

Atomic Theory Practice Test

Name:

Date:

Block:

This practice test is designed to help you determine what concepts you DO know and more importantly what concepts you DO NOT know!

Go through the practice test **THREE** times:

(1) On your own

(2) With your notes

(3) With another student



Each time, if you cannot answer a question, draw a circle around it to identify that you should review this concept when preparing for the test.

1. What is an element?

A pure substance made of only one atom.

2. Classify the following as an element, compound or mixture:

Fluorine: element

CO₂: compound

Sandwich: mixture

Water: compound
(H₂O)

Coffee: mixture

Computer: mixture

3. What is the lightest element?

Hydrogen

4. Which family is the following element a part of?

Radium: Alkaline Earth metals

I: Halogens

Sodium: Alkali metals

Xenon: Noble gases

Mg: Alkaline Earth metals

Nickel: Transition metals

Neon: Noble gases

Ba: Alkaline Earth metals

5. What is an atom?

- Smallest unit of matter

- Composed of protons, neutrons, and electrons.

6. Give three examples of elements in substances or objects that you use:

a)

b)

c)

7. How is the Periodic Table organized?

- Increasing atomic number

- By periods and groups

8. What is one property/characteristic of alkali metals?

Highly reactive

9. What does the atomic number represent?

of protons

10. What does the atomic mass measure?

of protons and neutrons

11. What are the three subatomic particles?

protons, neutrons, electrons

12. Complete the following table:

Subatomic Particle	Charge	Location in the atom	Mass
neutron	neutral	nucleus	1 amu
electron	negative	electron shells	0.0005 amu
proton	positive	nucleus	1 amu

13. Determine the subatomic particle(s) described by the following statements:

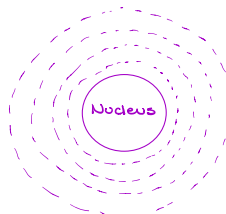
- Has a charge: proton and electron
- Has the heaviest mass: proton and neutron
- Does not have a charge: neutron
- Has the lightest mass: electron
- Is found in the nucleus: proton and neutron
- Has equal masses: proton and neutron
- Gives the nucleus a positive charge: proton
- Is found in shells that surround the nucleus: electron
- Have equal quantities in all **neutral** atoms: proton and electron

14. Why does the nucleus of an atom have a positive charge?

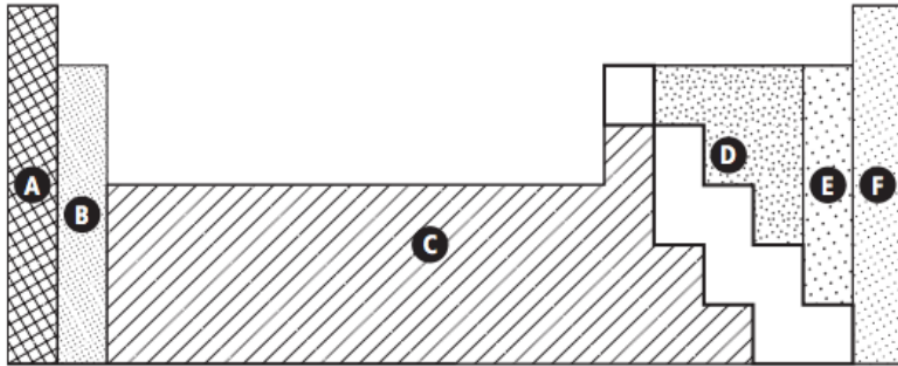
Protons have a positive charge and are found in the nucleus

15. Where is most of the volume found in the atom? Explain with your answer with a diagram.

Outer shells



16. Use the periodic table below to help answer these questions:



- a. Argon: F f. Calcium: B
- b. Sulfur: D g. Most reactive metals: A
- c. Silver: C h. Least reactive: F
- d. Tungsten: C i. Halogens: E
- e. Alkaline Earth Metals: B j. Transition metals: C

17. Complete the following table:

Element Name	Element Symbol	Atomic Number	Atomic Mass	# of protons	# of neutrons	# of electrons
Titanium	Ti	22	48	22	26	22
Bromine	Br	35	80	35	45	35
Gold	Au	79	197	79	118	79
Bismuth	Bi	83	209	83	126	83
Oxygen	O	8	16	8	8	8

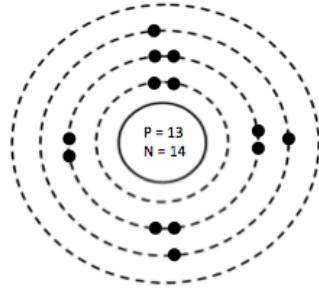
18. What does a Bohr model represent?

A visual diagram of the protons & neutrons in the nucleus and electrons in the outer shells

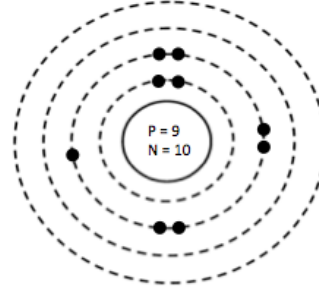
19. In a Bohr Diagram, what is the maximum number of electrons allowed in the:

- a) Innermost (first) shell? 2
- b) Second shell? 8
- c) Third shell? 8

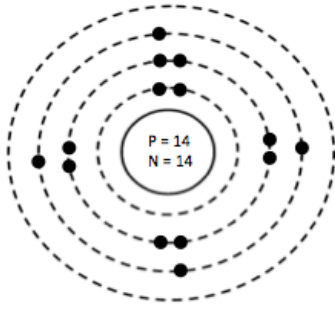
20. Identify the element represented by the following Bohr Diagram:



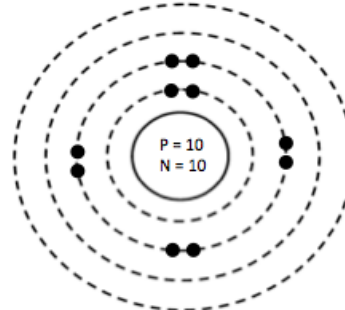
Element: *Aluminum*



Element: *Fluorine*



Element: *Silicon*



Element: *Neon*

21. Draw the Bohr diagram for the following elements:

<p>Lithium</p> <p>A Bohr diagram for Lithium. The nucleus is labeled with $3p^+$ and $4n^+$. There are three concentric shells. The innermost shell (K) contains 2 electrons. The middle shell (L) contains 2 electrons. The outermost shell (M) contains 1 electron.</p>	<p>Neon</p> <p>A Bohr diagram for Neon. The nucleus is labeled with $10p^+$ and $10n^+$. There are two concentric shells. The innermost shell (K) contains 2 electrons. The middle shell (L) contains 8 electrons.</p>	<p>Calcium</p> <p>A Bohr diagram for Calcium. The nucleus is labeled with $20p^+$ and $20n^+$. There are four concentric shells. The innermost shell (K) contains 2 electrons. The second shell (L) contains 8 electrons. The third shell (M) contains 8 electrons. The outermost shell (N) contains 2 electrons.</p>
<p>Chlorine</p> <p>A Bohr diagram for Chlorine. The nucleus is labeled with $17p^+$ and $18n^+$. There are three concentric shells. The innermost shell (K) contains 2 electrons. The middle shell (L) contains 8 electrons. The outermost shell (M) contains 7 electrons.</p>	<p>Argon</p> <p>A Bohr diagram for Argon. The nucleus is labeled with $18p^+$ and $22n^+$. There are three concentric shells. The innermost shell (K) contains 2 electrons. The middle shell (L) contains 8 electrons. The outermost shell (M) contains 8 electrons.</p>	<p>Sulfur</p> <p>A Bohr diagram for Sulfur. The nucleus is labeled with $16p^+$ and $16n^+$. There are three concentric shells. The innermost shell (K) contains 2 electrons. The middle shell (L) contains 8 electrons. The outermost shell (M) contains 6 electrons.</p>