Name KEY Date _____

Understanding the Atom

What are atoms, and what are they made of?

Before You Read

Before you read the chapter, think about what you know about atoms. Record your ideas in the first column. Pair with a partner, and discuss his or her thoughts. Write those ideas in the second column. Then record what you both would like to share with the class in the third column.

Think	Pair	Share
Will Vary	Will Vary	N/A

Chapter Vocabulary

Lesson 1	Lesson 2
NEW atom electron nucleus proton neutron electron cloud	**NEW** atomic number isotope mass number average atomic mass radioactive nuclear decay ion **ACADEMIC** spontaneous

Main Idea

The Atom

I found this on page 315.

Stop & talk about location & made of

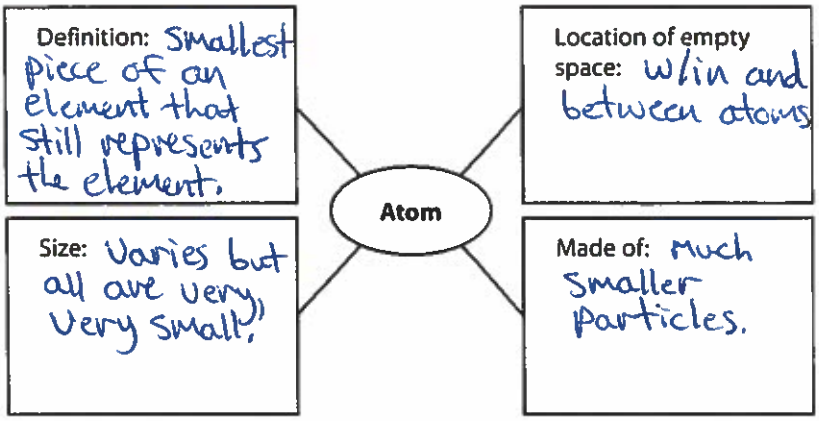
Thompson—Discovering Electrons

I found this on page 316.

I found this on page 317.

Details

Describe *how present scientists characterize the* atom.



Sequence *the discovery of the* electron *and the development of Thompson's atomic model.*

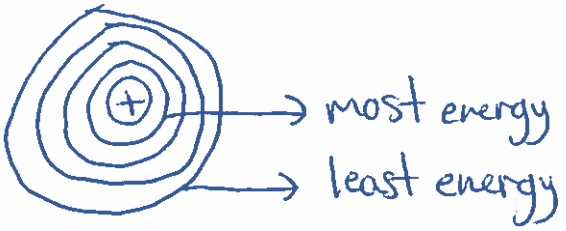
Event	Result or Conclusion
1. Thompson runs electricity through a cathode ray tube from which most of the air was removed.	Greenish rays travel from one electrode to the other end of the tube.
2. Thompson places charged plates on either side of the tube.	The ray bends toward a + charged plate. Conclusion: The rays are - charged.
3. Identical rays made of tiny particles are produced regardless of the type of metal in the electrode.	Conclusion: Cathode rays are made of small, - charged particles. Thompson called these particles electrons.
4. Thompson proposes a new model of the atom.	Thompson's model: An atom is a sphere w/ + charge evenly spread throughout, balanced w/ - electrons w/in it.

Main Idea

I found this on page 321.

Details

Diagram *and label* electron *energy levels in Bohr's model.*



The Modern Atomic Model

I found this on page 322.

Contrast *the location of* electrons *in the modern atomic model with their placement in Bohr's atomic model.*

Bohr	Modern
Electrons move around the nucleus in circular orbits at different energy levels.	Electrons move in an area around nucleus called the electron cloud.

Quarks

I found this on page 322.

Identify *6 types of quarks.*

1. up
2. strange
3. down
4. top
5. charm
6. bottom

I found this on page 322.

Review *details about particles that make up* atoms.

Particle	Smaller Parts
Electron	no smaller particle.
Nucleus	proton, neutron.
Proton	two up quarks, one down quark.
Neutron	two down quarks, one up quark.

Connect It Summarize three analogies used in Lesson 1 to describe atoms and the particles that they are made of.

Thompson resembles chocolate chip cookie, Rutherford's gold foil experiment, alpha particles shot through atoms would be like throwing a heavy baseball through a pile of tennis balls. Electrons in the electron cloud are liked to a swarm of bees, around a bee hive.