A **mineral** is a naturally occurring, inorganic solid with a definite chemical composition and a crystalline structure formed by geological processes (in contrast, a **rock** is an aggregate of one or more minerals). The term “mineral” encompasses both the material's chemical composition and its internal structure. Minerals range in composition from pure elements and simple salts to very complex silicates with hundreds of known varieties. The study of minerals is called mineralogy.

The term **crystal** refers to a mineral’s internal structure. A crystal structure is the orderly spatial arrangement of atoms in one of 14 basic crystal lattices belonging to six crystal systems. Often the internal crystal structure is expressed in the external geometry of the mineral. Crystal structure greatly influences a mineral's physical properties. For example, though diamond and graphite are both pure carbon, graphite is very soft, while diamond is the hardest of all known minerals. This is because the carbon atoms in graphite are arranged into sheets which slide easily upon each other, while the carbon atoms in diamond form a strong, interlocking three-dimensional network.

A **gemstone** is a mineral (e.g. tourmaline), rock (e.g. lapis lazuli), or petrified material (e.g. amber, jet) that when cut or faceted and polished (right) is collectible or can be used in jewelry. Some gemstones which may be generally considered precious or beautiful are too soft or fragile for jewelry manufacture (e.g. single-crystal rhodochrosite), but are exhibited in museums and are sought after by collectors. Diamonds and emeralds are the most precious gemstones.