

## UNIT I. ENERGY SOURCES AND ENERGY SAVING

Exercise 1. Learn the following words and word combinations.

Chemical energy – хімічна енергія  
heat energy – теплова енергія  
radiant energy – промениста енергія  
Btu (British thermal unit) – британська теплова одиниця  
invent – винаходити  
sea level – рівень моря  
equal – однаковий; рівнятися, дорівнювати  
match – сірник  
weigh – важити  
height – висота  
exist – існувати  
destroy – знищувати  
flash light – ручний електричний ліхтар

occur – відбуватися  
stir – розмішувати  
liquid – рідина  
convection – конвекція  
radiation – випромінювання  
empty – порожній

Exercise 2. Read the given text and make up the plan of the ideas.

### Text 1. What is energy?

Energy causes things to happen around us. Look out of the window. During the day the sun gives out light and heat energy. At night, street lamps use electrical energy to light our way. When a car drives by, it is being powered by gasoline, a type of stored energy. The food we eat contains energy. We use that energy to work and play.  
Energy can be found in a number of different forms. It can be chemical energy, electrical energy, heat (thermal) energy, light (radiant energy), mechanical energy and nuclear energy.

Energy is measured in many ways. One of the basic measuring blocks is called a Btu. This stands for British thermal unit and was invented by, of course, the English. Btu is the amount of heat energy it takes to raise the temperature of one pound of water by one degree Fahrenheit, at sea level. One Btu equals about one blue tip kitchen match. It takes about 2,000 Btus to make a pot of coffee. Energy also can be measured in joules. A thousand joules is equal to a British thermal unit. 1,000 joules = 1 Btu. The term 'joule' is named after an English scientist James Prescott Joule who lived from 1818 to 1889. He discovered that heat is a type of energy. One joule is the amount of energy needed to lift something weighing one pound to a height of nine inches. Around the world, scientists measure energy in joules rather than Btus. Energy can be transformed into another sort of energy. But it cannot be created and it cannot be destroyed. Energy has always existed in one form or another. Stored energy in a flash light battery becomes light energy when the flash light is turned on. Food is stored energy. It is stored as a chemical with potential energy. When your body uses that stored energy to do work, it becomes kinetic energy.

Heat is a form of energy. We use it for a lot of things, like warming our homes and cooking our food. Heat energy moves in three ways:

1. Conduction;
2. Convection;
3. Radiation.

Conduction occurs when energy is passed directly from one item to another. If you stirred a pan of soup on the stove with a metal spoon, the soup to the colder area of spoon. Metals are excellent conductors of heat energy. Wood or plastics are not. Convection is the movement of gases or liquids from a cooler spot to a warmer spot. The wind we feel outside is often the result of convection currents. You can understand this by the winds you feel near the ocean. Warm air is lighter than cold air and so it rises. During the daytime, cool air over water moves to replace the air rising up as the land warms the air over it.  
During the night time, the directions change – the surface of the water is sometimes warmer and the land is cooler.  
Radiation is the final form of movement of heat energy. The sun's light and heat cannot reach us by conduction or convection because