

## Chemical and Physical Properties Activity Packet **Answers**

All answers below serve as examples; your answers may vary depending on the types of materials used in class.

**Part A. Large Group Data Chart.** Complete the chart below as the class evaluates different objects.

	Item	Physical properties	Chemical properties
1	<i>Fancy dress</i>	<i>Soft Can rip Can be cut Blue (or whatever color) pliable solid at room temperature blue somewhat soluble in water (absorbs water)</i>	<i>Can burn Must be dry cleaned Doesn't irritate skin Can be bleached (ruin by bleached) Can be stained Can be eaten Will probably react with your body and make you sick if eaten</i>
2	<i>Plastic (water bottle, bags, etc.)</i>	<i>Waterproof Can be cut or torn Has a Low melting point Floats on water (less dense than water) Odorless colorless flexible not brittle</i>	<i>Can burn Doesn't react with water Doesn't irritate skin Will probably react with your body and make you sick if eaten Doesn't react with flavored water, juice, milk, soda, protein drinks—doesn't react with many things Can be cleaned normally (with soap and water)</i>
3	<i>Silly Putty</i>	<i>Flexible Malleable Solid a room temperature Insoluble in water More dense than water</i>	<i>Doesn't react with your skin Will probably react with your body and make you sick if eaten Probably burns? Doesn't react to water Cannot be cleaned normally (with just soap and water)</i>
4	<i>Almond milk</i>	<i>Liquid a room temperature Soluble in water Has a freezing temperature similar to that of water</i>	<i>Can be consumed Reacts with your body and makes you healthy Doesn't make lactose intolerant people sick (react with their body) Can be used to make yogurt Can be cooked</i>
5	<i>Apple</i>	<i>Solid at room temperature Red, green, white Insoluble in water (when not cooked) Can be smashed</i>	<i>Can be cooked Can be eaten Reacts with your body and makes you healthy when eaten Doesn't react with skin The inside reacts with the air (turns brown) but the outside doesn't</i>

6	<b>School glue</b>	<i>Liquid at room temperature</i> <i>White</i> <i>Thick/viscous</i> <i>Soluble in water</i> <i>Can be frozen?</i>	<i>Can be eaten</i> <i>Nontoxic</i> <i>Doesn't react with skin</i> <i>May irritate eyes</i> <i>Can burn??</i>
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**Part B. Vocabulary Review.** What you put in this Section is based upon the needs of your students.

**Part C. Individual Definition.** When instructed, silently study the chart that your class just completed. Write a definition for the terms below

1. Physical property – **a property that can be observed without a chemical reaction; some will say a property that can be observed using the five senses—that is ok at this level**
2. Chemical property – **a property that can only be observed when attempting a chemical reaction**

**Part D. Group Definition.** (See above) Make sure the students are circling and underlining according to their instructions.

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**Part E. Individual data chart:** Evaluate the items provided. Complete the chart.

Item	Two Physical properties	Two Chemical properties
	<i>Solid, liquid, gas at room temp</i> <i>Can be frozen, melted, evaporated easily</i> <i>Info about color</i> <i>Info about odor</i> <i>Info about taste</i> <i>Flexible/rigid</i> <i>Viscous/not viscous</i> <i>Brittle (breaks easily)</i> <i>Can be broken, cut, torn, etc.</i> <i>Soft/hard</i> <i>Strong</i> <i>Soluble/Insoluble in water</i> <i>Malleable</i> <i>Fragile/Tough</i>	<i>flammable (or not flammable)</i> <i>will/won't irritate skin, eyes, nose, etc</i> <i>makes you sick if ingested (eaten, etc.)</i> <i>gives you a headache, rash, bumps, itchy skin, etc.</i> <i>turns skin red</i> <i>improves our health</i> <i>builds your muscles</i> <i>strengthens your teeth</i> <i>strengthens your bones</i> <i>gives you energy/makes you sluggish</i> <i>makes you gain weight</i> <i>helps you stay trim</i> <i>will/won't spoil</i> <i>kills germs</i> <i>cleans/doesn't clean cuts</i> <i>can be cleaned regularly/has to be dry cleaned</i> <i>cleans other things (skin, clothes, etc.)</i> <i>changes colors of clothes (bleach)</i> <i>can be colored or dyed</i> <i>is/isn't living</i> <i>can/cannot grow</i>

**Part F. Elements and their properties.** Choose 2 elements from the Periodic Table. Look up 4 physical properties and three chemical properties of each element.

Element	Physical properties (2 points per box)	Chemical properties (2 point per box)
	<i>solid, liquid, gas, etc.</i>	<i>Reacts with . . .</i>

	<p><i>melting temp of . .</i>  <i>boiling temp of . .</i>  <i>info about color</i>  <i>malleable</i>  <i>ductile</i>  <i>density</i>  <i>high/low mass</i>  <i>atomic number</i>  <i>has isotopes</i>  <i>shiny</i></p> <p><i>No points given for any words they don't know the definition of such as</i>  <i>ionization energy</i>  <i>electronegativity</i>  <i>paramagnetic</i></p>	<p><i>Used to make soap, food, clothing, etc.</i>  <i>Bubbles when reacting with. . .</i>  <i>Turns colors when reacting with . . .</i>  <i>Toxic/Nontoxic</i>  <i>Causes coughing</i>  <i>Eye, nose, throat, skin, etc. irritant</i></p> <p><i>No points given for anything that they don't know the definition</i></p>
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**Part G.** Who cares about chemical and physical properties?

Answers.

1. Name a substance not yet mentioned and one of its **physical** properties.

*Plastic is waterproof.*

2. Explain the property influences how we use the substance.

*Because plastic is waterproof, we use it for water bottles.*

3. Name a substance not yet mentioned and one of its **chemical** properties.

*Iron, when exposed to oxygen and water, creates rust*

4. Explain the property influences how we use the substance.

*We often manufacture iron-based items with other materials (for example, steel) in order to make them stronger.*

5. Who cares about chemical and physical properties? Why?

*We do because it influences how we use things.*