

Forces and Motion

Name Key

Date _____

G 1. distance

A. an increase in speed

D 2. force

B. a force that acts against or stops motion

H 3. slope

C. a decrease in speed

A 4. acceleration

D. a push or pull that causes an object to move, stop, or change direction

F 5. velocity

E. a force which pulls objects to the surface of Earth

I 6. speed

F. an object's speed in a particular direction

E 7. gravity

G. the measurement from one point to another

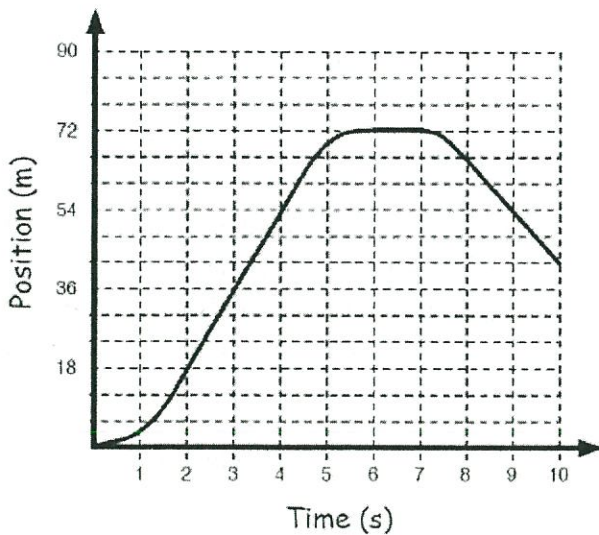
C 8. deceleration

H. used to describe the steepness, incline, or grade of a straight line

B 9. friction

I. a measure of the distance an object moves in a given amount of time

Interpret the graphs.



Graph 1

1. What is the object doing between 2s and 4s?

traveling at a constant speed

2. What is the object doing between 6s and 7s?

stopped, not moving

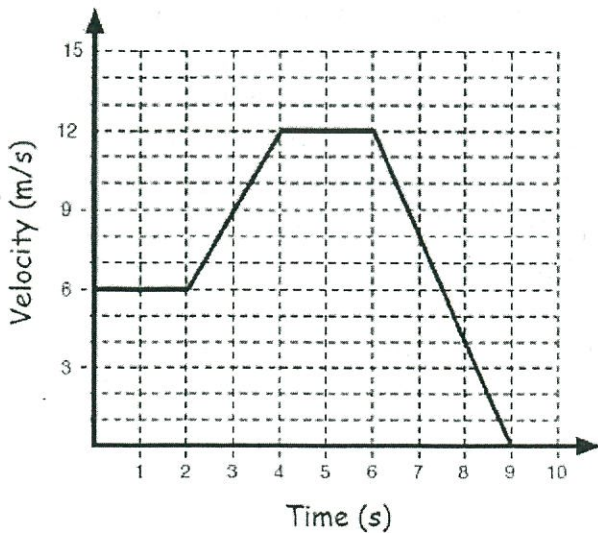
3. What is the velocity between 6s and 7s?

0 m/s

4. What is the object doing between 8s and 10s?

returning towards beginning

Graph 2



5. What is the object doing between 0s and 2s?

traveling at a constant speed

6. What is the object doing between 2s and 4s?

accelerating

7. What is the object doing between 4s and 6s?

constant speed

8. What is the object doing between 6s and 9s?

decelerating

Complete the reading.

Energy is defined as the ability to do work. Work is defined as when a force is used to move an object a distance. When thinking about energy and work, keep in mind that energy can be used in situations where no work is done. Also, the object upon which the work is done can be any size, large or small. Inside of our cells, microscopic organelles perform a great deal of work moving many molecules in, out, and around the inside of the cell. Energy is constantly being changed or transformed from one type of energy to another; there are many different forms of energy.

size around transformed distance work microscopic used forms

There are two main types of energy. Stored energy is called potential energy. Energy being used to move an object is called kinetic energy. The most common forms of potential energy are Chemical potential energy, gravitational potential energy, nuclear potential energy, and elastic potential energy. Chemical potential energy is stored in the bonds of chemical compounds. Gravitational potential energy is due to an object having the potential to fall from a height or roll down a hill. Nuclear potential energy is stored in the bonds inside of the nucleus of an atom. Elastic potential energy is stored in an object that has been stretched and has the potential to return to its original form.

Potential bonds form atom fall chemical roll types elastic kinetic

Just as there are many forms of potential energy there are also many forms of kinetic energy. In general, any system of moving parts such as fan blades turning or a car rolling is known as mechanical energy. Kinetic energy of moving molecules is called heat energy or thermal energy. Moving electrons are a form of kinetic energy that we call electricity, which we use to power our home appliances. A visible form of kinetic energy that we need to see things is called light energy.

heat light mechanical electricity

In the modern era, societies have tried to discover different sources of energy to use other than fossil fuels. The main fossil fuels in use today are coal, oil, and gasoline. Fossil fuels are known as non-renewable sources of energy because we are using these fuels at a faster rate than they can be replenished. In general, there has been a great search for sources of energy that will not run out. These sources of energy are called renewable sources of energy. Some common sources of renewable energy are from moving water and wind. Electricity that is made from moving water is called hydroelectric energy. Another renewable source of energy is from the heat inside the Earth is called geothermal energy.

renewable oil run rate fuels geothermal water renewable wind hydroelectric

Directions: Match the vocabulary words on the left with the definitions on the right.

D 1. friction

F 2. inclined plane

B 3. force

A 4. axle

E 5. power

C 6. fulcrum

K 7. load

I 8. pulley

G 9. pull

H 10. lever

N 11. screw

J 12. push

O 13. tool

L 14. spring

M 15. machine

R 16. wedge

P 17. wheel

Q 18. torque

S 19. work

A. a supporting bar or shaft on which, or by means of which, a wheel or wheels turn.

B. an influence on the shape, motion, or other characteristics of a body or system.

C. the point of support on which a lever turns.

D. the resistance of a surface to relative motion, as of an object sliding or rolling over it.

E. physical, mechanical, or electrical energy.

F. a plane surface inclined at less than a right angle to a horizontal surface, used to roll or slide a load up or down.

G. to bring or try to bring closer by exerting force upon.

H. any of a class of basic tools consisting of a rigid bar or an equivalent, acting by pivoting around a fixed fulcrum to transfer applied force from one point to another.

I. a wheel or set of wheels with grooved edges over which a rope or chain can be drawn in order to change the direction of a pulling force and increase the capacity for lifting weight.

J. to thrust (something) away.

K. an amount of something carried; cargo or freight.

L. an elastic device or object that regains its original shape after being compressed, stretched out, or otherwise distorted.

M. a man-made device, usually driven by a motor or engine, with a system of interrelated parts that work together to perform a task.

N. a fastener, usually metal, having a sometimes tapered shank with a helical thread, driven into a surface by applying pressure to the head while turning it.

O. an instrument, such as a hammer or drill, used for doing work.

P. any instrument resembling a disk or frame in shape, motion, or function.

Q. the measured ability of a force to produce turning or twisting around an axis, such as a gear or shaft.

R. a piece of wood or metal in a three-dimensional, triangular shape with a thin edge that is driven or forced between objects to split, lift, or reinforce them.

S. physical or mental effort directed toward achieving some result; labor.

