Nova: Hunting the Elements Notes

1. 4:13 AU (Gold)
   1. How many protons does Au have?
   2. What are some of the physical properties of Au?
   3. What are some of the Chemical properties of Au?
   4. How does the company know where to dig for the Au?
   5. What method is used to separate Au from the dirt?
   6. How much Au per ton of dirt do they extract from the earth?
   7. What are the “Noble Metals”? Why are they called the Noble Metals?
   8. How much does a gold bar weigh? According to today’s market value, how much would a gold bar be worth?
   9. What are the three elements that are denser than Au?
2. 13:13 Cu (Copper)
   1. What are the physical Properties of Cu?
   2. What are the Chemical properties of Cu?
   3. What is the symbol and atomic number for Cu?
   4. What are some of the uses of Cu?
   5. What do Cu prices tell us about the economy?
3. 17:17 Bronze Bell
   1. What other element is combined with Cu to make Bronze?
   2. What is the mixture in bronze \_\_\_\_% Cu + \_\_\_% Sn=Bronze
   3. How does adding Sn to Cu change the properties of Bronze?
   4. What happens when there is too much Sn?
   5. What are the brighter colors on the screen?
   6. What are the darker colors?
   7. What type of solid are metals, Crystalline or Amorphous?
   8. What images of other atoms did you see?
4. 32:23 Periodic Table
   1. What percentage of the elements on the table are metals?
5. 36:29 Mendeleev
   1. What process did Medeleev use to determine the atomic mass the elements?
   2. What are the names of elements 68 and 70 that Mendeleev predicted would exist?
6. 38:43 Arrangement of the Elements
   1. Why is group 18 called the Noble or Inert gases?
   2. To be stable, the valence (outer shell) needs to hold \_\_\_\_ e-?
   3. How many e- do group 17 (the halogens) have in their valence shell?
   4. How many e- do group 1 (alkali metals) have in their valence shell?
7. 44:41 Chemical Reactions
   1. What are some of the Physical properties of Na?
   2. What are some of the Chemical properties of Na?
   3. What caused the violent chemical reaction when Na + H₂0?
   4. What crystalline solid is formed when Na + Cl are combined?
   5. What determines how bonds are created between atoms?
8. 48:06 Oxygen
   1. How many e- does oxygen need in in its valence shell to be stable?
   2. What was David’s hypothesis about the engine in the ANFO explosion?
   3. What O₂ reactions do we see every day?
   4. Chemists have learned to \_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_ of combustion.
   5. Name the reactants in gunpowder and name the products after the reaction takes place.
   6. Name the reactants in Ammonium Nitrate Gel and name the products after the reaction takes place.
   7. Name the reactants in the C₄ and name the products after the reaction takes place.
9. 58:23 Organic Chemistry
10. CHNOPS
    1. What are the building blocks of living systems?