

Describing a Work Process

Warm-up Activity

Instructions: Look at the following picture and choose the correct name for the type of electrical equipment.

- a. a washing machine
- b. a microwave oven
- c. an electric toaster
- d. an electric transformer



Activity I

Instructions: Read the definition of a toaster below and answer the question.

A toaster is a type of electrical equipment used to toast bread. The basic idea behind any toaster is simple. A toaster uses infrared radiation to heat a piece of bread. The radiation gently dries and burns the surface of the bread. The common way for a toaster to create the infrared radiation is to use nichrome wire wrapped back and forth across a mica sheet, like this:



In order to dry and burn the surface of the bread, what energy is changed to heat energy?

Activity II

Instructions: The work process of an electric toaster below is not correct. Write a number in front of each item in the boxes below to rearrange the process.

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1. When the resistance of the nichrome wires is higher, the nichrome wires will get hot because of the friction of the electrons in the current of electricity.
2. 120-volt power runs directly through the contacts to the nichrome wires.
3. The spring immediately pulls the two slices of bread up.
4. When you put 2 slices of bread in the toaster and push down on the handle, the plastic bar presses against the contacts and applies power to the circuit board.
5. The radiation from the hot nichrome wires gently dries and burns the surface of the bread.
6. The electricity cannot pass through the nichrome wires easily because this special metal slows down the electrons and delays the current flowing through it. This is called the "radiation" of the metal.
7. The simple circuit also acts as a timer. When a capacitor in the circuit reaches a certain voltage, the plastic bar rises and cuts off the power to the toaster.

Activity III

Instructions: 1. Read the work process of a toaster again.
2. Discuss and conclude the language for describing a work process.

References: <http://www.howstuffworks.com/toaster.htm>
http://www.energyquest.ca.gov/how_it_works/toaster.html

How Does It Work?

Warm-up Activity

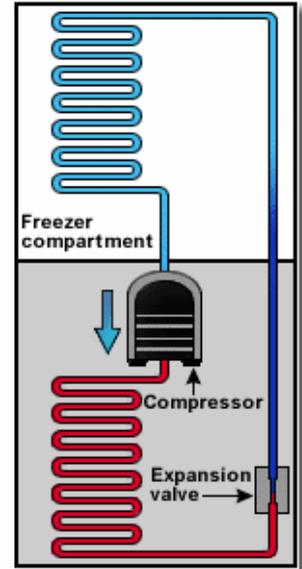
Instructions: Look at the diagram below and choose the correct name for the device whose work process is shown in the diagram.

- a. a refrigerator
- b. an electric fan
- c. a television
- d. an oven

Activity I

Instructions: Read the following information and answer the questions.

In the summertime, have you ever gotten out of a swimming pool and then felt very cold standing in the sun? That is because the water on your skin is evaporating. The air carries off the water vapor, and with it some of the heat is being taken away from your skin. According to a law of physics called the Second Law of Thermodynamics, when you have two things that are different temperatures that touch or are near each other, the hotter surface cools and the colder surface warms up.



Graphic courtesy: Science Treasure Trove

What happens to the colder surface?

Why does it happen?

Activity II

- Instructions:**
1. Read the work process of a refrigerator and complete the process.
 2. Add the words *first, finally, then, and next* in the appropriate space.
 3. Change words in the parenthesis into their correct grammatical form.

Modern refrigerators use ammonia gas. Ammonia gas turns into a liquid when it is cooled to - 27 degree Fahrenheit (-6.5 degree Celsius).

....., a motor and compressor squeezes the ammonia gas. When the ammonia gas (compress), the gas heats up as it is pressurized. Then, the compressed gas passes through the coils on the back or bottom of a refrigerator where the hot ammonia gas can (lose) its heat to the air in the room, according to the law of thermodynamics. As it cools, the ammonia gas can change into ammonia liquid because it is under a high pressure., the ammonia liquid (flow) through what is called an expansion valve, a tiny small hole that the liquid has to squeeze through. Between the valve and the compressor, there is a low-pressure area because the compressor is pulling the ammonia gas out of that side. When the liquid ammonia hits a low pressure area, it boils and changes into a gas. This (call) vaporizing. The coils go through the freezer and regular part of the refrigerator where the colder ammonia in the coil(pull) heat out of the compartment. This makes the inside of the freezer and entire refrigerator (cold)., the compressor sucks up the cold ammonia gas, and the gas goes back through the same process over and over.

Activity III

- Instructions:**
1. Read the work process of a refrigerator again.
 2. Discuss and conclude the language for describing a work process.

Reference: http://www.energyquest.ca.gov/how_it_works/refrigerator.html