

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Science 8

### Lesson C3: Subatomic & Elementary Particles

Atoms are made of:

- \_\_\_\_\_, which are made of \_\_\_\_\_
- \_\_\_\_\_, which are made of \_\_\_\_\_
- \_\_\_\_\_, which are a type of \_\_\_\_\_

# The PARTICLE ZOO

Subatomic Particle Plush Toys FROM THE STANDARD MODEL OF PHYSICS & beyond!

QUARKS	UP QUARK	DOWN QUARK	STRANGE QUARK	CHARM QUARK	BOTTOM QUARK	TOP QUARK	FORCE CARRIERS
	 <p>A teeny little point inside the proton and neutron, it is friends forever with the down quark.</p>	 <p>A tiny little point inside the proton and neutron, it is friends forever with the up quark.</p>	 <p>What's so strange about this second generation quark?</p>	 <p>A second generation quark, he is charmed, indeed.</p>	 <p>This third generation quark is puttin' on the pounds.</p>	 <p>This heavyweight champion doesn't live long enough to make friends with anyone.</p>	 <p>The massless wavicle we know and love.</p>
LEPTONS	ELECTRON-NEUTRINO	MUON-NEUTRINO	TAU-NEUTRINO	ELECTRON	MUON	TAU	W BOSON Z BOSON
	 <p>This minuscule bandit is so light, he is practically massless.</p>	 <p>Like the other 2 neutrinos, he's got an identity crisis from oscillation.</p>	 <p>He's a tau now, but what type of neutrino will he be next?</p>	 <p>A familiar friend, this negatively charged, busy lil' guy likes to bond.</p>	 <p>A "heavy electron" who lives fast and dies young.</p>	 <p>A "heavy muon" who could stand to lose a little weight.</p>	 <p>As the carrier particles of the weak nuclear force, they're downright obese.</p>
THEORETICALS	HIGGS BOSON	TACHYON	DARK MATTER	GRAVITON	NUCLEONS		
	 <p>He's the one everyone wants to meet, but for now he's playing hard to get. You'd be smiling too if everyone was looking to interview <i>you</i>.</p>	 <p>Can this devious and clever particle really travel faster than light?</p>	 <p>The mysterious missing mass. Difficult to see because he's so <i>dark</i>.</p>	 <p>Still unobserved, yet theoretically <i>everywhere</i>, he's got big legs for jumping branes.</p>	 <p><b>PROTON</b> We would not be here without her positivity.</p> <p><b>NEUTRON</b> He insists on remaining neutral.</p>		

## Parts of the Atom – Practice

1. Define a subatomic particle.
2. Name the three subatomic particles.
3. What are the charges of each subatomic particle?
4. Which two subatomic particles are located in the nucleus?
5. Define an elementary particle.
6. Describe and draw the structure of a proton.
7. Describe and draw the structure of a neutron.
8. Which subatomic particle is also an elementary particle?