Prep for Basic Chemistry: Competency 5 Practice **Key**

1. A new element has been discovered. It has an atomic number of 243 and a mass number of 429. How many protons does this new element have?
   - (A) 429
   - (B) **243**
   - (C) 672
   - (D) 186

2. A helium atom is composed of _____.
   - (A) 2 neutrons
   - (B) 2 protons
   - (C) 2 electrons
   - (D) A + B
   - (E) B + C
   - (F) **A + B + C**
   - (G) A + C

3. All of the following are found outside the nucleus EXCEPT _____.
   - (A) protons
   - (B) neutrons
   - (C) electrons
   - (D) **A and B**

4. Ions are electrically charged because they have different numbers of…
   - (A) positively charged protons and negatively charged neutrons
   - (B) positively charged electrons and negatively charged protons
   - (C) positively charged electrons and negatively charged neutrons
   - (D) **positively charged protons and negatively charged electrons**
   - (E) positively charged neutrons and negatively charged protons

5. The number of neutrons in an atom can be calculated by subtracting the atomic number from the atomic mass.
   - (A) **True**
   - (B) False

6. neutron
   - (A) **a subatomic particle in an atom with zero charge and a mass similar to that of a proton, found in the nucleus of an atom**
   - (B) defined as 1/12 of the mass of a carbon-12 atom
   - (C) weighted average mass of an element's isotopes

7. When sodium loses an electron it is known as a(n)…
   - (A) isotope
   - (B) molecule
   - (C) atom
   - (D) **ion**

8. Group 6 elements are most likely to form ions with which of the following charges?
   - (A) **2-**
   - (B) 1+
   - (C) 2+
   - (D) 1-

9. When chlorine gains an electron, it is known as a(n)…
   - (A) **ion**
   - (B) proton
   - (C) energy level
   - (D) energy sublevel

10. A **p** sublevel can hold a maximum of how many electrons?
   - (A) 5
   - (B) 14
   - (C) 10
   - (D) **6**
   - (E) 2

11. Aluminum has _____ electrons in its outermost level.
   - (A) **3**
   - (B) 2
   - (C) 5
   - (D) 15

12. Which of the following elements have the same number of outermost level electrons?
   - (A) K, Ca, F
   - (B) Na, B, F
   - (C) **Li, Na, K**
   - (D) Na, Mg, Ca

13. What is the atomic number of the atom with an electron configuration of $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$?
   - (A) 19
   - (B) 31
   - (C) **20**
   - (D) 17

14. The third principal energy level can contain a maximum of _____ electrons.
   - (A) 2
   - (B) 8
   - (C) 32
   - (D) **18**

15. Draw the electron dot diagram for Na. **Na ·** *(1 dot)*

16. Draw the electron dot diagram for chlorine. **:Cl ·** *(7 dots)*

17. Draw the electron dot diagram for oxygen. :Ö: *(6 dots)*

18. Draw the electron dot diagram for I. :Ï· *(7 dots)*

19. Draw the electron dot diagram for aluminum. ·Al: *(3 dots)*

20. Draw the electron dot diagram for the sodium *ion*. $:\ddot{N}a:^{1+}$ *(8 dots)*

21. Draw the electron dot diagram for barium. Ba: *(2 dots)*

22. Draw the electron dot diagram for S^{2-}. $:\ddot{S}:^{2-}$ *(8 dots)*

23. Draw the electron dot diagram for P^{3-}. $:\ddot{P}:^{3-}$ *(8 dots)*

24. Draw the electron dot diagram for Mg^{2+}. $:\ddot{M}g:^{2+}$ *(8 dots)*

25. Draw the electron dot diagram for the bromide *ion*. $:\ddot{B}r:^{1-}$ *(8 dots)*

	Element's name	Symbol	Atomic number	# of protons	Charge on ion (#+/-)
26.	**Lead**	**Pb**	82	**82**	**4-**
27.	Magnesium	**Mg**	**12**	**12**	**2+**
28.	**Radon**	**Rn**	**86**	86	**0**

Complete the following table:

	Element	Arrangement in levels 1 - 4	Electron (sublevel) structure
29.	C	1= **2**, 2= **4**, 3=___, 4=___	**$1s^2\ 2s^2\ 2p^2$**
30.	Cr	1= **2**, 2= **8**, 3= **12**, 4= **2**	**$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^4$**