

What is heat and what is temperature

[Science](#), [Physics](#)



Topic: Heat and Temperature Energy is measured on the earth in the form of both heat and temperature. Temperature is the average kinetic energy of the molecules and atoms of a substance. According to (Gavin 104-7)“ The concept of temperature is as fundamental a physical concept as the three fundamental quantities of mechanics—mass, length, and time. All atoms in universe are in motion; this motion can be in the form of vibration, such as a solid, or moving over long distances and colliding such as what occurs in gases. The greater the amount of motion in a substance, the higher the temperature. Temperature on earth is measure using three different scales. Kelvin, Fahrenheit and Celsius . Heat is a measure of the flow of kinetic energy from one material to another, or the total amount of kinetic energy in a system. All heat flows from substance with high kinetic energy, or a source, to substance with low kinetic energy, called a sink. Therefore the energy flow in a system moves from a source to a sink. We sense this change in kinetic energy as heat. Heat is measure by using the calorie, which is a unit that denotes the amount of energy it takes to raise the temperature of 1 gram of water 1 degree centigrade. The specific heat of a substance is a measure of how much heat is required to raise 1 gram of the substance to 1 degree centigrade. Specific heat is also called heat capacity. Liquid water has the highest specific heat of any natural substance on earth. The specific heat of water is 1 calorie per gram. Therefore water can hold much more heat energy than rock. The high heat capacity of water is an important property that helps the oceans regulates the climate of the Earth. Another important aspect of the heat and its relationship to matter is that when matter changes state, heat energy is either absorbed or released. The potential energy that

is released when a gas condenses into a liquid is called the latent heat of condensation. This means that heat is given off to the environment when a substance changes from a gas to liquid. Latent heat is an important energy in the atmosphere. Everything takes in and gives off heat at different rates. Water takes longer to take in heat than sand, so sand will heat up faster than water. Heat changes the speed of which molecules vibrate, or move quickly. As the molecules speed up or slow down, water will melt or freeze. This change in water is known as change in state. A thermometer is used in order to get temperature reading of a substance. Temperature is a number that tells you how hot or cold something is. Everything in this world has got energy and one type of energy is heat energy. Things that are hot, such as fire, have lot of heat and a high temperature. As per (Klinoff 111)“ Heat and temperature are not to be confused. Heat is a measurement of energy and temperature is measurement of how much energy a substance retains”. The only source of heat to the Earth is sun. The sun radiates heat to earth through atmosphere. Sun is an inexhaustible form of heat . The heat of the sun can permeate through any substance on earth. Heat is an energy which cannot be destroyed or created but only can be transformed from one body to another. The variation in heat can be measured in terms of temperature change. The human body needs heat to function. The normal temperature of a human body is 35 degree centigrade. If it drops down or rises up then the health of a person can be affected. Even human beings radiate heat to their surroundings. Usually the heat and temperature varies many times during a day. This is because of the change in the position of the sun as earth revolves. It is the heat that causes the temperature of a substance to

increase or decrease. The temperature has no relation with the size of a substance. For example the heat of a cup of milk will be same as the heat of a jug of milk. Usually when two substances come in contact with each other, then it generates heat. Heat could be described as the cornerstone of the existence of Universe. Without heat everything ceases to exist. It is observed that, matter in the coldest region of space has a minimal amount of heat. Heat energy can be obtained from different forms of energy like mechanical, nuclear, light, chemical sound and thermal energy. In conclusion it can be said that existence of life without heat and temperature is impossible.

References Sullivan, Gavin. " Heat and temperature." Oxford Journals 8. 3 (2008): 104-07. Print. Klinoff, Robert. Introduction to Fire Protection. 4th ed., th ed. Delmar: Cengage Learning, 2011. 111. Print.