

**ENERGY AND FORCE & MOTION UNIT
STUDY GUIDE**

TEST DATE: THURSDAY,
NOVEMBER 3

NAME:

VOCABULARY WORD	MEANING
energy	the ability to do work or make change
kinetic	energy of motion
potential	stored energy
gravitational potential	energy an object has due to its position above the ground
elastic potential	energy an object has when it is stretched or compressed
chemical	potential energy stored in matter
thermal	energy produced by the movement of molecules and atoms that make up a substance
heat	how thermal energy is transferred
radiation	transfer of heat by electromagnetic waves
conduction	transfer of heat by direct contact
conductors	matter that allows the rapid movement of heat
insulators	matter that transfers heat slowly
convection	transfer of heat by movement of molecules within a fluid (liquid or gas)
sound	form of energy produced when matter vibrates
vibrate	to move back and forth rapidly and repeatedly
pitch	highness or lowness of a sound
light	form of energy that moves in electromagnetic waves
absorb	to take in
reflect	to change in direction
refract	to bend
transparent	describes matter that allows light waves to pass through
translucent	describes matter that allows only some light waves to pass through
opaque	describes matter that does NOT allow light waves to pass through
renewable	energy resources that are never used up or can be replaced in a short time
non-renewable	energy resources that cannot be replaced for millions of years
force	a push or a pull against an object or substance
balanced force	when two forces are acting on opposite sides of an object and the object does not change its position
unbalanced force	when a force acts upon an object causing it to move
applied force	a force acting upon an object
net force	the sum of all the forces acting upon an object
inertia	an object's tendency to keep doing what it is doing
rest	the state of an object when it is not changing position in relation to its surroundings
motion	an object's changing position in relation to its surroundings

STUDY NOTES

- 1) Two factors that affect the kinetic energy of an object are MASS and SPEED.
More mass=more kinetic energy; more speed=more kinetic energy.
- 2) The more an object is stretched or compressed, the greater its elastic potential energy.
- 3) Heat flows from a warmer substance to a cooler substance.
- 4) Examples of heat transfer by radiation: heat from the Sun, heat from a campfire
- 5) Examples of heat transfer by conduction: touching a hot iron, hot water in a cup to a spoon
- 6) Examples of heat transfer by convection: heater warming a room; water in a pan as it heats
- 7) Metals are good CONDUCTORS. Plastic, rubber, wood, water, air, wool, and feathers are good INSULATORS.
- 8) LARGE vibrations = LOUD sound. SMALL vibrations = SOFT sound
- 9) FAST vibrations = HIGH pitch SLOW vibrations = LOW pitch
- 10) Light can travel through a vacuum such as space, but sound can't.
- 11) Both sound and light can be absorbed and reflected.
- 12) Light can be REFRACTED (or bent).
- 13) Sound waves travel best fastest through solid matter.
- 14) Light travels FASTER than sound.

15) The Moon is not a source of light energy because it does NOT produce its own light. It reflects light from the Sun.

16) We are able to see objects because they reflect light.

17) WHITE objects reflect the most light waves. BLACK objects absorb the most light waves.

18) Objects placed in water appear broken or larger because light waves bend as they move through the water. This is because light waves travel slower through liquids (such as water) than they do through gases (such as air).

19) Renewable energy resources: sunlight, moving water, wind, organic matter, thermal energy, wood, garbage

20) Non-renewable energy resources: oil, natural gas, coal, uranium

21) Mass of an object affects the distance a moving object will travel before stopping. The MORE MASS an object has, the FARTHER it will travel before stopping.

22) Gravity is a force that pulls object toward each other. The force of gravity depends on MASS and DISTANCE. Objects with greater mass have greater gravitational force. If distance increases between objects, gravity decreases.

23) Friction - a force that acts between surfaces that are touching. Friction tends to SLOW an object's motion.

24) AIR RESISTANCE is a form of friction between a moving object and air particles. Air resistance depends on an object's SHAPE and SURFACE AREA.