

PHYSICAL AND CHEMICAL PROPERTIES & CHANGES LESSON

“★★★★★ Extremely
satisfied - Thank you for a
great resource.
★★★★★ Extremely
satisfied - Excellent resource!”

Google & Office
Versions

No-Prep and Fully
Editable

SCROLL
to take a look inside!

Over 260 Units Sold!



HOW THIS LESSON HELPS YOU

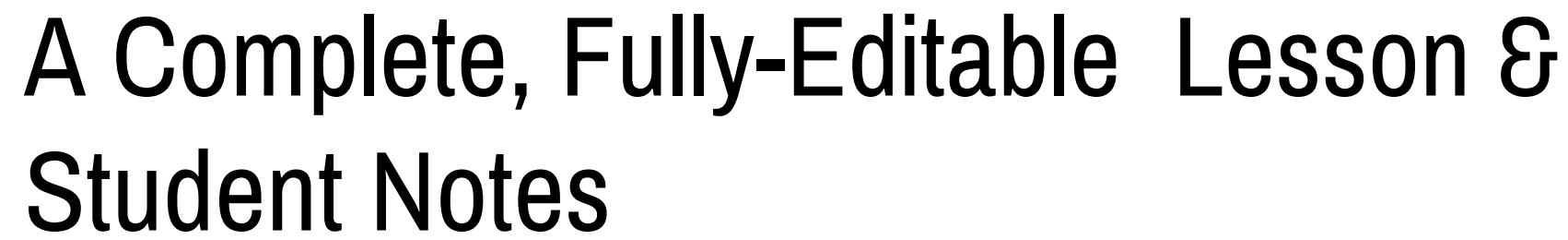
➤ Saves Prep Time: Everything is pre-made, ready to go, and Fully Editable.

➤ Provides Built-In Assessments - Auto-graded Exit Ticket lets teachers quickly check for understanding.

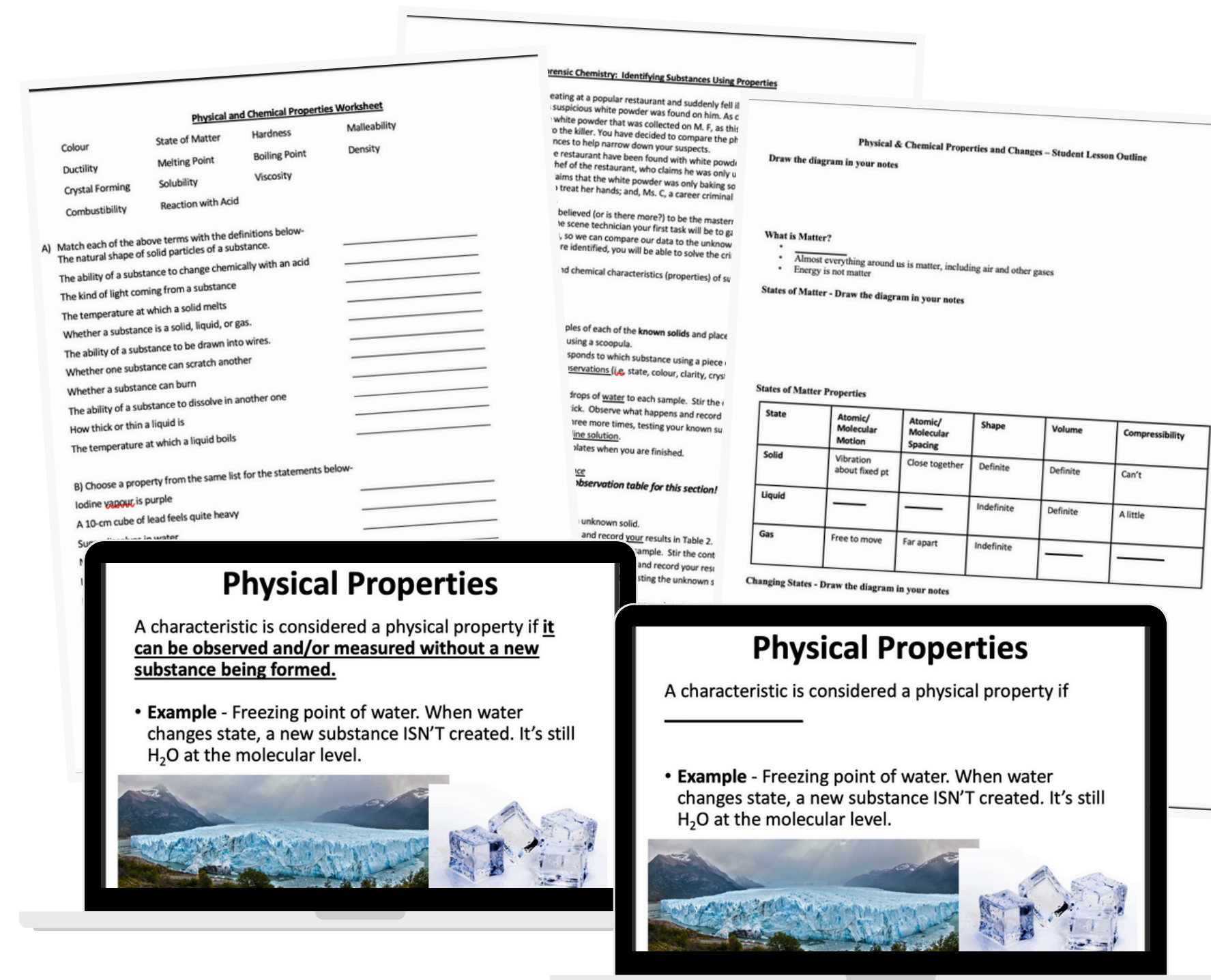
➤ Includes a Lesson, a Lab and 2 Additional Activities.

The collage features several educational resources:

- Forensic Chemistry: Identifying Substances Using Properties**: A lab scenario where students identify a white powder found on a suspect. The scenario involves a crime scene investigation where a white powder was found on a suspect. The students are tasked with identifying the substance by comparing its physical and chemical properties to known substances.
- Physical and Chemical Properties and Changes - Exit Ticket**: A form with a question: "Matter is anything that has both _____ and takes up _____." The options are: ☐ space, molecules; ☐ mass, volume; ☐ molecules, mass; ☐ volume, atoms. A "Next" button is at the bottom.
- Physical and Chemical Properties Worksheet**: A worksheet with a table for recording properties of substances. The table has columns for Matter, Hardness, Malleability, Point, Boiling Point, Density, and Viscosity. Below the table are sections for "With Acid" and "With the definitions below...".
- Properties**: A laptop screen displaying a lesson on properties. The text states: "Properties are the characteristics used to identify a substance". Examples include color, taste, smell, dimensions, density, etc. The text asks: "What are its properties? →". Below the text is a photo of a silver car and a film reel icon.



What You Get



Your Lesson

Student Notes in Word

Google Access

Videos embedded in your slides

Teacher and Student Versions of the Lesson

Properties

- Properties are the characteristics used to identify a substance
- **Examples include color, taste, smell, dimensions, density, etc**
- What are its properties? →



Physical Properties

A characteristic is considered a physical property if it can be observed and/or measured without a new substance being formed.

- **Example** - Freezing point of water. When water changes state, a new substance ISN'T created. It's still H₂O at the molecular level.



Physical Properties

A characteristic is considered a physical property if _____

- **Example** - Freezing point of water. When water changes state, a new substance ISN'T created. It's still H₂O at the molecular level.



Physical & Chemical Properties and Changes – Student Lesson Outline

Draw the diagram in your notes

What is Matter?

- Almost everything around us is matter, including air and other gases
- Energy is not matter

States of Matter - Draw the diagram in your notes

States of Matter Properties

State	Atomic/Molecular Motion	Atomic/Molecular Spacing	Shape	Volume	Compressibility
Solid	Vibration about fixed pt	Close together	Definite	Definite	Can't
Liquid	_____	_____	Indefinite	Definite	A little
Gas	Free to move	_____	Indefinite	Indefinite	_____

Changing States - Draw the diagram in your notes

Properties

- Properties are the characteristics used to identify a substance
- What are its properties?

Google Access

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TWF

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HAPPY TEACHERS SAID...

Physical and Chemical Properties Worksheet

Colour	State of Matter	Hardness	Malleability
Ductility	Melting Point	Boiling Point	Density
Crystal Forming	Solubility	Viscosity	
Combustibility	Reaction with Acid		

A) Match each of the above terms with the definitions below. The natural shape of solid particles of a substance.

The ability of a substance to change chemically with an acid

The kind of light coming from a substance

The temperature at which a solid melts

Whether a substance is a solid, liquid, or gas.

The ability of a substance to be drawn into wires.

Whether one substance can scratch another

Whether a substance can burn

The ability of a substance to dissolve in another one

How thick or thin a liquid is

The temperature at which a liquid boils

B) Choose a property from the same list for the statements below-

Iodine sublimes, is purple

A 10-cm cube of lead feels quite heavy

Sugar dissolves in water

Nitrogen is a gas

Iron melts at 1535°C

Diamond can scratch glass

Iron can be hammered

Oxygen boils

Methanol burns

Gold can be drawn into wires

Baking soda

Sugar forms crystals

Maple syrup

Forensic Chemistry: Identifying Substances Using Properties

Lab Scenario: Mr. F was eating at a popular restaurant and suddenly fell ill. He is currently in a critical condition in a hospital. A suspicious white powder was found on him. As chief crime scene investigator, your job is to identify the white powder that was collected on M. F. as this substance may be the cause of his illness, or point us to the killer. You have decided to compare the physical and chemical properties of the unidentified substances to help narrow down your suspects.

Four persons in the restaurant have been found with white powder and are subject to criminal investigations; Mr. P, the chef of the restaurant, who claims he was only using icing to make a cake; Mrs. B, a science teacher who claims that the white powder was only baking soda; Ms. H who claims to have used corn starch in order to treat her hands; and, Ms. C, a career criminal who is an expert in designing explosive devices using salt.

Only one of them is believed (or is there more?) to be the mastermind behind this crime (or are they all innocent?). As a crime scene technician your first task will be to gather the known properties of the various white substances, so we can compare our data to the unknown/mystery sample. Once the identities of the substances are identified, you will be able to solve the crime.

Purpose: What are physical and chemical characteristics (properties) of substances?

Procedure:

Part A – Known Solids

- Obtain **FOUR** small samples of each of the **known solids** and place them in different rows on the spot plate or micro tray using a scoopula.
- Identify which row corresponds to which substance using a piece of labeled tape.
- Record the **qualitative observations** (i.e. state, colour, clarity, crystal shape, etc.) of each substance into table 1.
- Using a dropper add two drops of **water** to each sample. Stir the contents gently with the stir stick then rinse your stir stick. Observe what happens and record your results in table 1.
- Repeat steps #1-3 above three more times, testing your known substances with **acetic acid**, **universal indicator**, and **iodine solution**.
- Rinse out and dry the spot plates when you are finished.

Part B – Unknown / Mystery Substance

You need to create your own observation table for this section! Label your table "Table 2: Unknown Substance"

Obtain a small sample of each unknown solid.

Make qualitative observations and record **your** results in Table 2.

Using a dropper add two drops of water to the sample. Stir the contents gently with the stir stick then rinse your stick. Observe what happens and record your results.

Repeat steps #1-3 above three more times, testing the unknown substances with **acetic acid**, **universal indicator**, and **iodine solution**.

Return any

stance.

Physical Properties

A characteristic is considered a physical property if **it can be observed and/or measured without a new substance being formed.**

- Example** - Freezing point of water. When water changes state, a new substance ISN'T created. It's still H₂O at the molecular level.



★★★★★ Extremely satisfied
- Thank you! Great stuff.

★★★★★ Extremely satisfied - I
needed some engaging lessons for my
GED class and this was perfect.

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PHYSICAL & CHEMICAL PROPERTIES AND CHANGES

• **Physical Property** - the behavior of a substance as it becomes a substance
• **Chemical Property** - the ability of a substance to react with oxygen to produce a dioxide
• **Acid** - the ability of a substance to react with an acid
• **Base** - the substance will produce a base

★★★★★ Extremely satisfied - Absolutely love the set up for these lessons! The slides are interactive and engaging for the students and the activities that come with the lesson allow for students to gain deeper understanding of the topic being discussed! These were an essential part of my curriculum for the past two years and I am looking forward to using them again!

PHYSICAL AND CHEMICAL PROPERTIES & CHANGES 5E LESSON BUNDLE

- Teaching Timeline
- Grade 7-10

- Lessons
- Activities
- Assessment

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