Grade 7 Science **The Solid Solution GOLD**

Name: ________________________________ Class: ______ Date: ________________________

In this activity, you will be learning about a system of marking jewelry and finding out how it works with mixtures of metals.

Find the karat markings on your jewelry. These are usually very small and you may need a magnifying glass or jeweler's loupe to find them. Markings are usually found inside the bands of rings, on necklace and bracelet clasps, on the posts of earrings, and on the back side or on the clasp of pins. Be sure to check for gold markings on white metal - it may be white gold.

In a group or pair, describe your jewelry and what the marking was:

The markings may be in the form of 10K, 14K, or 18K, which is the way that most jewelry is sold in the US. If the jewelry came from the UK, it may be marked 9K or 12K. Some jewelry may be marked with European markings, which are 417 (or sometimes 415), 585, or 750. Some jewelry Items that also have the markings GE, HGE, RGP, GF, or 1/10, 1/20, or 1/30 are not solid gold and cannot be sold for gold value. These items are gold plated or gold filled (which is just a heavier layer of plating). An item with just a P after the karat marking, such as 14 KP, is solid gold (not plated). In this case, the P stands for "plumb", which means "exactly". If your gold jewelry is marked 925 or "Sterling", it is actually gold plated Sterling silver jewelry, not solid gold.

What is the percentage of gold or silver in your jewelry? Explain.

10K gold is 10 parts out of 24 parts pure gold, or 10/24th's. 10 divided by 24 gives the fraction 0.417. This is where the European markings come from: 417 means 417 out of 1000 parts of pure gold. To convert to percentage, multiply the fraction by 100 to give 0.417 * 100 = 41.7% gold.

Likewise, 14K gold is 14/24 = .585 which is equal to 585/1000, making the European marking 585, and the pure gold content 58.5%.

18K gold is 18/24 = .750 = 75% pure gold, also marked 750.

The same can be calculated for other gold markings: 9K (sometimes marked 375), 20K (833), 21K (875), 22K (917). Some vintage jewelry from the UK may also be marked 8K or 333.

"Pure Gold" is quite pure and is denoted as '4-nines' meaning 99.99% or even '5-nines – 99.999%!

So, why is it that most jewelry is not 24K? Try to think of 2 reasons.

Gold is sometimes used as an investment. This means that people buy it with the thought that it will increase in value. How much has the price of gold changed in the past year? 5 years? 10 years? 20 years? Look at the graph below to see.

20 Year Gold Price History in Canadian Dollars per Ounce

Source: https://goldprice.org/gold-price-charts/20-year-gold-price-history-in-canadian-dollars-per-ounce

Approximate price 1 year ago : _______________

Approximate price 5 years ago : _______________

Approximate price 10 years ago : _______________

Approximate price 20 years ago : _______________