

From textbook: 9, 15, 17, 19, 21, 27, 29, 31, 45, 47, 49, 51, 53, 55, 57, 59, 61, 65 and 73

- What is the number of protons, neutrons, and electrons, respectively, in a neutral atom of  $^{19}\text{F}$  ( $Z = 9$ )?
- An isotope of the element uranium has a mass number of 235 and an atomic number of 92. What is the number of electrons, protons, and neutrons, respectively, in a neutral atom of this isotope?
- Neutral atoms of oxygen-16, oxygen-17, and oxygen-18 all have
  - 8 neutrons and 8 protons
  - 8 electrons and 8 protons
  - 16 protons
  - 8 neutrons
  - 16 protons and 16 electrons
- Which of the following has 17 protons, 18 neutrons, and 18 electrons?
  - $^{32}\text{S}^{2-}$  ( $Z = 16$ )
  - $^{40}\text{Ar}$  ( $Z = 18$ )
  - $^{28}\text{Si}$  ( $Z = 14$ )
  - $^{35}\text{Cl}^-$  ( $Z = 17$ )
  - $^{31}\text{P}^{3-}$  ( $Z = 15$ )
- All of the following have 36 electrons except
  - $^{87}\text{Sr}^{2+}$  ( $Z = 38$ )
  - $^{79}\text{Se}^{2-}$  ( $Z = 34$ )
  - $^{85}\text{Rb}^+$  ( $Z = 37$ )
  - $^{84}\text{Kr}^{2+}$  ( $Z = 36$ )
  - $^{80}\text{Br}^-$  ( $Z = 35$ )
- How many electrons are present in an atom of carbon?
  - 14
  - 6
  - 12
  - 4
  - 24
- The number of neutrons in the nucleus of a specific atom is equal to its
  - atomic mass.
  - mass number.
  - atomic number
  - mass number minus the atomic number.
- In all neutral atoms, there are equal numbers of
  - protons and neutrons.
  - positrons and electrons.
  - neutrons and electrons.
  - electrons and protons.
- What do these have in common?  
 $^{20}\text{Ne}$      $^{19}\text{F}^-$      $^{24}\text{Mg}^{2+}$
- How many neutrons are in the  $^{37}_{17}\text{Cl}^-$  ion?
- Which pair of particles has the same number of electrons?
  - $\text{F}^-$ ,  $\text{Mg}^{2+}$
  - $\text{Br}^-$ ,  $\text{Se}$
  - $\text{Ne}$ ,  $\text{Ar}$
  - $\text{Al}^{3+}$ ,  $\text{P}^{3-}$

12. Which of these atoms has the greatest number of neutrons in its nucleus?
- A.  $^{56}_{25}\text{Mn}$                       B.  $^{52}_{26}\text{Fe}$                       C.  $^{55}_{26}\text{Fe}$   
 D.  $^{57}_{27}\text{Co}$                       E.  $^{56}_{28}\text{Ni}$
13. The atomic number of an element is numerically the same as
- A. the number of neutrons in its nucleus.  
 B. the number of electrons in its neutral atom.  
 C. its valence electron number.  
 D. the total mass number of its atom.  
 E. the atomic number of its isobars.
14. A certain atom has the symbol  $^{148}_{73}\text{Px}$ . What does this symbol tell about an atom of the element?
- A. It has 148 electrons.                      B. It has a valence of 4.  
 C. It has 221 protons in the nucleus.      D. It has 75 neutrons in the nucleus.
15. The atomic mass of an element is 32.07 amu and its atomic number is 16. The number of protons contained in the nucleus of an atom of this element is
16. A sodium ion differs from a sodium atom in that the sodium ion
- A. is more reactive.                      B. has fewer electrons.                      C. is an isotope of sodium.  
 D. exists only in solution.                      E. has a negative charge on its nucleus.
17. Which of the following elements are most likely to form a cation?
- A. I                      B. P                      C. S                      D. N                      E. Be
18. Which of the following is likely to form an anion?
- A. P                      B. Ba                      C. V                      D. Rb                      E. Zn
19. Which of the following metals commonly forms a +2 charge?
- A. Li                      B. Rb                      C. Cs                      D. K                      E. Ba
20. Which of the following nonmetals readily forms a -2 charge?
- A. N                      B. P                      C. S                      D. Xe                      E. Br
21. What is the molar mass of a natural sample of an element consists of three isotopes with the following percentage abundances and molar masses?

<u>% Abundance</u>	<u>Molar Mass, g/mol</u>
35.39	150.9377
35.25	151.9791
29.36	156.9332

22. What is the molar mass of the natural sample of Chlorine consists of three isotopes with the following percentage abundances and molar masses.

<u>% Abundance</u>	<u>Molar Mass, g/mol</u>
75.77	34.9689
24.23	36.9659

23. What is the average molar mass of an iron nail that is composed of the following four isotopes of Iron

<u>% Abundance</u>	<u>Molar Mass, g/mol</u>
5.80	53.9396
91.72	55.9349
2.20	56.9354
0.280	57.9333

24. What are the units of molar mass?

25. The mass of  $2.5 \times 10^4$  grapes is 50.0 kilograms, what is the mass of a single grape?

26. What is the mass of  $4.5 \times 10^{34}$  atoms of Carbon?

27. If a mole of college students has a mass of  $4.22 \times 10^{25}$  Kg, what is the mass of  $3.4 \times 10^{15}$  college students?

28. How many atoms of Titanium are in 0.56 moles of titanium?

29. If the molar mass of Mercury is 200.59 g/ mol. How many atoms are in 11.74 grams of mercury?

30. If  $2.92 \times 10^{15}$  atoms of an unknown substance has a mass of 34.6 grams. What is the molar mass (g/mol) of this substance?

### Answers:

1. 9 protons, 10 neutrons, and 9 electrons

4. D

5. D

6. B

9. the same number of electrons

10. 20

13. B

14. D

15. 16

18. A

19. E

20. C

23. 55.8 g/mol

24. g/ mol

27.  $2.4 \times 10^{17}$  kg

28.  $3.4 \times 10^{23}$  atoms

2. 92, 92, and 143

7. D

11. A

16. B

21. 153.06 g/mol

25.  $2.0 \times 10^{-3}$  Kg

29.  $3.525 \times 10^{22}$  atoms

3. B

8. D

12. A

17. E

22. 35.46 g/mol

26.  $9.0 \times 10^{11}$  g

30.  $7.14 \times 10^9$  g/mol