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SLT Science Expo 2016



Physical Science



Participants



Answer Key

Name: _____

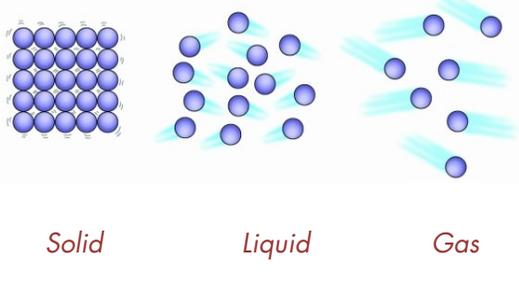
Date: _____

School: _____

Properties of Matter

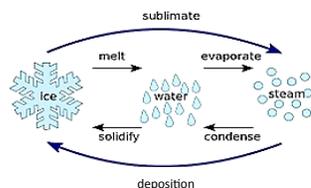
Physical Properties

Matter on the Move: What are the three states of matter?



Phase Change Poppers: What is the phase change called when a solid changes directly into a gas?

Sublimation.



Invisible Mass: Air has mass.
 True or False (Circle one)

It's a Gas: When citric acid and baking soda react, what gas bubbles out of the solution?

Carbon dioxide



Slime Time: What type of fluid acts like both a liquid and a solid?

Non-Newtonian fluid/oobleck

Mixtures

Separation Anxiety: Are mixtures separated by chemical or physical means?

Chemical or Physical (Circle one)



Energy

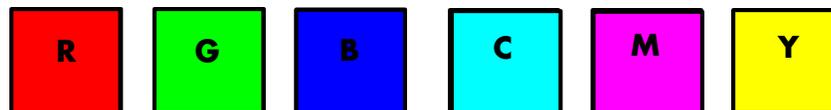
Light



Color Combination: When you combine red, green, and blue light, what color light do you get? *White*

Colored Shadows:

Write-in the 3 primary colors of light



Three Little Pigments:

Write-in the 3 secondary colors

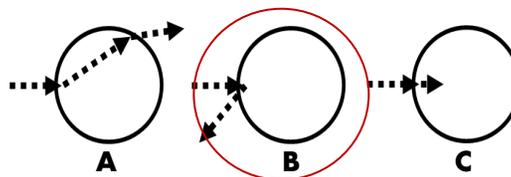
The Sky is Purple?: What gives the sky its color?

Light scattering



Great Wall of Color: Did you see colors reflected in the bubble film? Yes or No (Circle one)

Laser Light Show: Which image represents reflection? (Circle one)



Refraction Action: The bending of light is called Refraction

Super Spectroscopes: A spectroscope is a tool used for observing a spectrum of Visible light.

It's a Mirror-cle: Why does it look like you are flying?

The foot off the ground is reflected and looks like a second foot



Heat

Some Like it Hot: Name 3 methods of heat transfer and an example of each

- 1) *Conduction—touching a hot stove*
- 2) *Convection—hot air rising in a room*
- 3) *Radiation—feeling the warmth of the sun*

Energy

Mechanical



Give it a Ride: Potential energy is stored energy.

Kinetic energy is energy in motion.



Keep Your Eye on the Ball: Energy cannot be created nor destroyed but can change into different forms.

True or False (Circle one)

Sound

Musical Coat Hangers: Which is the best medium for sound waves to travel?

Solid or Gas (Circle one)



Good Vibrations: What creates sound?

Sound is created by vibrating objects

Electricity

Sizzling Static Electricity: Uncharged objects become charged by gaining or losing _____

Human Battery: Which pair of metals produced the most current:
(Circle one)

Copper + Brass

Copper + Aluminum

Copper + Zinc

Electricity, Simply Magnet-ificent: In this activity you observed
(Circle One)

- a. A compass needle move when you connect a battery to copper wire
- b. Copper wire rotating on a battery and magnet
- c. An electromagnet picking up a paper clip
- d. All of the above



Currently Working: A solution with ions is able to conduct electricity.

True or False (Circle one)

Properties of Matter

Density

Mystery Box: What is the definition of density?

How tightly packed a material is and how much space it takes up or Mass/Volume

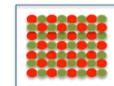


Floating Golf Ball: Which is more dense, Freshwater or Saltwater? (Circle one)

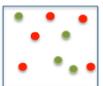
Stacking Colors: Which is less dense? Oil or Water (Circle one)

Hot and Cold Density: How can you change the density of water?
You can change the density of water by changing the temperature

Changing the Density of an Object: Can two objects have the same volume but different densities? Why?
Yes, because they have different masses.



High Density



Low Density

Chemical Reaction

Gassy Lave Lamp: What is a chemical reaction?

A process that rearranges molecular structures of a substance

Shake it Up! An indicator, like cabbage juice, is used to demonstrate that a chemical reaction has taken place.

True or False (Circle one)

Exothermic vs. Endothermic:

Exothermic reactions release energy in the form of heat.

(For example, Calcium chloride mixed with water feels warm and can be used to melt ice.)

Endothermic reactions absorb energy in the form of heat. (For example, Urea mixed with water feels cold.)

Fire Starters: What is needed for a fire to burn?

1. Heat (or source of ignition) 2. Oxygen 3. Fuel



Forces & Motion

Air Pressure

Automatic Balloon Inflator: Which takes up more space:

Hot air or Cold air? (Circle one)



Mystery Candle: Is the pressure higher or lower inside the flask:
Higher or Lower? (Circle one)

Balloon in a Bottle: How do you know air takes up space?
Because you can't blow up the balloon without a hole in the bottle.

The Power of Words: True or False (circle one): The more surface area something has, the more atmospheric pressure pushes down on it.



Gravity

Gravity keeps you down: Air Resistance causes falling objects to slow down.

Strike a Balance: What physics concept keeps objects from falling over?

The center of gravity of an object.



Friction Frenzy: What is an example from your life when you experience friction? *Examples: driving, skiing, rubbing hands together.*

Physics of Animal Flight

Flight: What are two things that help animals fly?
Wing shape, wing size, mass, wing movement and/or wing speed.



Forces & Motion

Magnetism

Magnet Magic: Magnetic fields cause magnetic

attraction and repulsion.



Magnet Mania: True or False (circle one): All metals are magnetic.

Eddy Currents: Does a magnet fall faster in:

Copper tube or Plastic tube? (Circle one)



Properties of Water

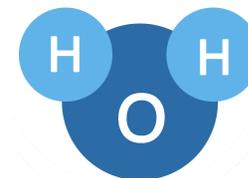
Magic Playing Card: What bond is breaking when the water spills out?
Adhesion OR Surface Tension.

H2Olympics: Cohesion is the attraction between water molecules.

Adhesion is the attraction between water molecules and other materials.

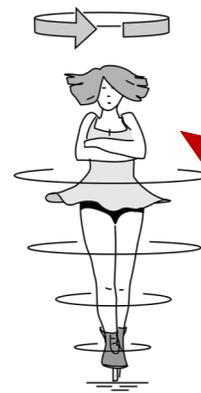
Surface Tension is the strong bond formed between water at the surface.

Capillary Action is the movement of water molecules within materials.



Momentum

Match the type of momentum to the photo.



Angular

Linear

