

**Exercise 1:** Read the passage and answer the following questions:

Chemists study the structures, physical properties, and chemical properties of material substances. These consist of matter, which is anything that occupies space and has mass. Gold and iridium are matter, as are peanuts, people, and postage stamps. Smoke, smog, and laughing gas are matter. Energy, light, and sound, however, are not matter; ideas and emotions are also not matter.

The mass of an object is the quantity of matter it contains. Do not confuse an object's mass with its weight, which is a force caused by the gravitational attraction that operates on the object. Mass is a fundamental property of an object that does not depend on its location. [1] Weight, on the other hand, depends on the location of an object. An astronaut whose mass is 95 kg weighs about 210 lb on Earth but only about 35 lb on the moon because the gravitational force he or she experiences on the moon is approximately one-sixth the force experienced on Earth. For practical purposes, weight and mass are often used interchangeably in laboratories. Because the force of gravity is considered to be the same everywhere on Earth's surface, 2.2 lb (a weight) equals 1.0 kg (a mass), regardless of the location of the laboratory on Earth.

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- 1- What is discussed in the passage above?
- 2- How many paragraphs are there?
- 3- Give a definition to 'matter'?
- 4- What is the difference between 'mass' and 'weight'?
- 5- Put true or false:
  - a- The gravitational force on the moon is the same on Earth.
  - b- The weight of a matter on earth is different from its weight on the moon.
  - c- People are matter.
- 6- Summarize the passage.

**Exercise 2:** *translate* the following words from English to Arabic then *use them in sentences*: matter, mass, theory, physical, molecule, wave, ray, particles, quantum, laws.