What is the difference between a solid, a liquid and a gas? – I

Read the text.

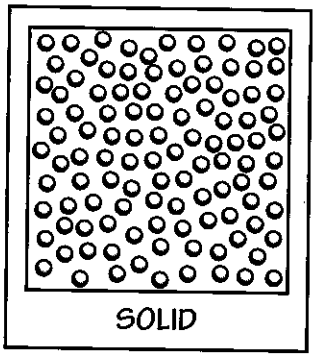
All physical objects around us—trees, clothing, water, books, air—are made of matter. But what *is* matter?

Matter is anything that has mass and volume. (Mass is the measure of how much matter an object has, while volume is the amount of space an object takes up.)

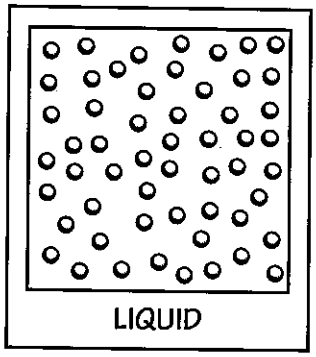
Matter is made of small particles called molecules (which are made of atoms) which move constantly. The particles within an object or substance are held together by electric forces. Between the particles are empty spaces which allow the particles to move about. The particles of one substance are different to those of another. The particles can be affected by temperature (heating or cooling) and pressure. The higher the temperature, the faster the speed of the particles. Matter has properties which allow us to group objects.

The three basic states of matter are solid, liquid and gas.

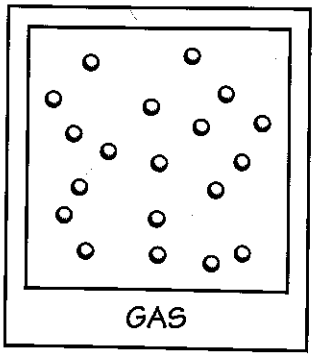
Solids include substances such as rubber, chalk, ice and sand. The particles in a solid are closely packed in a regular pattern. This creates a hard substance. The force among the particles is very strong, and although they vibrate constantly, they can not move from one place to another. Solids keep their own shape, unless they are broken or cut. They do not flow and can not be *compressed* (forced to take up a smaller space).


SOLID

Liquids include substances such as shampoo, petrol, water and milk. The particles in a liquid are held together by weaker forces than those of solids. They are packed closely together (but not as closely as solids) but with no regular arrangement of the particles. This allows them to move more freely inside the space they occupy. The shape of a liquid is not definite; it depends on the container in which it is held. Liquids can flow and be poured, but like solids, they are difficult to compress.


LIQUID

Gases include substances such as air, natural gas, carbon dioxide and water vapour. The particles in gases are held together by very weak forces, and the spaces among them are larger than those in either solids or liquids. The particles have no regular arrangement and are able to move around more quickly than solids or liquids. Gases, like liquids, do not keep their own shape as they take up and expand to fill the shape of their container. Gases flow easily and can be compressed (squashed into a smaller space). They can easily escape from a container and can put pressure on a container in which they are held, such as when air fills a balloon or tyre.


GAS

Solids, liquids and gases are the most common states of matter on Earth. Do *all* things fit into these groups?