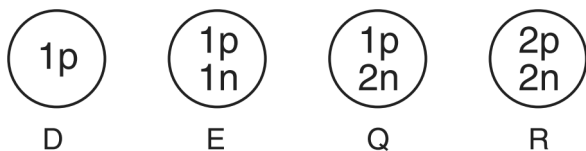


Ch 3: Level 4 Questions

1. Compared to an atom of calcium-40, an atom of potassium-39 contains fewer
- protons
 - neutrons
 - occupied sublevels
 - occupied principal energy levels

2. Each diagram below represents the nucleus of a different atom.



Which diagrams represent nuclei of the same element?

- D and E, only
 - D, E, and Q
 - Q and R, only
 - Q, R, and E
3. Which of the following represents a pair of isotopes?
- ^1H and ^3H
 - $^{16}\text{O}^{2-}$ and $^{19}\text{F}^{1-}$
 - ^{40}K and ^{40}Ca
 - $^{16}\text{O}^{2-}$ and $^{32}\text{S}^{2-}$
4. According to the periodic table, which statement correctly describes the change from a neutral atom of an element to its ion?
- A fluorine atom forms a F^{-1} ion by losing one electron.
 - A sodium atom forms a Na^{+1} ion by losing two electrons.
 - A magnesium atom forms a Mg^{+2} ion by gaining two electrons.
 - A phosphorus atom forms a P^{-3} ion by gaining three electrons.
5. Study the table below.

Atom	Number of Protons	Number of Neutrons	Number of Electrons
W	3	4	3
X	53	57	53
Y	55	60	54
Z	1	0	1

Which atom has a net positive charge?

- Atom W
- Atom X
- Atom Y
- Atom Z

6. Which statement *best* describes the density of an atom's nucleus?
- The nucleus occupies most of the atom's volume but contains little of its mass.
 - The nucleus occupies very little of the atom's volume and contains little of its mass.
 - The nucleus occupies most of the atom's volume and contains most of its mass.
 - The nucleus occupies very little of the atom's volume but contains most of its mass.
7. Why are enormous amounts of energy required to separate a nucleus into its component protons and neutrons even though the protons in the nucleus repel each other?
- The force of the protons repelling each other is small compared to the attraction of the neutrons to each other.
 - The electrostatic forces acting between other atoms lowers the force of repulsion of the protons.
 - The interactions between neutrons and electrons neutralize the repulsive forces between the protons.
 - The forces holding the nucleus together are much stronger than the repulsion between the protons.
8. Atoms can be considered the basic building blocks of matter.

Atom X has 9 protons, 10 neutrons and 9 electrons
Atom Y has 9 protons, 9 neutrons and 9 electrons

Which of the following statements *best* describes how Atom X and Atom Y are related?

- X and Y are isotopes of the same element.
 - X is an ion and Y is a neutral atom.
 - X and Y are different elements.
 - X is neon and Y is fluorine.
9. Which of the following elements can form an anion that contains 54 electrons, 74 neutrons, and 53 protons?

<p>A. <table border="1" style="display: inline-table; text-align: center; width: 100px; height: 100px;"> <tr><td>(262)</td></tr> <tr><td>Bh</td></tr> <tr><td>107</td></tr> <tr><td>Bohrium</td></tr> </table></p>	(262)	Bh	107	Bohrium	<p>B. <table border="1" style="display: inline-table; text-align: center; width: 100px; height: 100px;"> <tr><td>126.905</td></tr> <tr><td>I</td></tr> <tr><td>53</td></tr> <tr><td>Iodine</td></tr> </table></p>	126.905	I	53	Iodine
(262)									
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<p>C. <table border="1" style="display: inline-table; text-align: center; width: 100px; height: 100px;"> <tr><td>183.85</td></tr> <tr><td>W</td></tr> <tr><td>74</td></tr> <tr><td>Tungsten</td></tr> </table></p>	183.85	W	74	Tungsten	<p>D. <table border="1" style="display: inline-table; text-align: center; width: 100px; height: 100px;"> <tr><td>131.29</td></tr> <tr><td>Xe</td></tr> <tr><td>54</td></tr> <tr><td>Xenon</td></tr> </table></p>	131.29	Xe	54	Xenon
183.85									
W									
74									
Tungsten									
131.29									
Xe									
54									
Xenon									

1.
Answer: A
2.
Answer: B
3.
Answer: A
4.
Answer: D
- 5.
6.
Answer: D
7.
Answer: D
8.
Answer: A
- 9.