

Use of Physics in Daily Activities

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Physics can generally be defined as a science that involves the study of forces and their interaction with the environment. Precisely, physics is the study of matter, energy, time and space, and how they interact with each other. Physics assumes the existence of four basic units which include: length, mass, electric current and time. These quantities are measured in terms of the metre, kilogram, second and Ampere respectively. According to physics, the four basic units are used to explain all other physical quantities. Physics is used to explain how things move, and to analyze the forces that hold them together and/or forces that make them move. As such, it is hard to imagine modern life without application of physics in the daily activities. This paper will analyze the use of physics in daily activities, giving simple activities where physics is applied on a routine basis.

Communication

Physics is greatly used in communication. Communication may be carried out through a number of channels such as mobile phones, radio, television, internet and others. Electronic communication involves transmission of information from one person to another through cables or electromagnetic waves. A telecommunication system comprises of three basic elements: a transmitter, the transmission medium and the receiver. The transmitter receives information from the source and converts it to a signal. This signal is carried through a transmission medium to the receiver. The receiver decodes the signal to a form that the user can understand.

The communication channels used may either be physical or free space. Physical channels include the atmosphere, coaxial cables, and glass optical fibers among others. The free space includes channels such as radio waves, infrared waves, and ultraviolet light among others. Communication via these channels is made possible through application of physics. For example,

radio stations rely on broadcasting of information from one source to multiple receivers through the use of radio waves. Mobile devices use electromagnetic waves to transmit information from one source to the receiver. Electromagnetic radiation comprises of magnetic fields and electric currents, with a give frequency. Electromagnetic radiation may occur naturally (radiation from the sun) or through man-made means. The application of physics in communication has enabled people to send and receive information easily in terms of time and cost.

Physics is applied in cooking

Modern cooking appliances such as the microwave, coils, inductive cooker and others rely on the principles of physics to perform their work. A microwave uses convection current to cook or warm food. Convection is defined as transfer of heat in liquid or gas from one region to another through circulation of currents. Air inside the oven is heated when electricity is switched on. Warm air rises to the top part of the oven and collects there. Since there is no cold air entering the oven, food placed at the centre of the oven is evenly cooked. Other forms of cooking such as use of coils also utilize laws of physics. When electric current passes through specially designed coils, heat is generated in the process turning the coil red. Heat is transferred from the coil through conduction. It is important to note that the energy used in cooking is also derived through the principles of physics. Electricity is generated using principles of physics. In addition, mining of oil, coal, gas and other energy resources rely on the same principles.

Regulating temperatures

Physics is applied in moderating room temperatures or in food preservation. Room temperature regulation is carried out by an air conditioner while food preservation is carried out by refrigerators. Temperature regulation is based on physic's law on heat which explains that

heat is absorbed when liquids change to gas through evaporation. Air conditioners use this feature to cool indoor air. Air conditioners have special chemicals that evaporate and condense in specially designed coils. When the chemicals evaporate, they absorb heat making the air in the coils to become cold. Special fans draw warm air from the room over these coils leading to a chilling effect on the air passing above the coils and being released back into the room. This process repeats itself until the surrounding air becomes cooler. When the special chemical turns to gas, a reverse process is initiated turning it back to liquid state. This is achieved by compressing the gas at high pressure. Refrigerators use the same mechanisms and laws of physics in keeping the inside temperatures lower. The only difference is that refrigerators have an exterior housing that also acts as an insulator.

Physics makes work easier

At times, individuals are faced with the need to lift heavy objects that are beyond their strength. For example, one may need to lift a heavy load onto a lorry, or to lift a car so as to change a damaged tire. In order to succeed in doing so, one must apply one or more of the laws of physics. The individual lifting a heavy load onto the lorry may apply the laws of physics by using a lever or an inclined plane in order to reduce effort, and in so doing succeed in lifting the heavy load onto the lorry. Lifting heavy objects such as a car requires use of special equipments that works on the laws of physics. Jacks are often used to lift heavy objects. Jack uses force to lift objects, either generated by hydraulic press or turning a screw thread. The hydraulic cylinder uses pressure to generate force. It contains a small cylinder and a larger one. A force applied in one of the cylinders produces uniform pressure in both the cylinders. However, the resultant force on the larger cylinder is greater and hence gives a lift, making work easier.

Physicists have developed a wide range of tools that are used in making work easier. All these tools are based on laws on principles of physics. Apart from jacks, pulleys are also used to make work easier. Pulleys comprise of wheels which are connected in a manner to reduce work done in pulling loads. A pulley with two wheels is able to reduce the force needed to lift a load by half. Likewise, a pulley with four wheels reduces the force needed to lift a load by a scale of four. Thus, pulleys have a mechanical advantage. The mechanical advantage enables individuals lift heavier objects than they would under ordinary circumstances where principles of physics are not applied. All these use the principles of physics to make work easier.

Driving a car

Driving a car also requires the understanding of the basic principles of physics. This is regardless of whether the driver is aware of these laws or not. The driver must be aware of balance, and be able to keep the car in balance. Imbalance may be brought about by accelerating, decelerating or turning. To maintain the stability of the car, the driver must anticipate the action of the various forces on the car as it moves. Physics help engineers to determine the centre of gravity of various bodies. The centre of gravity helps engineers predict the likely results when a body is acted on by forces such as the gravitational force. Center of gravity also helps individuals to drive carefully especially when they put extra load on vehicles. When drivers put extra load on the roof of vehicles, they affect the centre of gravity and hence, they must be extra keen when taking turns or during acceleration and deceleration. A car is more likely to topple when taking a turn and while carrying a load on the roof.

Flying

When individuals decide to move over long distances, the preferred mode of transport is use of an aircraft. Aircrafts are designed using the laws of physics. Basically, aircrafts fly as a result of pressure differences that are caused by air flowing at different speeds. This can be explained by Bernoulli's principle. Flying is thus wholly dependent on the principles of physics.

Diagnosis of various ailments

Physics is widely applied in the medical field to detect, cure and establish the cause of diseases. Medical imaging applies principles of physics to establish ailments in patients. Radiation oncology and nuclear medicine are commonly applied in cure of various ailments such as tumors and cancerous cells. Medical imaging involves testing, quality assurance and optimization. Common tests carried out on patients include X-rays, mammography, ultrasound and fluoroscopy. Such tests help reveal internal problems in the body of the patient. Nuclear medicine physics involves use of radiation to treat or identify diseases in patients. For example, radiation is used to kill malignant cells in patients suffering from cancer. All this involves application of the principles of physics that involve radiation and waves.

The importance of physics in people's daily activities cannot be overlooked. Physics underlie the environment around human beings. Thus, for human beings to properly understand their environment, they must have a thorough knowledge on the basic principles of physics. In the complex environment, physics attempts to explain things and to predict what might happen if changes are introduced in such things. Physics is one of the disciplines that have contributed to a new and better understanding of the universe, and the consequent development of new products based on the principles of physics. As such, physics is often used in daily activities in the modern

world. Physics is commonly used in communication, cooking, moderating temperatures, making work easier, driving, and in medicine among other uses.

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