

### **'caloric theory'**

scientists thought heat was an invisible fluid that flowed from a hot object to a cold object

### **Heat is energy**

Heat is not a substance, but energy that comes from the movement of particles in matter

### **joule**

is the official unit of heat energy

### **culture**

is a learned way of life that is shared by a group of people with common needs and wants

### **needs**

are basic, required conditions that must be met in order to survive

### **wants**

are desired conditions or materials that are not necessary for life, but arise from needs

### **standard of living**

is a measure of how well a population is able to meet its needs and satisfy its wants

### **hyperthermia**

is the application of heat to treat cancer cells

### **sustainable**

refers to the maintenance or continued use of resources indefinitely

### **heat energy**

is a form of energy that transfers from (high temperature) particles of matter to (low temperature) particles of matter

### **Particle Model of Matter**

is a scientific model used to explain the idea about what all matter is made of (tiny particles) and how they behave

### **freezing point**

is the temperature at which a liquid becomes a solid

### **melting point**

is the temperature at which a solid becomes a liquid

### **boiling point**

is the temperature at which a liquid changes (evaporates) to a gas

### **condensation**

is the cooling of particles as they change from a gas to a liquid

### **kinetic energy**

is the energy of movement

### **volume**

is the amount of space that matter occupies

### **temperature**

is a measure of the average kinetic energy of the particles in a substance

### **thermal energy**

is the total kinetic energy of all the particles within the substance

### **heat**

is the energy of transfer when there is a difference in kinetic energy between substances

### **thermometer**

is an instrument used to measure temperature

### **expansion**

occurs when thermal energy **increases the volume** of particles within all types matter

### **contraction**

occurs when thermal energy **decreases the volume** of particles within all types matter

### **thermal expansion**

is the process of expansion of a substance (increased volume) caused by an increase in thermal energy

### **conduction**

is the transfer of heat energy from particles in **direct contact** with each other

### **conductors**

are materials that **allow** the easy transfer of heat by direct contact of the particles

### **insulators**

are materials that **do not allow** the transfer of heat by direct contact of the particles

### **convection current**

is a circular pattern that occurs when heat transfers in liquids and gases (hot particles rise, replaced at low levels by cooler particles)

### **radiation**

is the transfer of heat energy in a wave-like pattern

### **radiant energy**

is the transfer of heat energy from its source by radiation

**infrared**

is radiant energy that is felt as heat

**reflection**

means heat will bounce off certain materials

**absorbed**

means heat will be captured and taken into certain materials

**geothermal energy**

is heat energy that comes up to the surface from the core of the Earth - through cracks in the Earth's crust

**solar energy**

is heat energy that comes to the Earth from the Sun

**fire**

converts the chemical energy in fuel to heat energy, light energy and sound energy

**decay (decomposition)**

is a source of thermal energy

**passive solar energy**

refers to a system that is heated directly by the thermal energy from the Sun

**active solar energy**

refers to a mechanical device to transfer heat energy from the Sun to be used elsewhere

**thermal efficiency**

is a measure of well a device or structure prevents heat loss

**solar array**

is an interconnected series of solar panels (made up of an arrangement of solar cells)

**thermostat**

is a device that transforms heat into electricity and are used to control indoor air temperatures

**local heating system (space heater)**

is a system used to provide heat only for one room

**central heating system (furnace)**

is a system that distributes heat through pipes/ducts throughout a structure

**forced-air**

is a system that heat air and then uses blowers to move the heated air

**hot-water (radiant) heating**

is a system that heats water and then uses pipes to move the heated water, which provides radiant heat using a radiator in rooms where it is wanted

**refrigerant**

is a liquid that evaporates at a very low temperature, proving cold temperatures inside the refrigerator

**thermal conductivity**

reflects the ability of a material to transfer heat by conduction

**thermogram**

is a visual representation of thermal energy created by capturing infrared energy on film

**R-value**

is the rating given to different insulating products based on their ability to prevent heat loss

**environmental costs**

are those **negative effects on the environment** certain products or resources have when they are used

**societal costs**

are those **negative effects on the people** when certain products or resources are used

**wind energy**

is the energy of moving air

**wind farm**

is a location where many windmills (turbines) are located and interconnected

**nuclear fission**

is energy created by the splitting of atoms in a reactor to produce a great deal of heat energy that can then be converted to electrical energy

**reservoir**

is a man-made (artificial) lake

**hybrid**

is a device that uses electricity and gasoline to convert fuel into motion

**cogeneration**

is the production of two forms of energy at the same time from only one fuel source