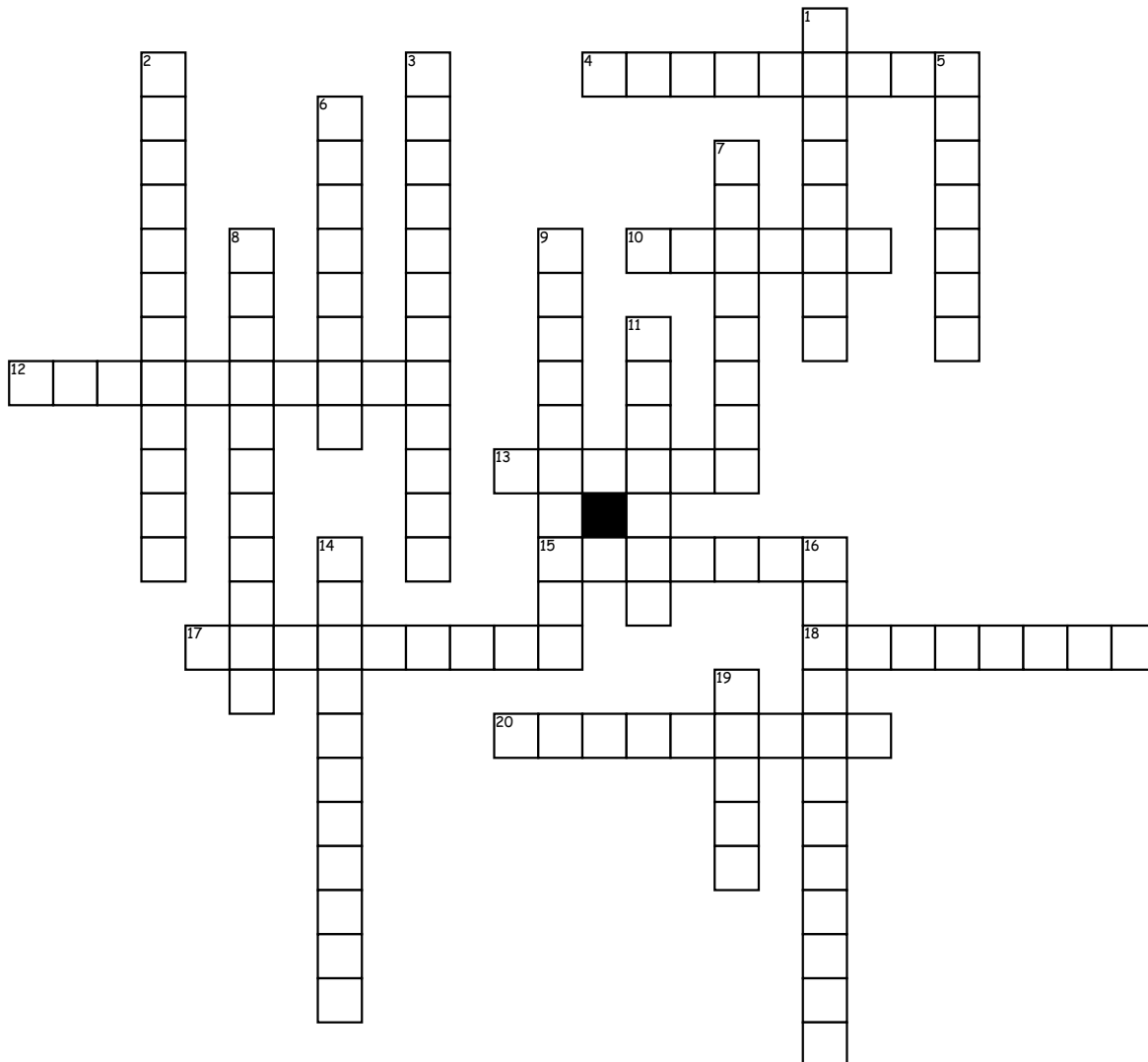


The History of the Atom



Across

4. Discredited the basic ideas about matter.
10. Formed the atomic theory.
12. Determined that the nucleus of an atom was 10,000 times smaller than the atom itself.
13. A subatomic particle located in the nucleus of an atom, has a positive charge.
15. Discovered the electron in 1904.
17. Part of the two men that formed the "basic idea" that if you could look at matter on smaller and smaller scales, ultimately you would see individual atoms which could not be divided further, and everything was made up of this.
18. Helped discover the neutron.
20. Electrons "jump" between energy levels in a quantum fashion. When an atom absorbs or loses energy, the electrons "jump."

Down

1. Shot beams of alpha particles at a sheet of this that was 1/3000 of an inch thick, and traced the particles' paths. Most of the particles went right through, but some bounced back. It was discovered that a nucleus at the center held most of the mass of an atom.
2. 1) All matter is made of atoms. Atoms are indivisible and indestructible. 2) All atoms of a given element are identical in mass and properties. 3) Compounds are formed by a combination of two or more different kinds of atoms. 4) A chemical reaction is a rearrangement of atoms.
3. A model of the atom, envisioned the atom as a solid, hard sphere.
5. Any substance that cannot be decomposed into a simpler substance.
6. A subatomic particle located in shells or orbitals, has a negative charge.
7. Conducted the famous "Oil Drop Experiment" and discovered the charge and mass of an electron.
8. Used math to describe the likelihood of finding an electron in a certain position.
9. The other half of the two men with the "basic idea" also thought that physical properties came because atoms in materials had different shapes, arrangements, and orientations.
11. A subatomic particle located in the nucleus of an atom with a neutral charge.
14. We cannot measure the position (x) and the momentum (p) of a particle with absolute precision. This is Heisenberg's what principle?
16. All of the protons in the nucleus of an atom, with the electrons orbiting around the nucleus.
19. Rejected the idea that there were 4 elements.