Gold is an element which exists by itself in its free elemental form. It is one of the most valuable and highly sought-after metals in the world.

Weighing gold is based on the Troy System (1 troy oz. = 480 grains = 20 pennyweight = 1.097 avoirdupois oz). Gold is often referred to according to its purity, which is expressed on parts per thousand. And thus, 1000 fine gold is also equivalent to 24 karat gold.

As a rare metal, it is believed that one ounce nugget of gold is more difficult to find than a five carat diamond. Gold has several properties which makes it an ideal material for different industries. The ductility and malleability of gold allows it to be drawn into tiny wires or thread without breaking. It is said that a single gram of gold can be beaten into a one square meter sheet. After silver and copper, gold is the third most conductive of all metals. This excellent electric conductivity makes it suitable for electric circuitry and such. Gold is also said to be the most non-reactive of all metals, which makes it resistant to tarnish and corrosion, even when subjected to weather, water and oxygen. Gold is also the best reflector of long wavelength thermal radiation. High purity gold reflects up to 99 percent of infrared rays. This characteristic makes gold suitable for space satellites and aircraft cockpit windows.

There are two types of gold mining, hard rock gold mining and alluvial gold mining. Lode Mining or Hard Rock Mining starts with exploration and drilling. Once enough gold has been found within the ore samples taken from the area, they shall continue on with the Blasting. The ore is blasted and trucks transport it to be processed for gold. One of the most important purification processes of gold mining is cyanidation. After the ore has been classified into Low Grade Ore and High Grade Ore, they are sent for to next process for Leaching, where Sodium cyanide solution in the presence of air causes gold to enter into solution. Good quality ores give up their gold under cyanidation in what is called vat leaching. Lesser quality ores require heap leaching, which involves huge piles of ore being repeatedly re-sprayed with the cyanide solution over a prolonged period. The next process, which is Stripping, is where he gold loaded carbon is moved into a vessel where the gold is chemically stripped from the carbon which is then recycled. Electro-winning will precipitate the gold from the solution by chemical substitution. The Smelting is then, the last process of refining gold. The crude gold is melted and treated with chloride, converting remaining metals to chlorides that will drift off the gold. The resulted gold can now be mold and turned into gold bullions.

The other type of gold mining is the Placer/Alluvial Gold Mining. This uses giant water cannons to break rocks from cliffs. The rocks and gold washed down the streams are to be panned by the miners.

<http://49ermike.com/facts.shtml>

<http://www.slideshare.net/jkifer/different-types-of-gold-mining>

<http://www.slideshare.net/teacherlizz/the-recipe-for-gold>