Lesson 2 : What do you already know about devices and energy ?

How does energy change (transform) :

Device	Consumed energy (input energy)	produced energy (output energy)
 1- Hair dryer	Electrical energy	Thermal and sound energy
 2- Soap dispenser (detergent bottle)	Potential energy (stored in the spring of the soap dispenser)	Kinetic energy (the movement of the soap upward)
 3- Washing machine	Electrical energy	Kinetic and sound energy

Note

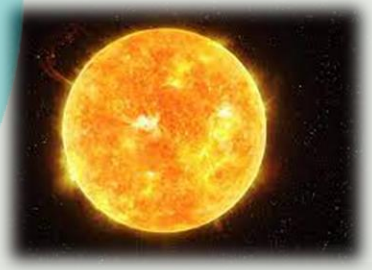
- When you rub your hands , you will feel warm because kinetic energy (consumed energy) is converted into thermal energy (produced energy)

➢ Put (√) or (X) :

1. The consumed energy in the blender is sound energy. (X)
2. The produced energy in remote-controlled toy car is chemical energy. (X)

Activity 5 Energy Chain

- **Energy chain : is a way to describe the energy flow that occurs when we use different devices.**
- **Energy chain often start with the sun**



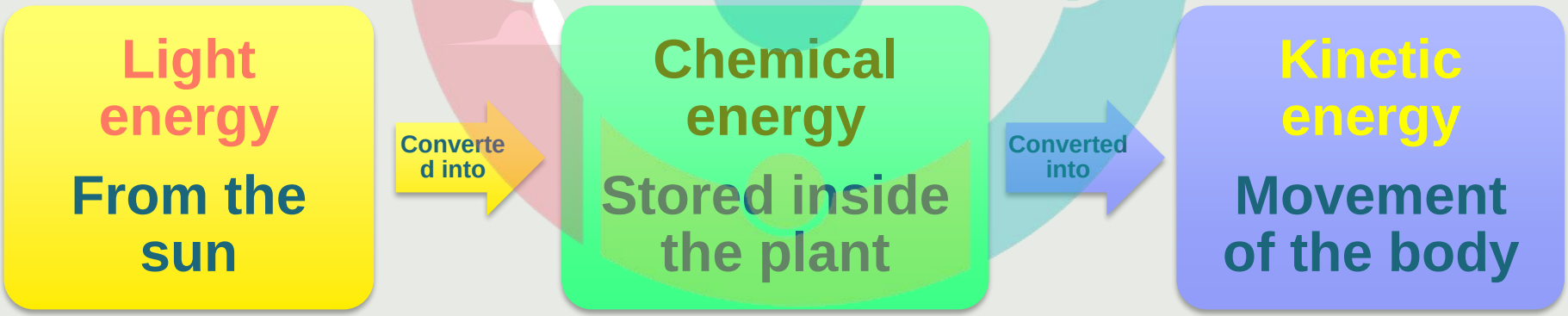
➢ **Energy chain when eating food :**

The sun emits light energy that reaches a plant such as an orange tree.

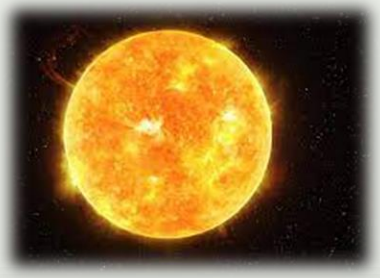
The green plant converts the light energy comes from the sun into chemical energy , which is stored in the form of sugars inside the plant

When you eat an orange , your body converts the chemical energy stored inside the fruit into kinetic energy when your body move

- **The following diagram shows the energy chain in the previous example :**



Energy chain when heating a pot of water over a fire :

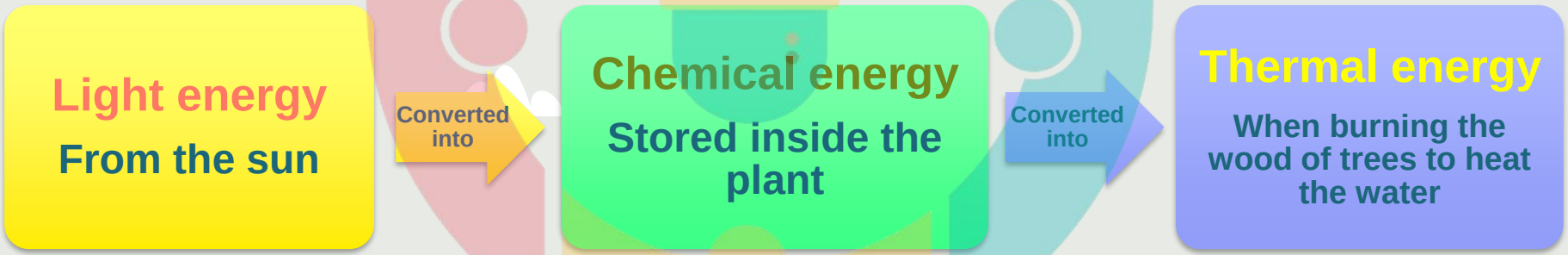


light energy comes from the sun causes the growth of the trees.

This light energy is converted into chemical energy , which is stored in the form of sugars inside the plant

When the wood of trees is burned , thermal energy is released which heats the water inside the pot

➢ The following diagram shows the energy chain in the previous example :



? Give reason for ……..

1. When you go for a walk , there is a change of energy takes place inside your body.

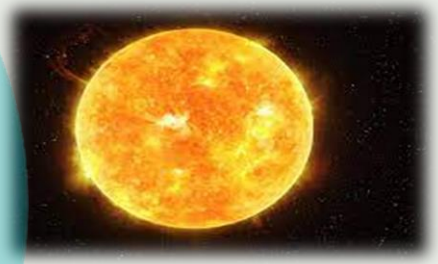
- Because the chemical energy stored in the food is converted into kinetic energy that helps your body move.

2. There is a change of energy when burning some wood of trees.

- Because the chemical energy stored in the wood of trees is converted into thermal energy.

Energy chain in a hair dryer :

light energy comes from the sun causes the growth of trees.



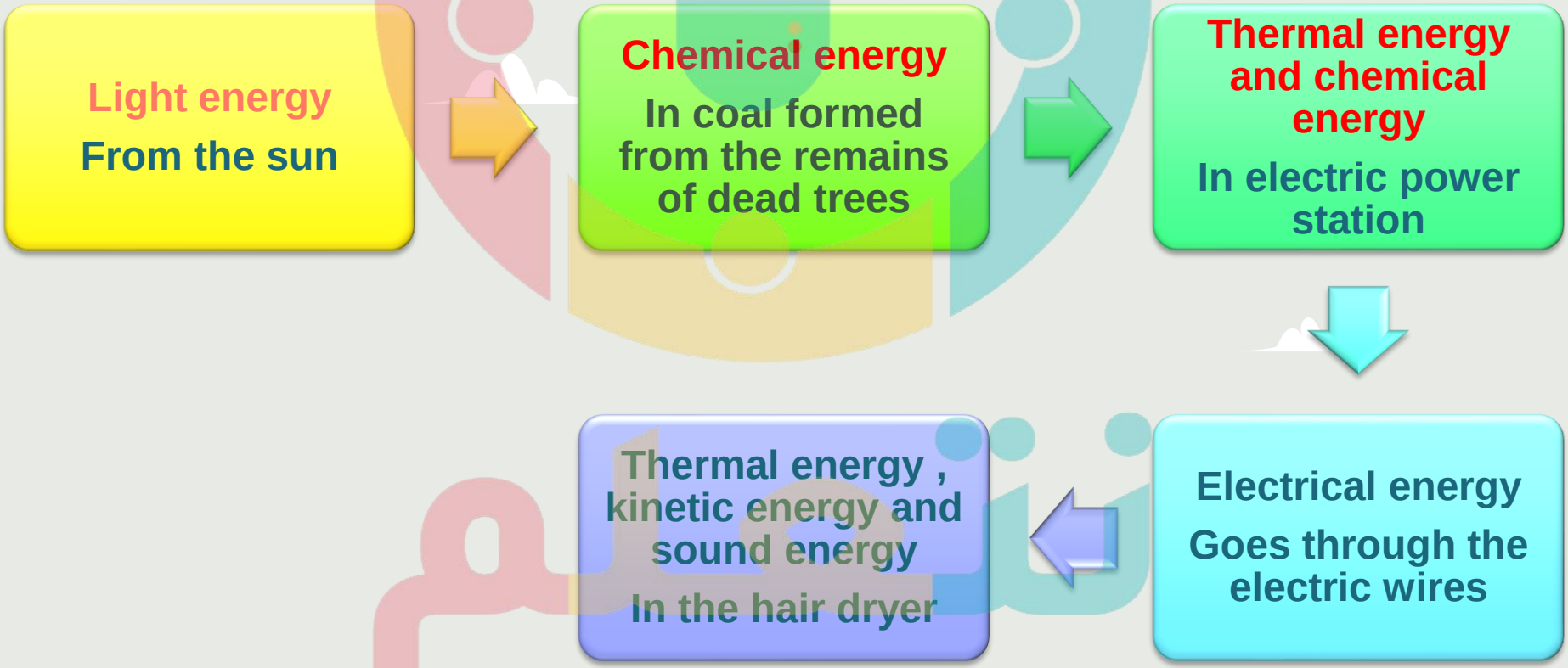
Coal is formed from the remains of dead trees that buried deep in the earth over millions of years so , coal is a resource of energy that stores chemical energy

Coal is used in electric power stations (power plant), because :

- When coal is burned , it produces thermal energy.
- The thermal energy is converted into kinetic energy which is used to operate certain devices in these stations to generate electricity

Electrical energy goes through electric copper wires until it reaches the hair dryer to be operated producing thermal energy , kinetic energy and sound energy

- **The following diagram shows the energy chain in the previous example :**



Note

1. **Not all the energy in the energy chain reaches the device.**
2. **Some of the energy is wasted while travelling through the energy chain , as it is converted into other forms of energy that the device does not use.**
3. **Most of the wasted energy leaks out in the form of heat.**

➢ Complete the following sentences using the words below :

(kinetic – heat – electrical – coal – sun – thermal- chemical)

1. Most of the energy we use is produced inside ……sun……
2. When you eat , your body turns the ……chemical…… Energy found in the food into ……kinetic……energy that helps your body move.
3. In electric power stations , ……coal…… Is burned to generate ……electrical……energy.
4. In an electric iron , electrical energy is converted into ……thermal……energy.
5. In several electrical devices , most of the wasted energy leaks out in the form of……heat……

Activity 6 Energy and Everyday Device

- **The following table shows the function , the energy consumed, and the energy produced is some devices :**

Device	Function	Consumed energy	Produced energy
 Electric lamp	Lighting	Electrical energy	Light energy and thermal energy
 Battery powered clock	Showing the time	Chemical energy	Kinetic energy

Device	Function	Consumed energy	Produced energy
 Flashlight	Lighting	Chemical energy	Light energy and thermal energy
 Hand bell	Alerting	Kinetic energy	Sound energy
 Electric heater	Warming	Electrical energy	Thermal energy

➢ Write the name of the suitable device below of each sentence :

1. A device which converts electrical energy into sound energy only……. **Speakers**
2. A device which converts electrical energy into light energy …….. **Electric lamp**
3. A device which converts kinetic energy into sound energy …….. **Drum**
4. A device which converts electrical energy into kinetic energy …….. **Washing machine**
5. A device which converts electrical energy into thermal energy only…….. **Electric iron**