Physics and Chemistry

1- PhysicsDefined :

❖ Physics comes from the Greek word *phusike* which denotes knowledge of nature. Physics studies nature and how it works. It investigates energy, force, light, and movement. It deals with how matter moves through time and space .

2- **Physics**, is a science that deals with the structure of matter and its motion. the interactions between the fundamental constituents of the observable universe. Its scope of study encompasses not only the behaviour of objects under the action of given forces but also the nature and origin of gravitational, electromagnetic, and nuclear force fields.

3- . Physics can, at base, defined it as the science of matter, motion, and energy. Its laws are typically expressed with economy and precision in the language of mathematics. Its goal is to understand the natural world.

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5- .Chemistry defined:

- Chemistry, the science that deals with the properties, composition, and structure of substances (defined as elements and compounds), the transformations they undergo, and the energy that is released or absorbed during these processes. Every substance, whether naturally occurring or artificially produced, consists of one or more of the hundred-odd species of atoms that have been identified as elements. Chemistry, therefore, is concerned with the properties of atoms and the laws governing their combinations and the reactions of matter; meaning that when 2 different chemicals are mixed

together to bring something new, this is labeled as a chemical reaction.

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- Matter: anything that occupies space and has weight.
- Composition of matter: it means that what the different materials are made of.

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- Structure of matter: meaning that how things are shaped.

Physics and chemistry

- Both physics and chemistry study matter and its properties. Physics tries to understand how everything in the universe functions and works. While, chemistry deals with how matter exists in the universe and how it changes over time like the chemical changes.
  - There are two distinct changes characterizing matter in the universe:

First: Physical change is a change in which **no** new substances are formed. That is, **no** change in the type of matter an object is made of. Material may change shapes or forms like size, shape…

e.g. broken glass/ pencil, ice water…

- **physical changes occur when**: cutting, breaking, dissolving, condensing, folding, bending, warming, evaporating, mixing, boiling, separating, freezing, cooling, tearing, crushing.

Second: Chemical change is a change in which **one or more new** types of matter form .That is, substances react to each other to form other new substances.

- The table bellow summarizes the chemical changes with some examples.

Clue	Examples
Changes colour	Cake gets brown in the oven
Different ordor	Burning wood
Bubbles form	Bubbles form when vinegar is mixed with baking soda
Gives off gas	Burning wood gives off carbon dioxide CO2
New solid form	Rust is created

Activity one: classify the followings either as physical change or chemical change:

Slicing bread, frying an egg, fireworks, fresh juice, boiling water, digesting food, roasting a marshmallow, baking a cake, cracking an egg.

Correction

Physical change	Chemical change
Cracking an egg	*Frying an egg*
Slicing bread	*Baking a cake*
Boiling water	*Fireworks*
Fresh juice	*Digesting food*
	Roasting a marshmallow