Checking Concepts

1. (a) Both protons and neutrons are about the same mass. Students may have also mentioned that they are both subatomic particles and are both found in the nucleus.
   (b) Protons and neutrons have different electric charges.
2. Proton and neutron
3. The neutron is nearly equal to the mass of the proton plus the mass of the electron.
4. (a) Protons and neutrons
   (b) Electrons
5. The charges of all the subatomic particles in an atom add up to zero.
6. (a) 2+
   (b) The nuclear charge equals the number of protons in the nucleus.
7.

	Element	Atomic Number	Number of Protons	Number of Electrons
(a)	Pb	82	82	82
(b)	O	8	8	8
(c)	Zn	30	30	30
(d)	Fe	26	26	26
(e)	Ag	47	47	47
(f)	Cl	17	17	17

8.

Element	(a) Period	(b) Group
Cs	6	1
S	3	16
Kr	36	36
C	2	14

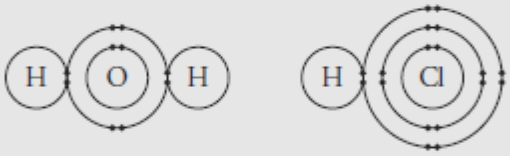
Element	(a) Period	(b) Group
Fe	4	8
Hg	6	12

9. For example: alkali metals, alkaline earth metals, halogens, noble gases

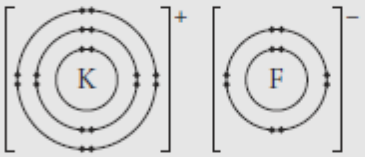
Understanding Key Ideas

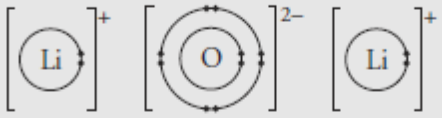
10. (a) Electron
    (b) Proton, electron
    (c) Electron
    (d) Neutron
    (e) Proton, neutron
    (f) Proton
11. In a covalent compound, atoms bond together by sharing a pair of electrons. In an ionic compound, ions form as a result of the transfer of electrons, and then ions of opposite charge attract each other.
12. (a) Bohr and Lewis diagrams are similar in that they show the valence electrons and how they result in bond formation.
    (b) They are different in that Bohr diagrams show all the atoms in each atom or ion, while Lewis diagrams show only valence electrons.
13. (a)

(b)



(c)





14. (a) H—H :F—F:

(b) H—O—H H—Cl:

(c) $[Na]^+$ $[:\ddot{F}:]^-$ $[Li]^+$ $[:\ddot{O}:]^{2-}$ $[Li]^+$

$[:\ddot{Cl}:]^-$ $[Be]^{2+}$ $[:\ddot{Cl}:]^-$