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8th Grade Science Semester 1 Exam Review
Covers Chapters 1, 2, 3, 4, 5, 6, 8, and 9

Answer the following questions to help you study for your Semester 1 Exam.

Define the following terms:

Surface tension: the uneven forces acting on the particles on the surface of a liquid.

Noncontact Force:
a force that one object applies to another object without touching it.

Contact Force:
a push or pull on one object that is touching

Kinetic Energy:
energy due to motion

Potential Energy:
Stored energy due to the interactions between objects or particles.

Law of Conservation of Energy:
law that states that energy can be transformed from one form to another but it cannot be created or destroyed

What makes digital signals better than analog signals?
1. Less interference
2. Higher Picture Quality
3. Can carry more information

What is the unit of force?
Newton

Give an Example of Each Energy Type:

Kinetic	Potential	Chemical	Radiant	Seismic	Sound	Thermal
Blades of a wind turbine moving	a kite stuck in a tree	Energy from food	Sunshine	Earth-quakes	Echo-location	Rubbing your hands together

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Fill in the graphic organizer below:

	Newton's 1st Law	Newton's 2nd Law	Newton's 3rd Law
Definition	An object in motion will stay in motion unless acted on by an unbalanced force	F=ma the acceleration of an object is equal to the net force acting on the object divided by the object's mass	For every action there is an equal and opposite reaction
Example 1 and Picture	A soccer ball sitting at rest	Pushing a heavy ball - harder to move it	A fireman turns on his hose and is knocked backwards
Example 2 and Picture	A seatbelt stops you from going through the windshield	A girl pushes a sled and the sled accelerates	Air being let out of a balloon and pushing it upwards
Example 3 and Picture	A book sitting on a table	A boy can throw a football further by using more force	Water pushes you forward when you push against it

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Define and Provide an Example of each Simple Machine Listed Below:

Simple Machine	Definition	Example
Lever	Consists of a bar that pivots or rotates around a fixed point	bottle opener
Pulley	Consists of a grooved wheel with a rope or cable wrapped around it	flagpole mechanism
Wheel and Axle	Consists of an axle attached to the center of a larger wheel, so the rotate together	Potter's Wheel
Screw	Consists of an inclined plane wrapped around a cylinder	threaded bolt
Wedge	Consists of an inclined plane with one or two sloping sides - used to split or separate an object	Doorstop knife
Inclined Plane	Consists of a ramp or a flat, sloped surface	wheelchair ramp

Speed of Sound

Medium	Speed (m/s)
Gases:	
Air (0°C)	331
Air (20°C)	340
Liquids:	
Fresh water	1,490
Salt water	1,531
Solids:	
Lead	1,210
Plastic	1,800
Silver	2,680
Gold	3,240
Brick	3,650
Wood	4,000
Glass	4,540
Iron	5,000
Steel	5,200

Using the chart at the left fill in the blanks:

The speed of sound is faster in Steel than in iron.

Sound travels the slowest in (solids, liquids, or gases).

Sound travels fastest in (solids, liquids, or gases).

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A(n) (sound or electromagnetic) wave can travel through a vacuum and matter.

Sound Waves are (longitudinal or transverse) waves.

What is the difference between a polar molecule and nonpolar molecule?
Polar - partial positive end and partial negative end because of unequal sharing of electrons
Nonpolar - electrons shared equally

Where are electrons located in an atom? What are energy levels?
Outside the nucleus, in the electron cloud, in energy levels

What is a compound?
Matter made up of two or more different kinds of atoms joined by chemical bonds

What is heat?
Heat is thermal energy that is transferred from one object at a certain temperature to another at a different temperature

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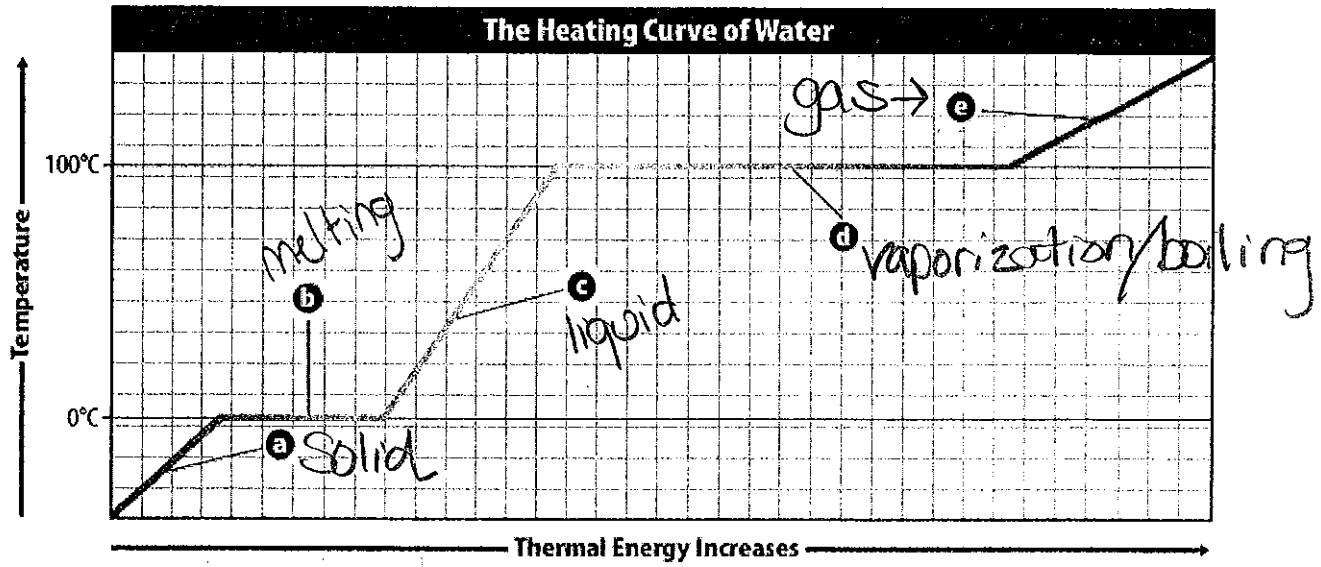

Label each letter in the graph above with the state of matter or the change in state being shown. (6)

Define each and give an example

	Definition	Example
Conduction	transfer of energy by direct contact of particles	metal spoon in hot soup
Convection	transfer of energy by the motion of heated particles in a liquid or gas	Boiling Water
Radiation	transfer of energy through electromagnetic waves	Sun rays

Heat transfers because of a difference in what?

temperature

What is temperature? A measure of the average kinetic energy of the particles in an object

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Define thermal energy.
The sum of the kinetic energy and potential energy of an object.

Define and give an example of each:

	Definition	Example
Freezing	liquid → solid	ice
Melting	solid → liquid	melting butter
Condensation	gas → liquid	foggy mirror
Vaporization	liquid → gas	boiling water
Sublimation	solid → gas	dry ice
Deposition	gas → solid	snow formation

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What is the law of conservation of mass?

the mass of the reactants must equal the mass of the products

The sum of all the potential energy and kinetic energy in an object is equal to its _____.

a. thermal energy b. kinetic energy

c. potential energy d. force

What is activation energy?

the minimum amount of energy needed to start a chemical reaction

Describe an endothermic reaction.

Chemical reaction that absorbs thermal energy

What is the difference between a chemical change and a physical change?

Physical - doesn't change what the substance is
Chemical - new substance is formed.