Name: ______________________

**Sam Kean’s Disappearing Spoon Video Questions – Mercury**

**Instructions**
Watch the Mercury video (5 minutes, 13 seconds) and answer the following questions:

1. What state of matter is mercury at room temperature?

2. True or False? *Mercury is a metal.*

3. What does the name “Hydrargyrum” mean?

4. Why does Sam Kean describe mercury as an “introverted element?”

5. How large were the mercury pills that Lewis and Clark carried with them?

6. What was the main use of Dr. Rush’s Thunderclapper mercury pills?

7. True or False? *Eating mercury is far more dangerous than breathing it.*

8. What part of the body does mercury fumes attack?
Instructions
Watch the Helium video (4 minutes, 40 seconds) and answer the following questions:

1. Why is helium a “loner”?

2. What specific topic was studied by Rutherford at Cambridge University?

3. What type of particle emitted by radioactive elements was of interest to Rutherford?

4. What is the characteristic color of helium gas when excited by electricity?

5. True or False? An alpha particle and a helium atom are exactly the same.

6. Why would helium be found inside a radioactive rock?

7. Based on Rutherford’s initial calculations, how old did he determine the earth to be?

8. Do we currently use Rutherford’s age determination of earth as its correct age?
Sam Kean’s Disappearing Spoon Video Questions – Arsenic

Instructions
Watch the Arsenic video (4 minutes, 14 seconds) and answer the following questions:

1. What properties make arsenic undetectable as a poison?

2. Why was arsenic so difficult to identify when used for murder?

3. What was a common name for arsenic in the early 19th century?

4. What is the chemical name for arsenic powder?

5. List some symptoms of arsenic poisoning:

6. The original method of detecting arsenic was to combine hydrogen sulfide and hydrochloric acid with the sample. What result indicated the presence of arsenic?

7. Why was this test not very helpful in convicting criminals in court?

8. What result indicates the presence of arsenic when the Marsh test is used on a sample?
Name: ______________________

Sam Kean’s Disappearing Spoon Video Questions – Gallium

Instructions
Watch the Gallium video (4 minutes, 13 seconds) and answer the following questions:

1. List some physical properties of Gallium:

2. Why does gallium look like aluminum?

3. Where did the name “Gallium” come from?

4. Why did Mendeleev want credit for the discovery of Gallium?

5. What two specific measurements about Gallium were different than Mendeleev’s original predictions?

6. True or False? During the disputes over Gallium, it was proven that experiment is much more important than theory in science.
Name: ______________________  

Sam Kean’s Disappearing Spoon Video Questions – **Silicon**

**Instructions**
Watch the Silicon video (4 minutes, 51 seconds) and answer the following questions:

1. What type of everyday item is dependent on silicon?

2. What 4 elements are neighbors to silicon on the periodic table (above, below, left, right)?

3. What component in a computer did a silicon amplifier attempt to replace?

4. What properties of silicon limited it from being used as an amplifier?

5. What element was used to create a transistor, instead of silicon?

6. Why was the main problem with the new element used in transistors?

7. What is the main component of sand?
Name: ______________________

Sam Kean’s Disappearing Spoon Video Questions – Hydrogen

Instructions
Watch the Hydrogen video (5 minutes, 05 seconds) and answer the following questions:

1. In the late 1950’s scientists suggested that the earth was once a sea. What three elements existed in this sea?

2. What does the atomic fusion process that occurs within stars create?

3. How do scientists suspect elements 27 and higher were created?

4. True or False? A supernova is the explosion of a star that ejects most of its mass, resulting in an increase in brightness.

5. What elements and isotopes are created from a supernova?
Instructions
Watch the Phosphorous video (5 minutes, 24 seconds) and answer the following questions:

1. What is the element symbol and atomic number of Phosphorous?

2. What important scientific discovery was related to Phosphorus?

3. What did scientists learn about DNA in 1952?

4. True or False? The structure of a molecule does not greatly affect how the molecule works.

5. What was the shape of the DNA molecule that Pauling originally sketched?

6. What property of phosphorus made Pauling’s structure impossible?

7. What scientists at Cambridge University had the same design idea as Pauling?

8. What important information collected from X-ray Crystallography was helpful to the scientists?

9. How many nucleic acids are in DNA? What is important about them?

10. Where are the negatively charged phosphorous located in the double helix?
Name: ______________________

**Sam Kean’s Disappearing Spoon Video Questions – Cadmium**

**Instructions**
Watch the Cadmium video (4 minutes, 43 seconds) and answer the following questions:

1. Which element is incredibly similar to cadmium when found in the earth’s crust?

2. How was zinc purified from ore by miners in Japan?

3. What was done with the unwanted Cadmium after purification of ore?

4. What type of people were first unknowingly exposed to cadmium?

5. What are the health symptoms of cadmium poisoning?

6. True or False? *Rice can absorb and retain cadmium, which then poisons anyone who consumes it.*

7. What elements does cadmium replace in the body to cause poisoning?

8. How was Godzilla killed in the movie sequel?
Name: ______________________

Sam Kean’s Disappearing Spoon Video Questions – Gold

Instructions
Watch the Gold video (5 minutes, 35 seconds) and answer the following questions:

1. What is the myth of the “Midas Touch”?

2. Bronze is an alloy made from which two metals?

3. What two metals make up brass?

4. What element is very similar to, and can be mistaken for brass?

5. What is the chemical name for “Fool’s Gold”?

6. Where did the “Fool’s Fool’s Good Rush” take place in 1896?

7. Gold doesn’t bond well with many elements. What element does it bond well with?

8. Why was Calaverite initially recycled into building materials?
Name: ______________________

Sam Kean’s Disappearing Spoon Video Questions – Manganese

Instructions
Watch the Manganese video (3 minutes, 26 seconds) and answer the following questions:

1. True or False? Pathological Science uses evidence to prove a scientific point.

2. The researchers from the HMS Challenger collected rocks shaped by mineralized ice cream cones from the ocean floor of the Pacific Ocean in 1873. What element were these rocks made of?

3. What was found in the rocks when they were cracked open?

4. How did paleontologists use the evidence collected?

5. What did scientists determine based on the amount of manganese that had accumulated on a tooth?

6. What do believers of Pathological Science think about the extinction of Megalodons?
Sam Kean’s Disappearing Spoon Video Questions – Astatine

Instructions
Watch the Astatine video (3 minutes, 30 seconds) and answer the following questions:

1. What element makes up approximately 90% of the atoms in the universe?

2. What is the second most abundant atom in the universe?

3. What is the rarest element in the universe?

4. True or False? Francium is extremely radioactive.

5. What year was astatine discovered by scientists?