

*Label (by creating a key) the atom and identify the name of the atom present in the picture.*

**The Atomic Hypothesis**

1. What does the word atom mean?
2. Aristotle taught that all matter is composed of various combinations of four elements \_\_\_\_\_\_.
3. What is Brownian motion?
4. If all scientific knowledge were to be lost/destroyed what one sentence would Richard Feynman leave for future generations?

**Characteristics of Atoms**

1. Explain what is meant by the following statements:
   * Atoms are incredibly tiny
   * Atoms are numerous
   * Atoms get around
   * Atoms are ageless

**Atomic Imagery**

1. Atoms are smaller than the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of visible \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Why was 1970 a historic year for our understanding of what an atom looks like?
3. Describe or Draw a picture of one of the models of the atom.
4. Why is no model of the atom truly correct?

**Atomic Structure**

1. Where is the majority of the mass of an atom concentrated?
2. What happens when the nuclei of two or more atoms are squashed together?
3. Define a nucleon. How is a nucleon related to a proton and a neutron?
4. Why do atoms combine to form molecules?

**The Elements**

1. Define the term element.
2. How were heavier elements created?
3. What five elements are living things primarily composed of?

**The Periodic Table of the Elements**

1. How is the periodic table of elements organized?

**Isotopes**

1. What is an isotope?
2. What is the atomic mass?
3. Where does the number we see on periodic table (in terms of mass) come from?

**Compounds and Mixtures**

1. How is a compound different than a mixture?

**Molecules**

1. What is a molecule? Draw a picture of a molecule.
2. What is required to pull apart molecules?

**Antimatter**

1. What is antimatter composed of? *Make sure to make reference to the types of charges each portion of antimatter has.*
2. How were positrons first discovered?
3. How can we produce antiparticles today?
4. Why can’t antimatter and matter be in our immediate environment?

**Dark Matter**

1. What is dark matter?

**Higgs-Boson 🡪 Critical Thinking**

1. Why do we care about finding this particle called the Higgs-Boson?