WHAT IS A MINERAL?

A ***Mineral*** is defined as an inorganic, naturally occurring, homogenous solid, with a definite chemical composition, and ordered (crystalline) atomic structures.

Let's break that definition down….

Inorganic: Involving neither organic life nor the products created from or by organic life.
Naturally Occurring: Must be formed by natural processes, meaning a mineral cannot be man-made, manufactured, or created in a laboratory.
Homogeneous Solid: A mineral must be chemically and physically uniform down to the atomic level. This homogeneity means that the mineral will have absolutely predictable physical properties including hardness, density, and streak.
Definite Chemical Composition means that all occurrences of that mineral have a chemical composition that varies within a specific limited range and the atoms that make up the mineral must occur in specific ratios.
Ordered Atomic structure (Crystalline): The atoms in a mineral are arranged in a systematic and repeating pattern. Glasses such as obsidian, which are disordered solids, liquids (e.g., water, mercury), and gases (e.g., air) do not have a crystalline structure and are therefore not minerals.

Substance	Mineral	Why or Why Not?
Window glass	no	no regular internal structure
Amber	___	_____
Coal	___	_____
Diamond	___	_____
Ice	___	_____
Pearl	___	_____
Pepper	___	_____
Pyrite (Fools Gold)	___	_____
Salt	___	_____
Sugar	___	_____
Water	___	_____

Want some more definitions?

- “A mineral is a naturally occurring chemical compound, usually of crystalline form and abiogenic in origin. A mineral has one specific chemical composition, whereas a rock can be an aggregate of different minerals or mineraloids. The study of minerals is called mineralogy.” (Wikipedia, 2017).

- “A mineral is an element or chemical compound that is normally crystalline and that has been formed as a result of geological processes.” (Nickel, E. H., 1995).

- “Minerals are naturally-occurring inorganic substances with a definite and predictable chemical composition and physical properties.” (O' Donoghue, 1990).

- “A mineral is a naturally occurring homogeneous solid, inorganically formed, with a definite chemical composition and an ordered atomic arrangement.” (Mason, et al, 1968).

- “These... minerals ...can be distinguished from one another by individual characteristics that arise directly from the kinds of atoms they contain and the arrangements these atoms make inside them.” (Sinkankas, 1966).

- “A mineral is a body produced by the processes of inorganic nature, having usually a definite chemical composition and, if formed under favorable conditions, a certain characteristic atomic structure which is expressed in its crystalline form and other physical properties.” (Dana & Ford, 1932).

- “Every distinct chemical compound occurring in inorganic nature, having a definite molecular structure or system of crystallization and well-defined physical properties, constitutes a mineral species.” (Brush & Penfield, 1898).