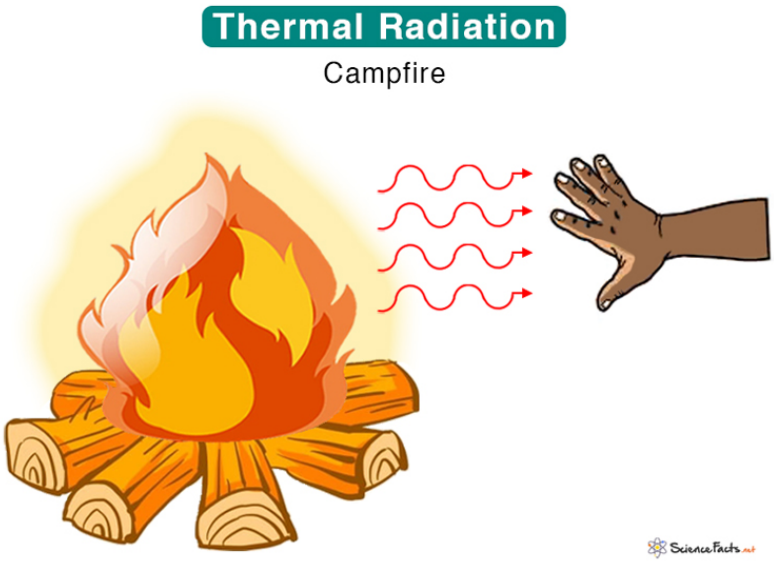
G5. Thermal-Radiant Energy

Thermal-Radiant Energy

Have you ever felt the warmth of the sun on your skin? Or perhaps you have experienced the cozy feeling of sitting by a warm campfire. These are all examples of thermal-radiant energy in action. Let's explore what thermal-radiant energy is and how it affects our daily lives.

What is Thermal-Radiant Energy?

Thermal-radiant energy is a form of energy that comes from heat. It is produced when an object's atoms and molecules vibrate and move faster, creating heat energy. This energy then radiates outward in the form of waves or rays.



The Sun, the Ultimate Source of Thermal-Radiant Energy

The sun is the ultimate source of thermal-radiant energy on Earth. It is a giant ball of hot gases that constantly releases heat and light. The sun's rays travel through space and reach Earth, providing us with warmth and light during the day.

How Do We Experience Thermal-Radiant Energy?

We experience thermal-radiant energy in various ways in our daily lives. Here are some examples:

1. **Feeling the Sun's Warmth**
   When you step outside on a sunny day, you can feel the sun's warmth on your skin. This is the result of the sun's thermal-radiant energy reaching us.

2. **Using Heaters**
   During cold weather, we use heaters to warm up our homes. Heaters convert other forms of energy (such as electricity or gas) into thermal energy, which radiates heat and warms up the surrounding air.

3. **Campfires and Bonfires**
   When you sit by a campfire or bonfire, you can feel the heat radiating from the flames. This is an example of thermal-radiant energy.

4. **Warm Beverages**

When you heat up a cup of hot chocolate or tea, you are using thermal energy to warm up the liquid, making it more enjoyable to drink.

How Does Thermal-Radiant Energy Transfer?

Thermal-radiant energy can transfer through three main processes:

1. **Conduction**
   This is the transfer of heat between two objects in direct contact with each other. For example, if you touch a hot pan, the thermal energy transfers from the pan to your hand through conduction.

2. **Convection**
   This is the transfer of heat through the movement of fluids (liquids or gases). For instance, when you boil water on the stove, the heat transfers through convection as the hot water rises and the cooler water sinks.

3. **Radiation**
   This is the transfer of heat through waves or rays. For instance, the sun's thermal-radiant energy travels through space and reaches Earth through radiation.

1. What is thermal-radiant energy?
   A) Energy that comes from electricity
   B) Energy that comes from heat
   C) Energy that comes from magnets
   D) Energy that comes from wind

2. What is the ultimate source of thermal-radiant energy on Earth?
   A) The moon
   B) The stars
   C) The sun
   D) The Earth's core

3. How do we experience thermal-radiant energy from the sun?
   A) By feeling the warmth on our skin
   B) By hearing the sun's rays
   C) By smelling the sun's heat
   D) By seeing the sun's light

4. What do we use to warm up our homes during cold weather?
   A) Air conditioners
   B) Heaters
   C) Fans
   D) Refrigerators

5. When you sit by a campfire, what type of energy are you experiencing?
   A) Thermal-radiant energy
   B) Electrical energy

C) Sound energy
D) Kinetic energy

6. What is conduction?
   A) The transfer of heat through movement of fluids
   B) The transfer of heat through waves or rays
   C) The transfer of heat between two objects in direct contact
   D) The transfer of heat through sound vibrations

7. How does thermal-radiant energy reach Earth from the sun?
   A) Through conduction
   B) Through convection
   C) Through radiation
   D) Through reflection

8. What is an example of thermal-radiant energy transfer through convection?
   A) Heating a cup of tea in the microwave
   B) Touching a hot pan
   C) Feeling the warmth of the sun on your skin
   D) Boiling water on the stove

9. How does thermal-radiant energy transfer through radiation?
   A) Through movement of fluids
   B) Through waves or rays
   C) Through direct contact between objects
   D) Through sound vibrations

10. What type of energy is converted into thermal energy when we use heaters?
    A) Electrical energy
    B) Solar energy
    C) Wind energy
    D) Magnetic energy

ANSWERS & EXPLANATIONS

1. B - Energy that comes from heat.
    - Thermal-radiant energy is a form of energy that comes from heat.

2. C - The sun.
    - The sun is the ultimate source of thermal-radiant energy on Earth.

3. A - By feeling the warmth on our skin.
    - We experience thermal-radiant energy from the sun by feeling the warmth on our skin.

4. B - Heaters.
    - During cold weather, we use heaters to warm up our homes.

5. A - Thermal-radiant energy.
    - When you sit by a campfire, you are experiencing thermal-radiant energy.

6. C - The transfer of heat between two objects in direct contact.
    - Conduction is the transfer of heat between two objects in direct contact.

7. C - Through radiation.
    - Thermal-radiant energy from the sun reaches Earth through radiation.

8. D - Boiling water on the stove.
    - Boiling water on the stove is an example of thermal-radiant energy transfer through convection.

9. B - Through waves or rays.
    - Thermal-radiant energy transfers through radiation in the form of waves or rays.

10. A - Electrical energy.
    - Heaters convert electrical energy into thermal energy to warm up the surrounding air.