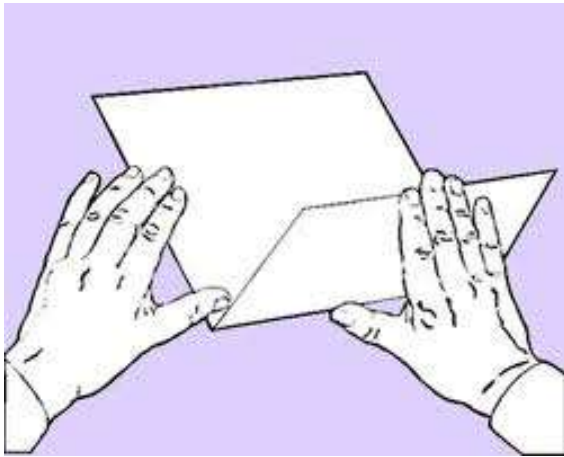
By: Cammie's Corner

Physical Changes

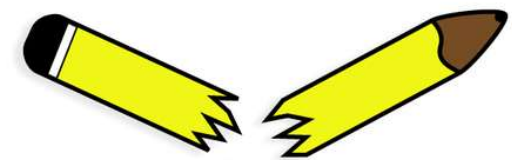
Physical Change: A change in which
no new substances form

- Do not change the type of matter an object is made of
- You change the shape, size or more physical properties.
- Many changes can be easily reversed.





Examples



Broken Pencil

Physical Changes

cutting

tearing

Breaking

Crushing

bending

folding

Warming

cooling

melting

freezing

Evaporating

condensing

mixing

separating

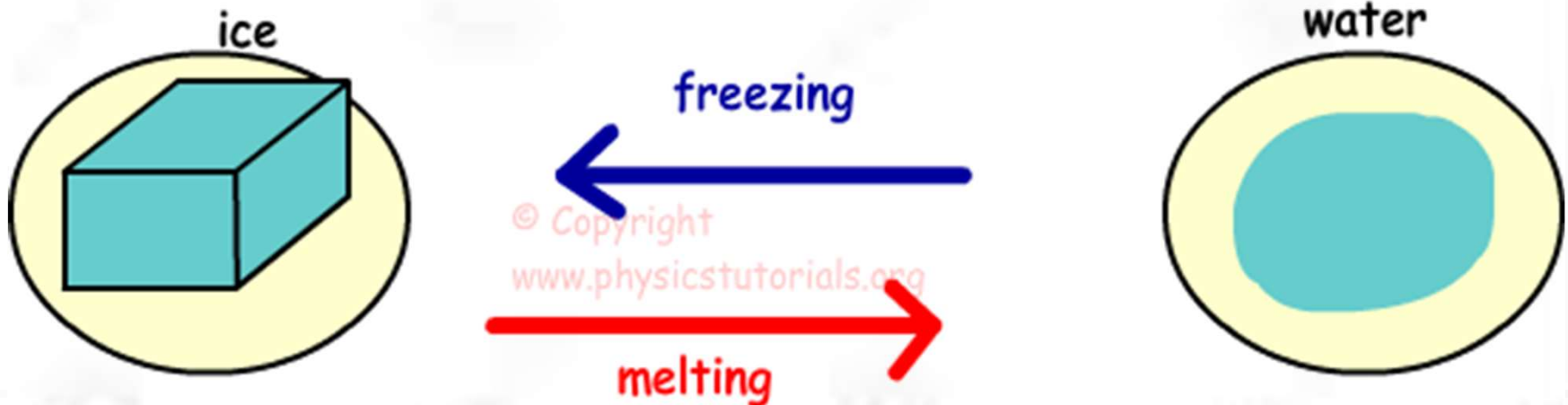
boiling



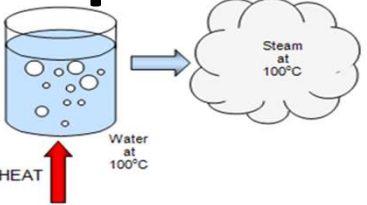
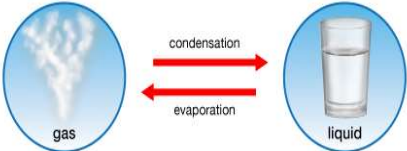
Dissolving

Changes in State

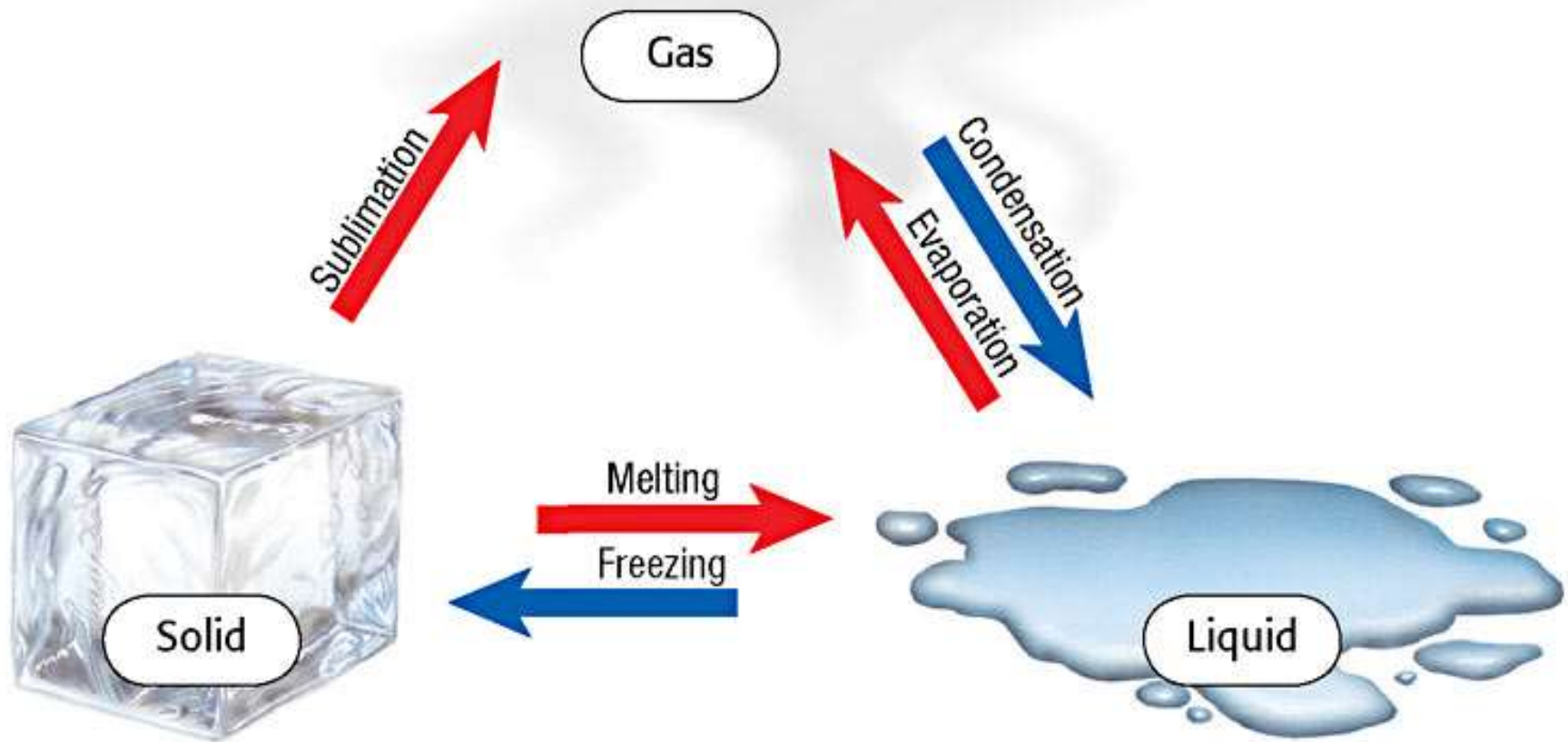
Matter changes state if you **raise or lower** the temperature.

- **Temperature**: a measure of how warm something is.
- As temperature **INCREASES**, matter has more energy and particles move quickly.

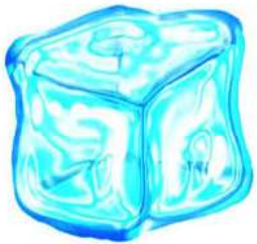
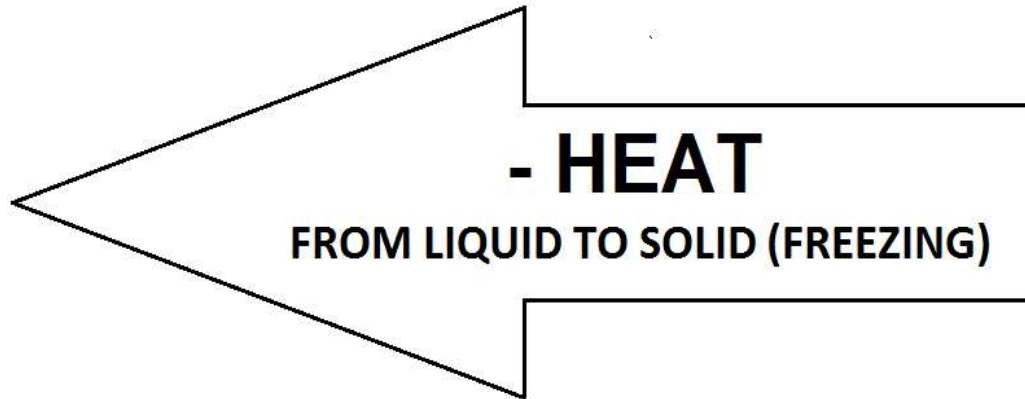


<u>Name</u>	<u>Change in State</u>	<u>Example</u>
<p>Melting</p> 	Solid to a liquid	When heated, ice changes to water. (ice melts at 0°C)
<p>Freezing</p> 	Liquid to a solid	Water gets cold, it changes to ice. (water freezes at 0°C)
<p>Evaporation</p> 	Liquid to a gas	Water boils, it changes to a gas. (water boils at 100°C)
<p>Condensation</p>  <p><small>© 2013 Encyclopædia Britannica, Inc.</small></p>	Gas to a liquid	When water vapor cools, it changes to liquid water.

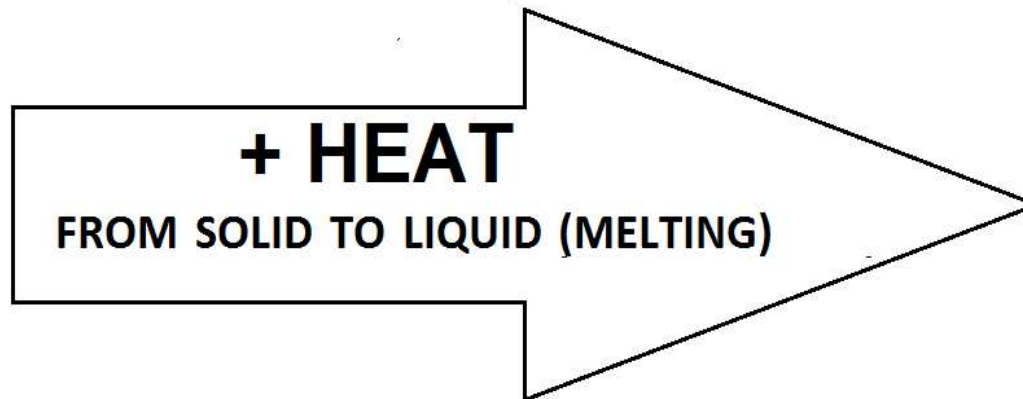
Changes in State



Changes in State



Ice temperature = Melting water temperature = 32° F or 0° C





Mixture: a combination of two or more substances.

- Each substance keeps its own properties.
- You can separate mixtures.
- Examples: a fruit salad, cereal with milk

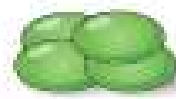
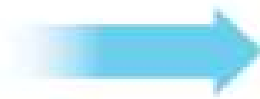


Ways to separate mixtures:

- Separate by color and shape
- Floating (salt and pepper)
- Filters and strains (pebbles)



Mixture



Separated

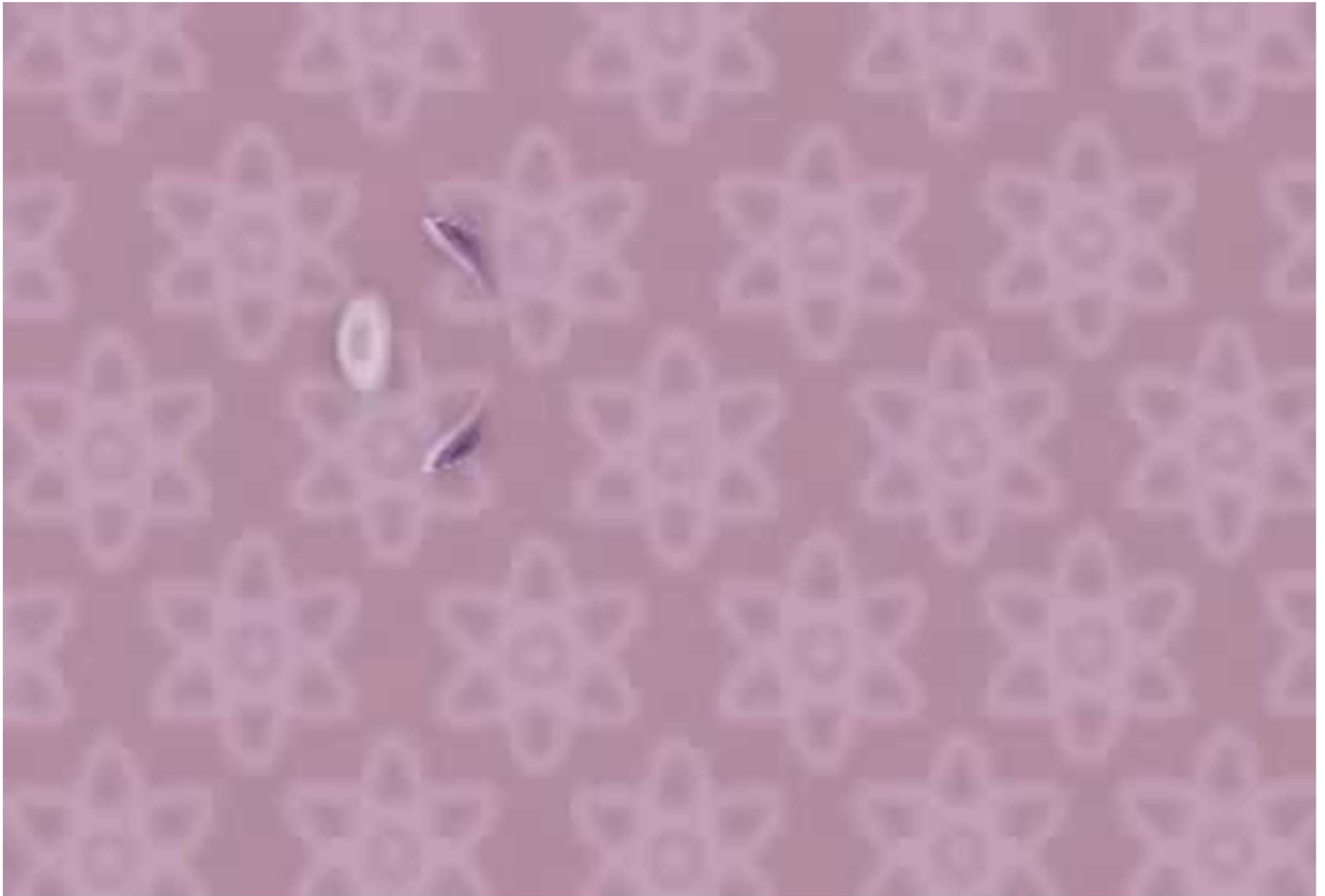


Solutions

Solution: a mixture in which one substance dissolves into another.

- **When a substance dissolves, it mixes evenly into another substance and seems to disappear.**
- **Example: stirring sugar into water**
- **Ways to separate solutions: Boiling (sugar and water)**





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Chemical Changes

Chemical Change: a change in which one or more new types of matter form.

- **Substances react to each other; they combine in new ways to form other substances.**
- **The old matter is not lost, just changes to a different kind of matter.**

Chemical Property: is the ability of a substance to **react with other substances in a certain way**

- **Burning**
- **Rusting**
- **Reacting to acid**



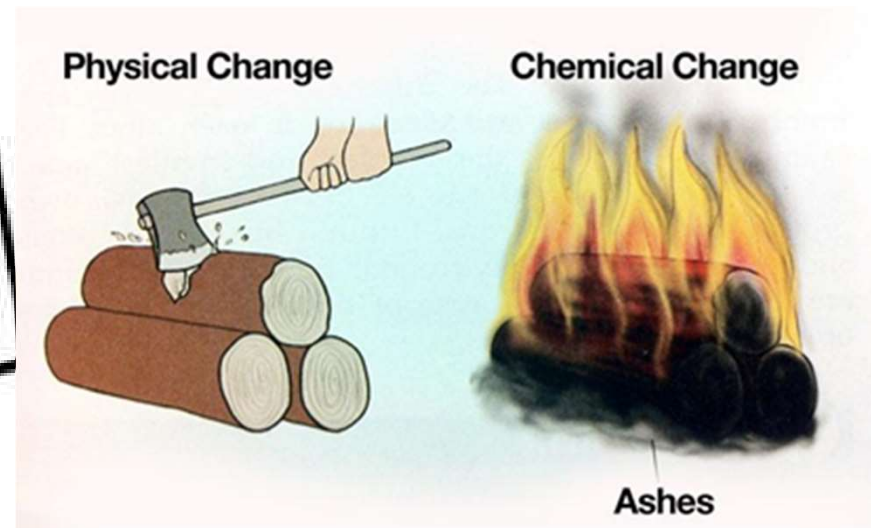
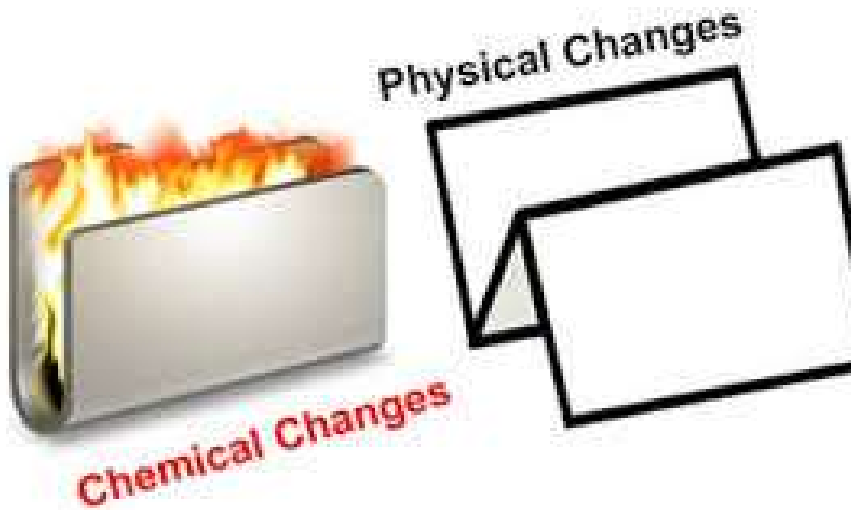


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Signs of Chemical Changes

<u>Clue</u>	<u>Examples</u>
Changes color	Green tomato turns red, cake gets brown in the oven, egg frying
Different odor	Burning wood, spoiled food
Changes temperature without being heated/cooled	Rotting leaves in a compost pile become warm.
Bubbles form	Bubbles form when vinegar is mixed with baking soda.
Gives off gas or gases	Burning wood gives off carbon dioxide and water vapor.
New solids form	Rust is created.

One way to tell whether a change is physical or chemical is to ask whether the change can be easily reversed. Most Chemical changes are much harder to reverse than physical changes.





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Which are Chemical Changes and which ones are Physical Changes?



Frying eggs



Toast



Cracking eggs



Slicing Bread



Lighting a Match



Roasting Marshmallows

Which are Chemical Changes and which ones are Physical Changes?



Boiling Water



Fresh Lemonade



Baking a Cake



Mowing the Lawn



Fireworks



Digesting Food

Physical Changes


- Cracking an egg
- Slicing bread
- Boiling water
- Fresh lemonade
- Mowing the lawn

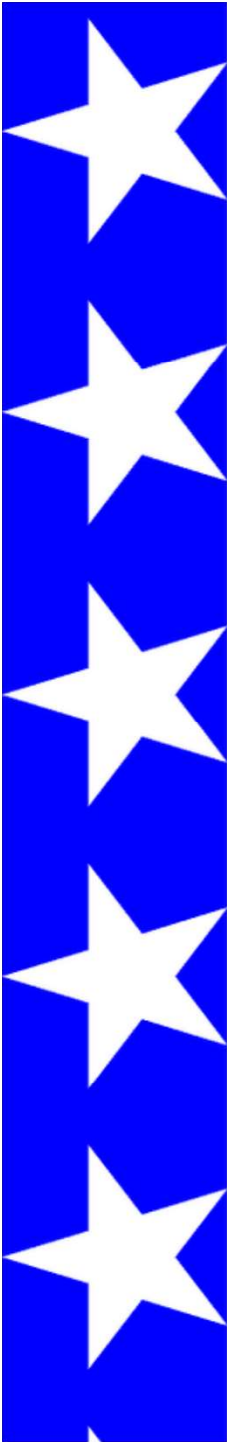
Chemical Changes

- Frying an egg
- Toast
- Lighting a match
- Baking a cake
- Fireworks
- Digesting food
- Roasting a marshmallow



Vocabulary – Words to Know

1. Physical change- a change in which no new substances form.
 2. Temperature- a measure of how warm something is.
 3. Melting- the change from a solid to a liquid.
 4. Evaporation- the change from a liquid to a gas at the surface of the liquid.
 5. Condensation- the change from a gas to a liquid.
 6. Freezing- the change from a liquid to a solid.
- 



7. Mixture-a combination of two or more substances in which each substance keeps its own properties.

8. Solution- a mixture in which one substance dissolves in another.

9. Dissolve- to mix evenly into another substance. When a substance dissolves, it breaks into tiny pieces that seem to disappear.

10. Chemical change- a change in which one or more new types of matter form.

11. Chemical property- the ability of a substance to react with other substances in a certain way, such as by burning or rusting.

