Physical and chemical changes

Before reading:

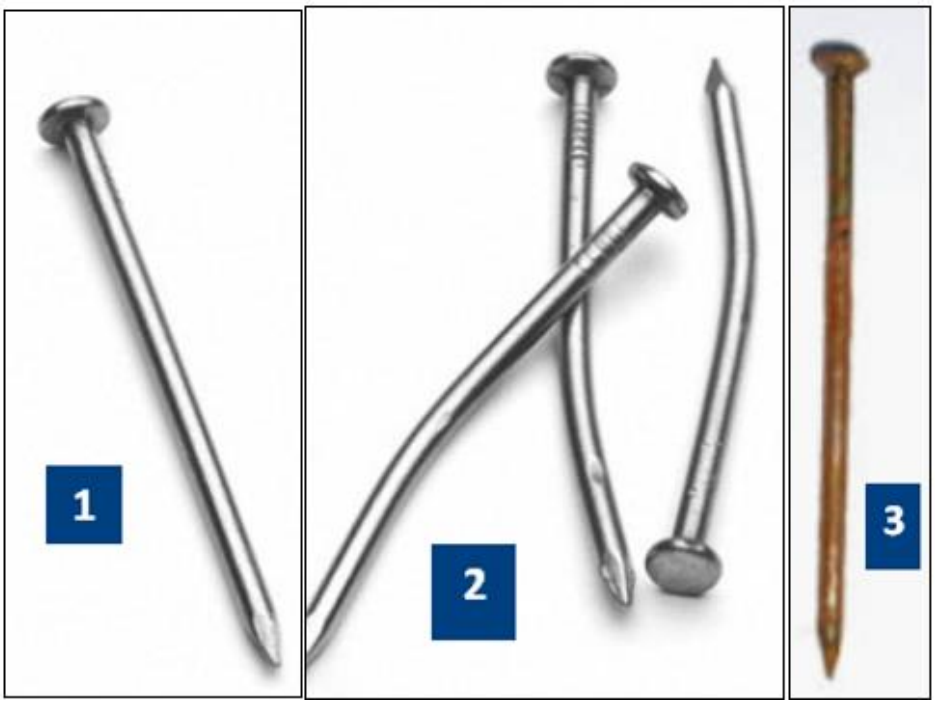
Discuss the photograph: Look at the three situations: 1, 2 and 3

1) What do you think that happened from 1 to 2? (use an online dictionary if needed)

2) What do you think that happened from 1 to 3? (use an online dictionary if needed)

Now, let´s read the text

Physical changes involve the change in states of matter. The **states of matter** include solids, liquids, or gases. During a physical change no new substance is created. The matter may take on a different form or state. The size, shape, and colour of matter may also change. During a physical change, though, the molecules of a substance will stay the same.



Breaking a glass bottle or chopping wood are changes in the shape and size of an object. The molecules that make up the glass or wood are still the same molecules. So, they are physical changes.

When an ice cube changes from solid state to liquid state a physical change takes place because the temperature changed. When we heat water up to 100 ° C, water boils and changes from liquid to gas. If we cool down water up to 0 ° C, water freezes and changes from liquid to solid. The changes in temperature caused those physical changes. In all three examples, the change in temperature caused a physical change. The water molecules are still water molecules.

In summary, there are many different kinds of physical changes which can include size, temperature, shape, colour and others.

While reading:

1) All of the following are states or phases of matter EXCEPT:

a) solid

b) liquid

c) gas

d) shape

2) All of the following are examples of making physical changes EXCEPT:

a) painting walls

b) making ice

c) making oxygen out of water

d) chopping wood

3) Which of the following is a TRUE statement?

a) solids, liquids and gases cannot be changed

b) when ice melts and changes into liquid water, it is a chemical change.

c) changing a liquid into a solid, or a solid into a gas may be a physical change.

d) the change in temperature of a liquid is not a physical change.

Chemical changes or chemical reaction occur when a substance combines with another to form a new substance, Matter is never destroyed or created in chemical change. The same number of particles that exist before the reaction exist after the reaction. Some reactions produce heat and are called exothermic reactions and other reactions need heat.

Chemists classify chemical changes into three main classes: inorganic chemical changes, organic chemical changes and biochemical changes.

There are several ways to detect a chemical change:

- Change of odor and color reveals change.
- Change in temperature.
- Emision of gas (bubbles)
- Production of a solid.

Some **examples of everyday chemical changes** are rusting iron, burning wood, cooking an egg, baking a cake, explosion of fireworks, rotting bananas, or grilling hamburgers, photosynthesis, respiration…

Chemical changes are reactions involve combining different substances. The chemical reaction produces a new substance with different physical properties (colour, physical state) and different chemical properties.

While reading:

4) Chemists classify chemical changes into three main classes. Which of the following is NOT one of those changes?

a) inorganic

b) organic

c) biochemical

d) geothermal

5) Which chemical change works on changes on living beings?

a) geothermal

b) oxidation

c) inorganic

d) biochemical

6) During chemical changes the particles of one substance are reordered to form which of the following?

a) a new substance

b) an energy source

c) enzyme

After Reading:

Let´s think of our daily life. Fill in the gaps with the following words:

digestion/ oxygen/ carbon dioxide/ respiration/ chemical (2) / physical (2)

7) When we take breath, a _____ reaction is happening in our body. Because we take in _____ and we take out _____ . This is called _____.

8) When we have a piercing done, that is a _____ change.

8) After eating, our body processes the food in _____ . These are _____ changes.

9) When we have our hair cut, a _____ change happened.