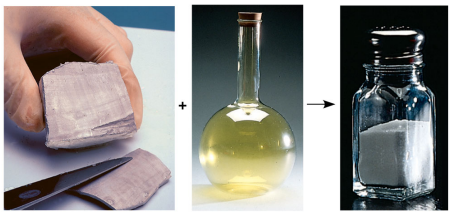

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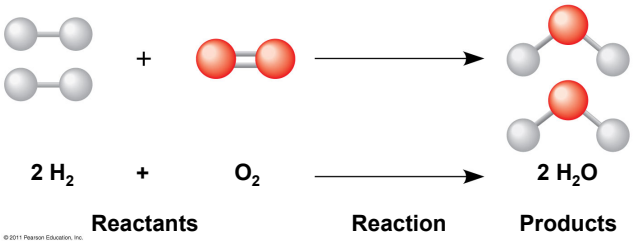


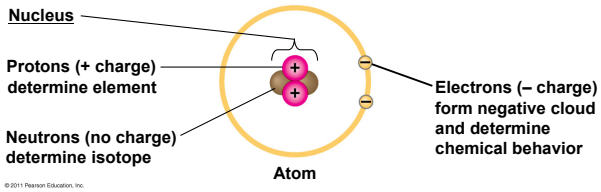
2

Table 2.1 Elements in the Human Body

Element	Symbol	Percentage of Body Mass (including water)	
Oxygen	O	65.0%	96.3%
Carbon	C	18.5%	
Hydrogen	H	9.5%	
Nitrogen	N	3.3%	
Calcium	Ca	1.5%	3.7%
Phosphorus	P	1.0%	
Potassium	K	0.4%	
Sulfur	S	0.3%	
Sodium	Na	0.2%	
Chlorine	Cl	0.2%	
Magnesium	Mg	0.1%	

Trace elements (less than 0.01% of mass): Boron (B), chromium (Cr), cobalt (Co), copper (Cu), fluorine (F), iodine (I), iron (Fe), manganese (Mn), molybdenum (Mo), selenium (Se), silicon (Si), tin (Sn), vanadium (V), zinc (Zn)

3



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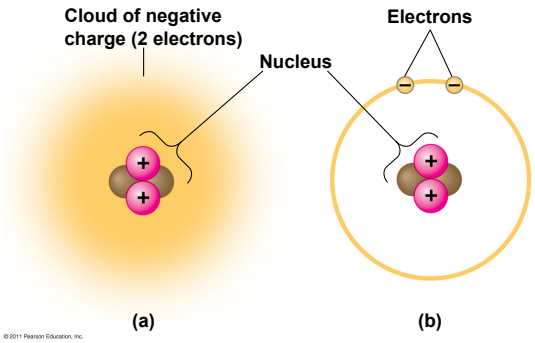
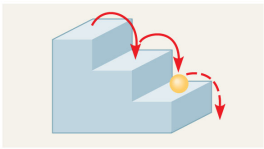
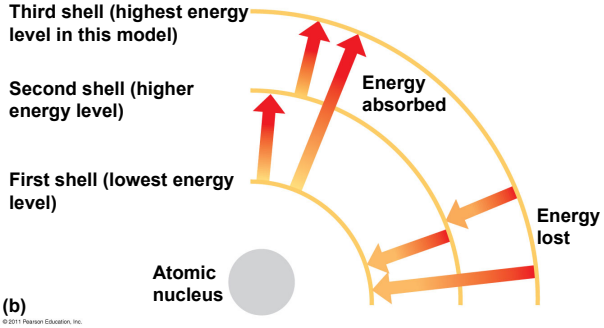


5

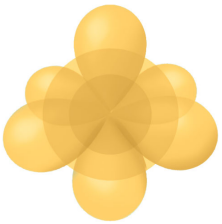
(a) A ball bouncing down a flight of stairs provides an analogy for energy levels of electrons.

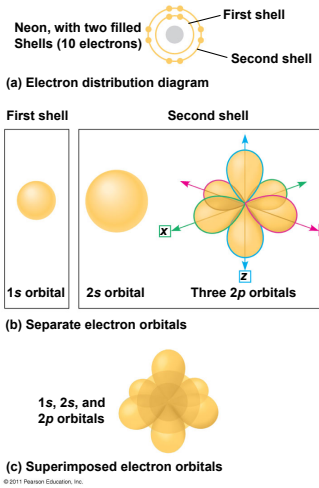


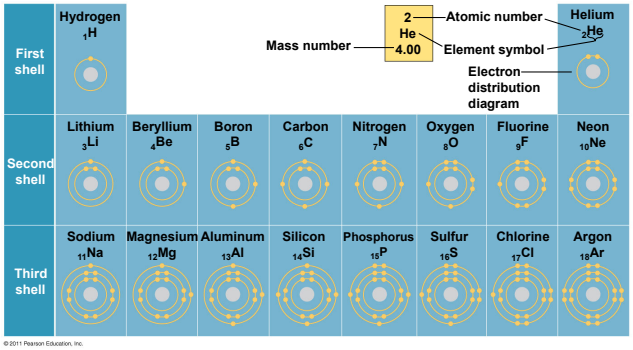


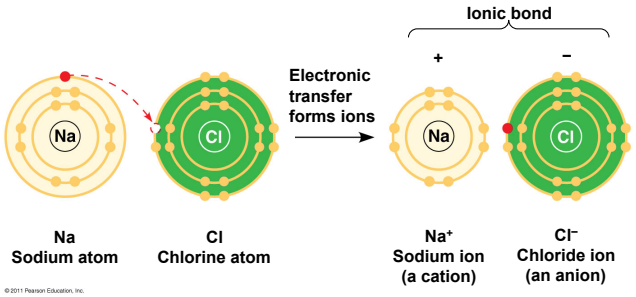
6

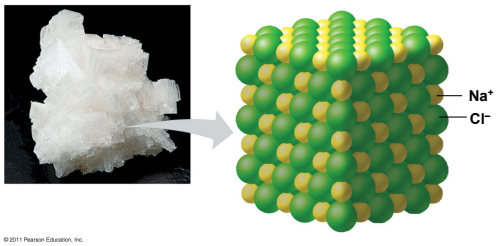
Electron orbitals

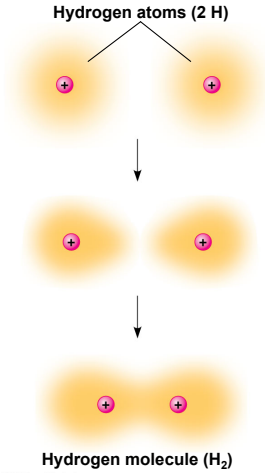


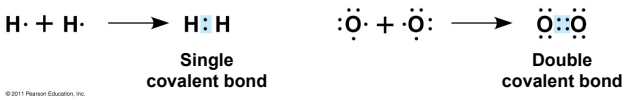




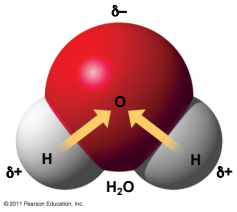


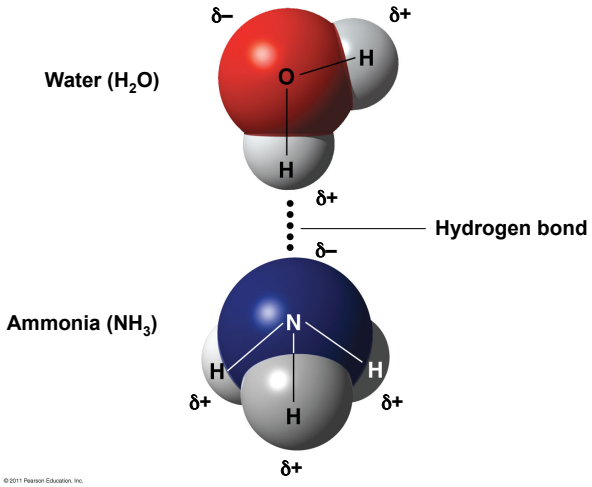


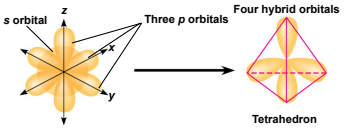




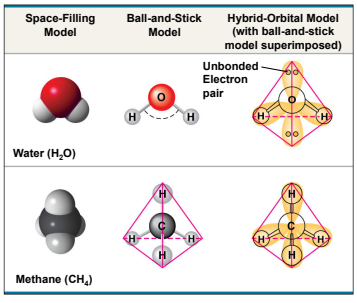
Name and Molecular Formula	Electron Distribution Diagram	Lewis Dot Structure and Structural Formula	Space-Filling Model
(a) Hydrogen (H_2)		H:H H—H	
(b) Oxygen (O_2)		Ö::Ö O=O	
(c) Water (H_2O)		:Ö:H H O—H H	
(d) Methane (CH_4)		H H:C:H H H H—C—H H	



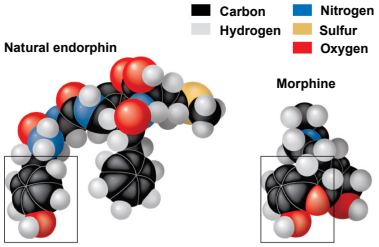




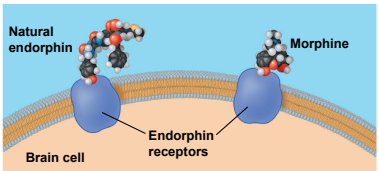
(a) Hybridization of orbitals



(b) Molecular-shape models



(a) Structures of endorphin and morphine



(b) Binding to endorphin receptors