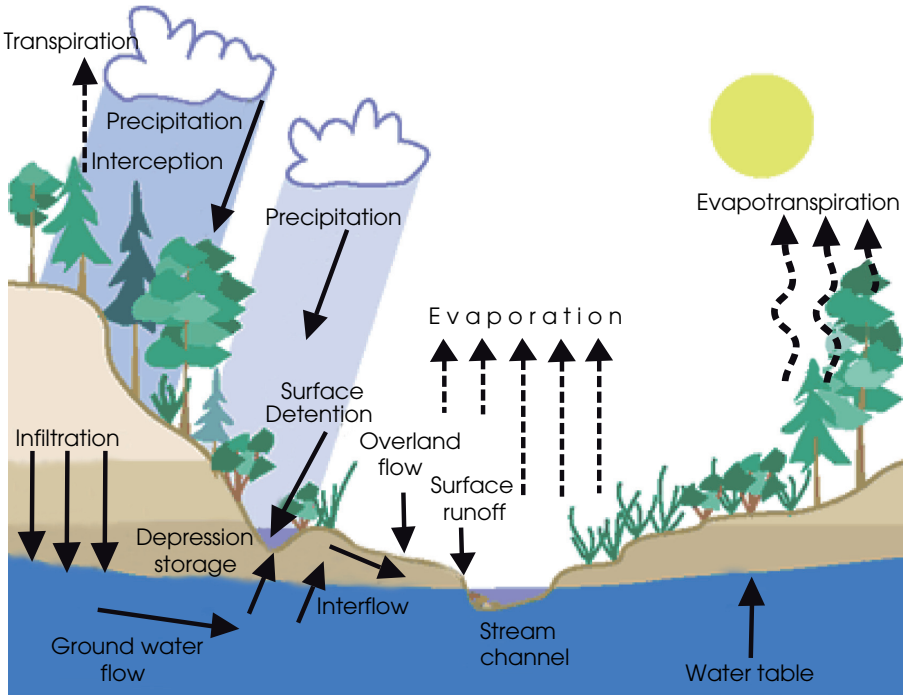
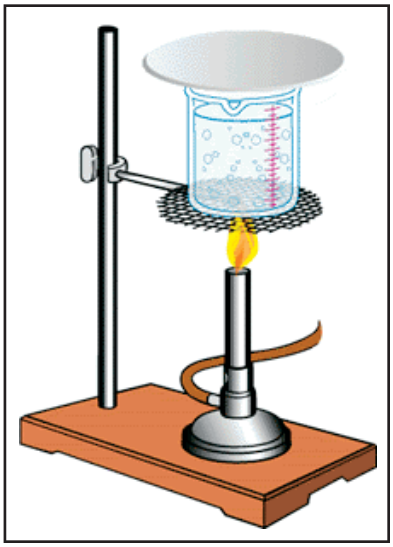
Phase Changes



Evaporation as water leaves ocean, Condensation as water forms clouds, Freezing as water goes from clouds to snow, and Melting as water goes from snow-capped mountains to run off.



Boiling

Mass and Weight On the Earth and the Moon

Earth

Mass equals
54 kilograms

Weight = 120 pounds

Moonscape

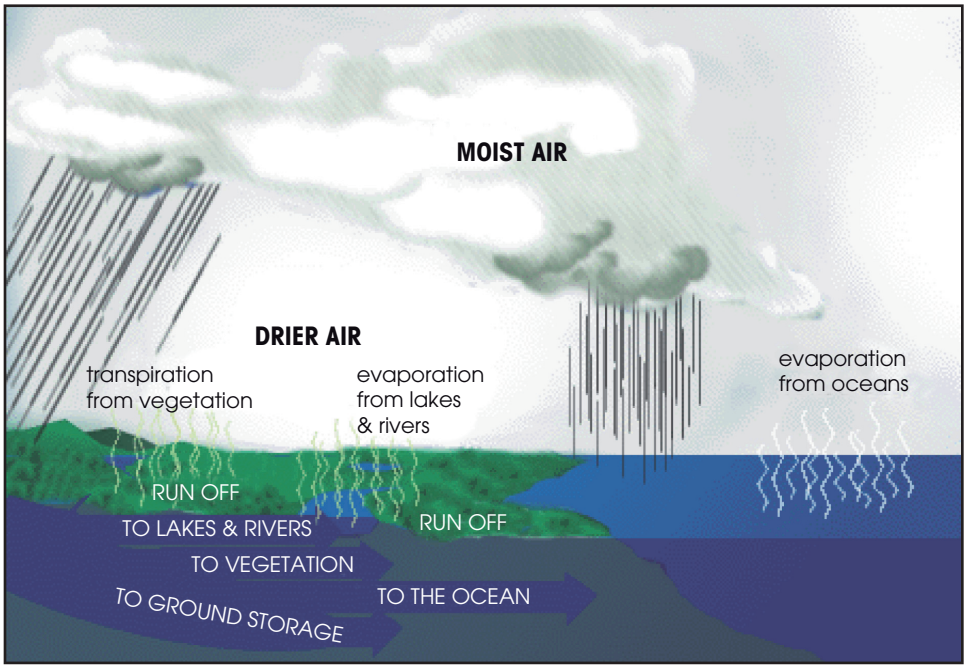
Mass equals
54 kilograms

Weight = 20 pounds

Chemical Changes and Physical Changes

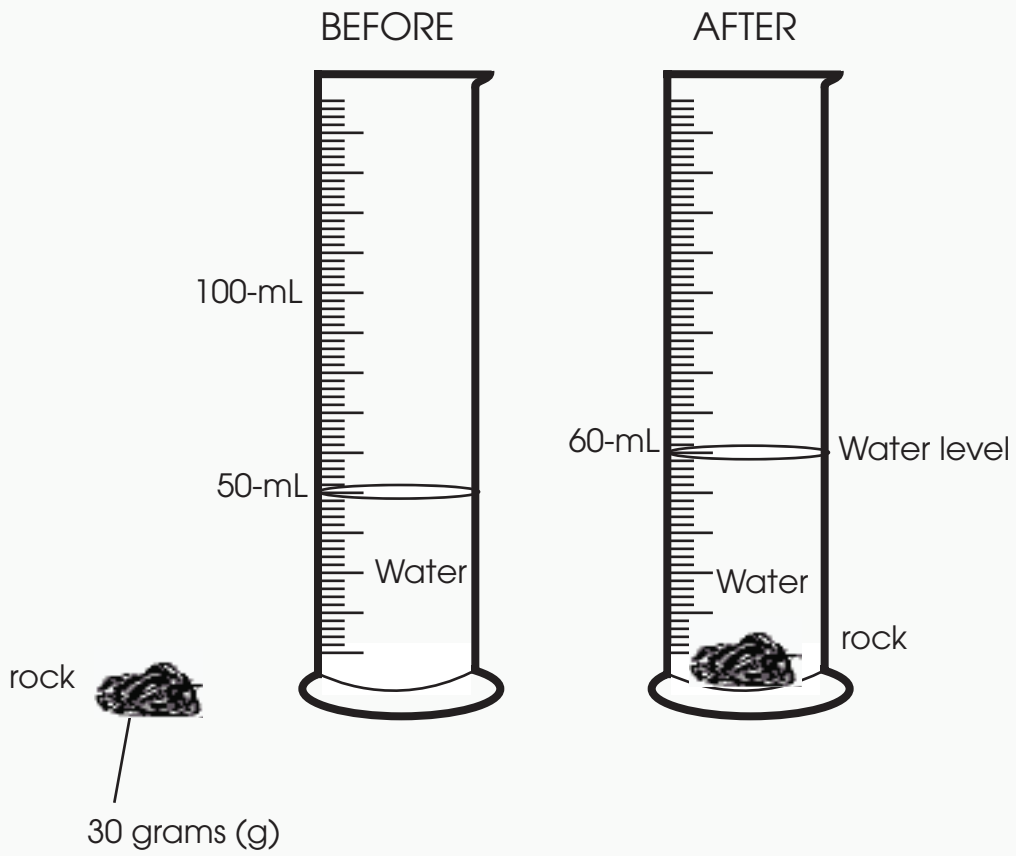
Chemical: Forest fire burning

Physical: Water evaporating from oceans



Finding Density

This is the **displaced liquid** method of finding density.

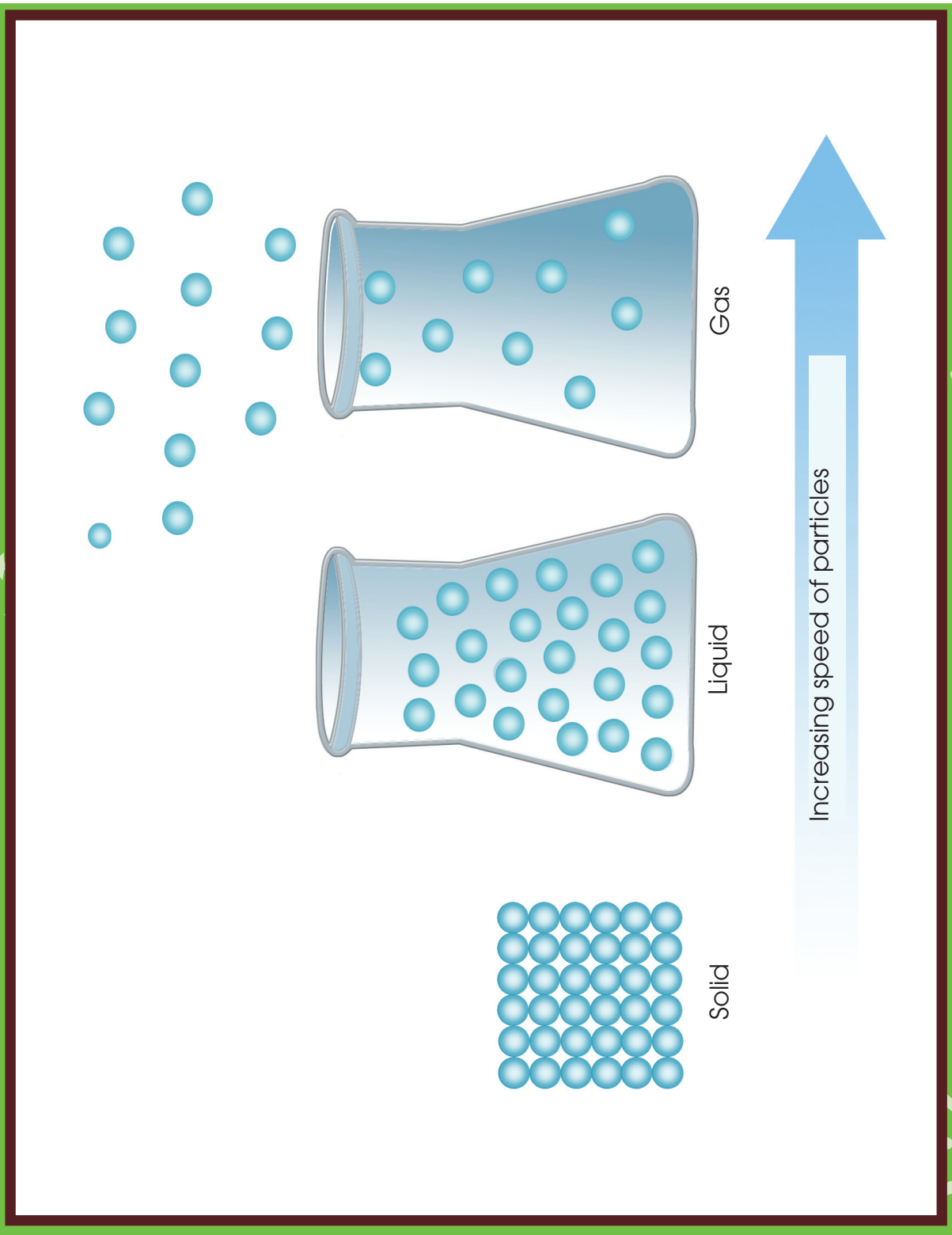


Mass of rock = 30 grams.

Volume of rock = 60 milliliter (mL) – 50 mL = 10 mL.

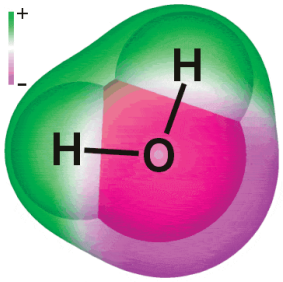
Density of rock = 30 g/10 mL = 3.0 g/mL

Particles In Solids, Liquids and Gases

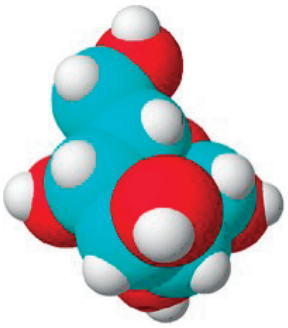


Particles In Two Kinds of Mixtures

Sugar particles in solution



Water molecule



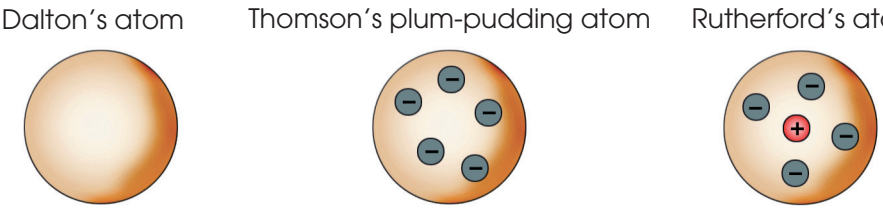
Sugar molecule

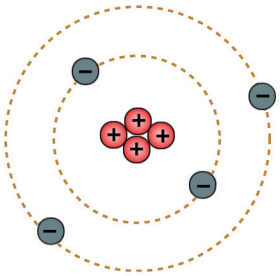
Sand grain

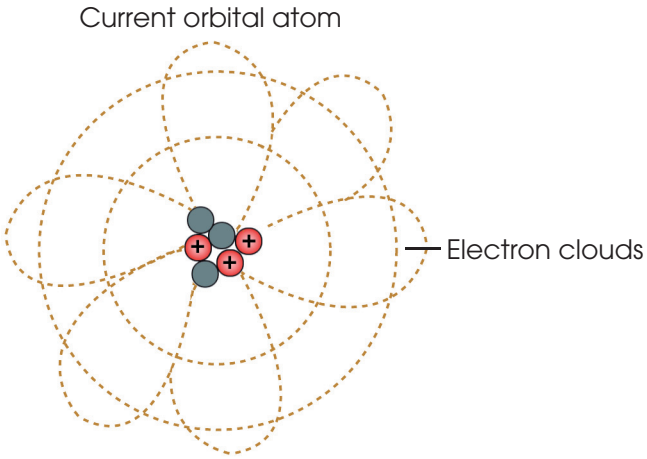
Sugar grain

Atomic Models

History of the Atomic Model



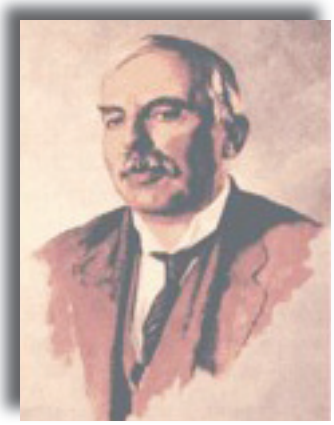




Current electron cloud model proposed in1926.

Dalton
1803

Thompson
1897



Rutherford
1909

Bohr
1913

Elements and Compounds

OXYGEN

SALT

BAKING SODA

SUGAR

Mendeleev's Periodic Table

Group / Period	I	II	III	IV	V	VI	VII	VIII
1	H=1							
2	Li=7	Be=9.4	B=11	C=12	N=14	O=16	F=19	
3	Na=23	Mg=24	Al=27.3	Si=28	P=31	S=32	Cl=35.5	
4	K=39	Ca=40	?=44	Ti=48	V=51	Cr=52	Mn=55	Fe=56, Co=59 Ni=59
5	Cu=63	Zn=65	?=68	?=72	As=75	Se=78	Br=80	
6	Rb=85	Sr=87	?Yt=88	Zr=90	Nb=94	Mo=96	?=100	Ru=104, Rh=104 Pd=106
7	Ag=108	Cd=112	In=113	Sn=118	Sb=122	Te=125	J=127	
8	Cs=133	Ba=137	?Di=138	?Ce=140				
9								
10			?Er=178	?La=180	Ta=182	W=184		O=195, h=197 Pt=198
11	Au=199	Hg=200	Tl=204	Pb=207	Bi=208			
12				Th=231		U=240		

Mendeleev's Periodic Table

Mendeleev

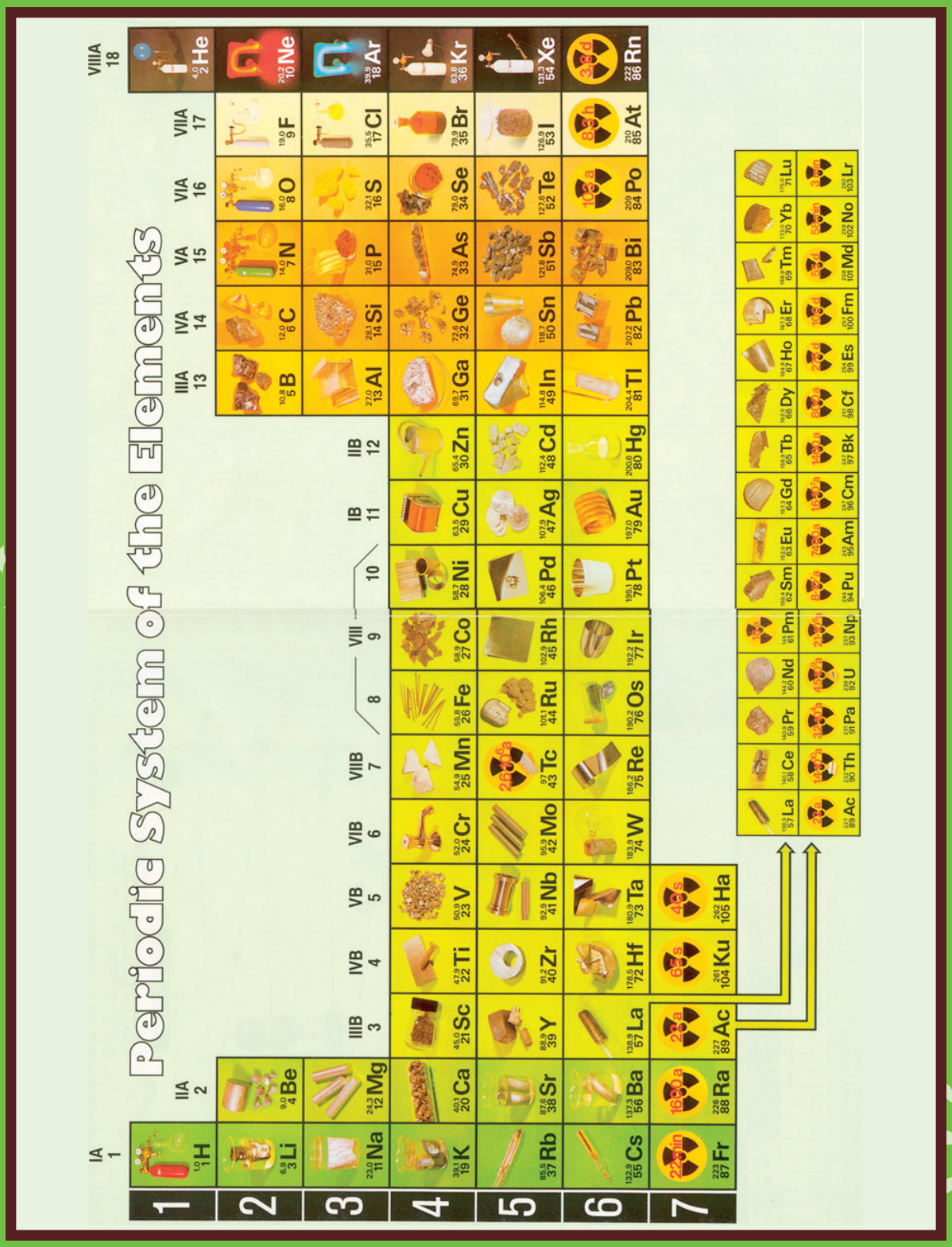
The Periodic Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	H 1																	He 2
2	Li 3	Be 4											B 5	C 6	N 7	O 8	F 9	Ne 10
3	Na 11	Mg 12	Sc 21	Ti 22	V 23	Cr 24	Mn 25	Fe 26	Co 27	Ni 28	Cu 29	Zn 30	Al 13	Si 14	P 15	S 16	Cl 17	Ar 18
4	K 19	Ca 20	Y 39	Zr 40	Nb 41	Mo 42	Tc 43	Ru 44	Rh 45	Pd 46	Ag 47	Cd 48	Ga 31	Ge 32	As 33	Se 34	Br 35	Kr 36
5	Rb 37	Sr 38											In 49	Sn 50	Sb 51	Te 52	I 53	Xe 54
6	Cs 55	Ba 56	*	Hf 72	Ta 73	W 74	Re 75	Os 76	Ir 77	Pt 78	Au 79	Hg 80	Tl 81	Pb 82	Bi 83	Po 84	At 85	Rn 86
7	Fr 87	Ra 88	**	Rf 104	Db 105	Sg 106	Bh 107	Hs 108	Mt 109									

*	La 57	Ce 58	Pr 59	Nd 60	Pm 61	Sm 62	Eu 63	Gd 64	Tb 65	Dy 66	Ho 67	Er 68	Tm 69	Yb 70	Lu 71
**	Ac 89	Th 90	Pa 91	U 92	Np 93	Pu 94	Am 95	Cm 96	Bk 97	Cf 98	Es 99	Fm 100	Md 101	No 102	Lr 103

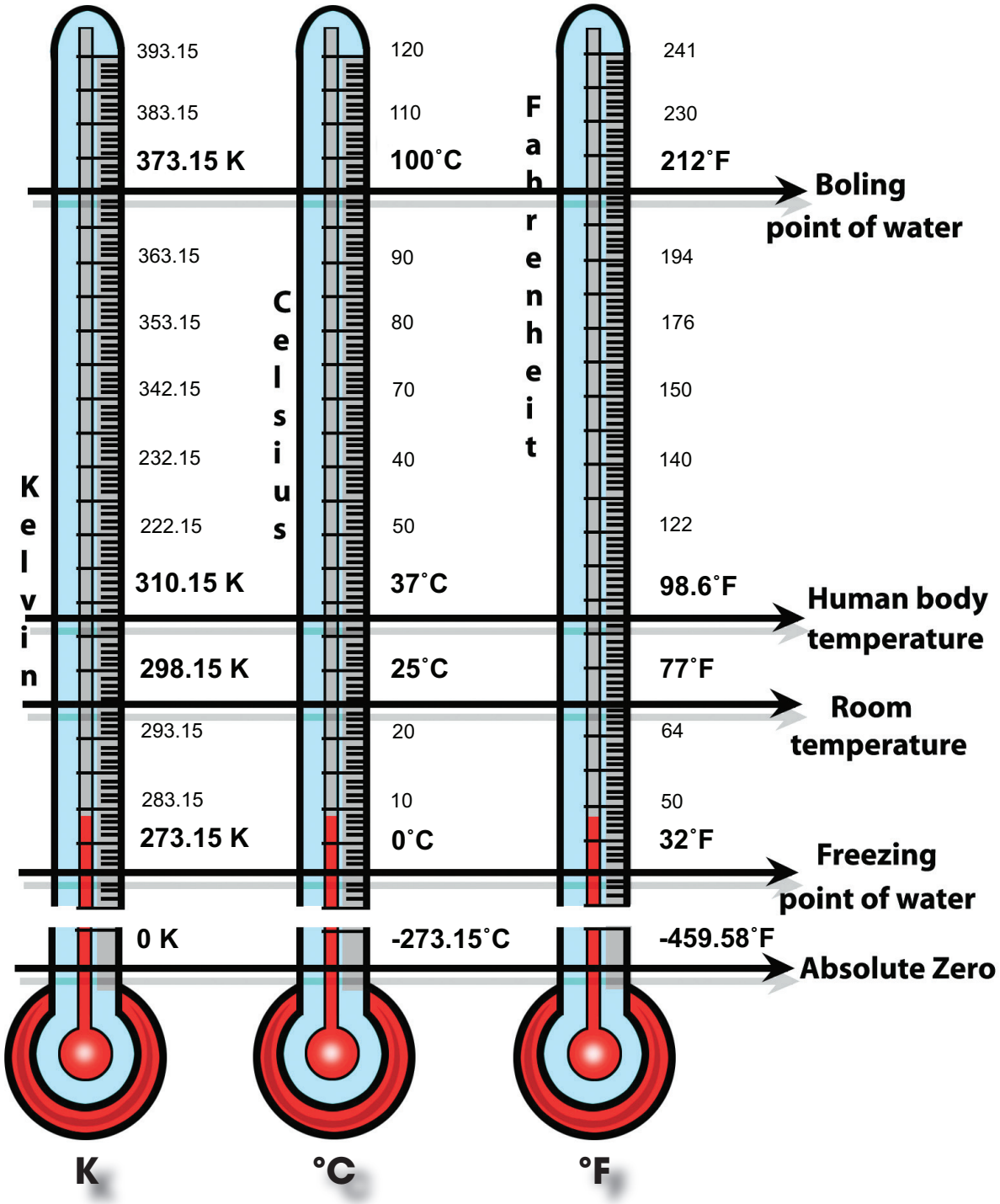
Nonmetals

The Periodic Table
(Showing the Elements)



Potential and Kinetic Energy on a Rollercoaster

Temperature Scales



Electromagnetic Spectrum

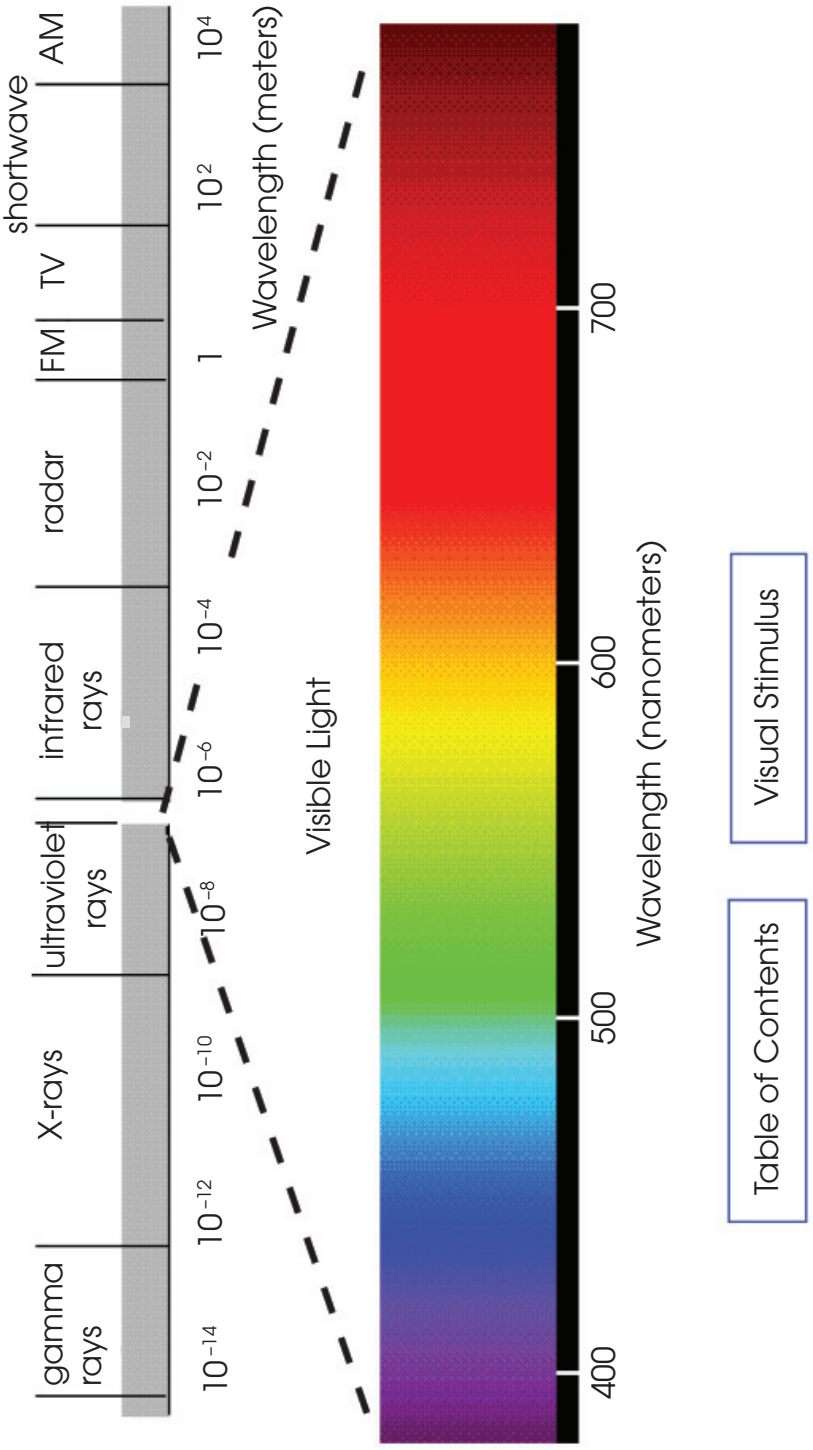
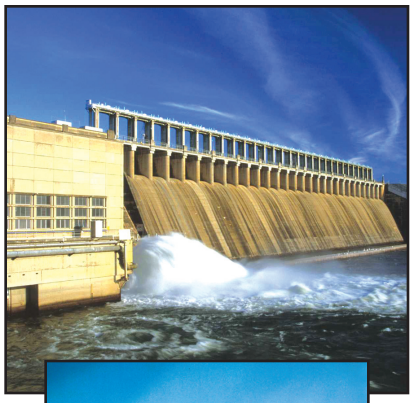


Table of Contents

Energy Sources



Hydroelectric Power

WAVE

WOOD (BIOMASS)

SOLAR

WIND

RENEWABLE ENERGY SOURCES

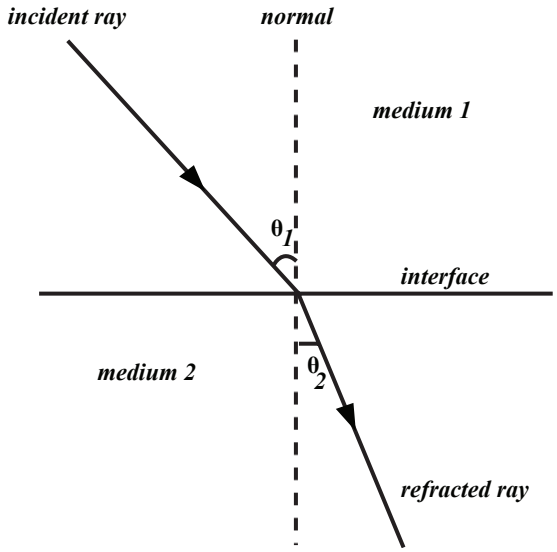
COAL

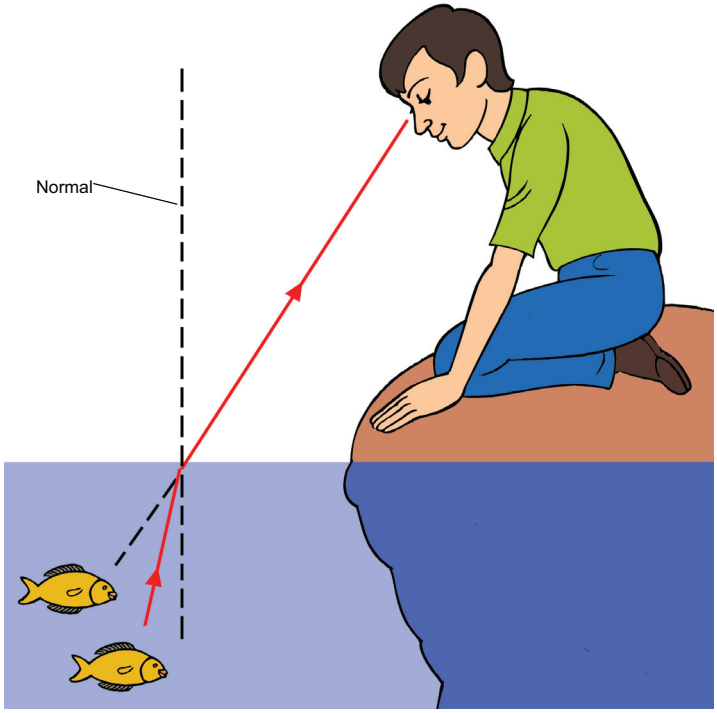
GAS

NUCLEAR

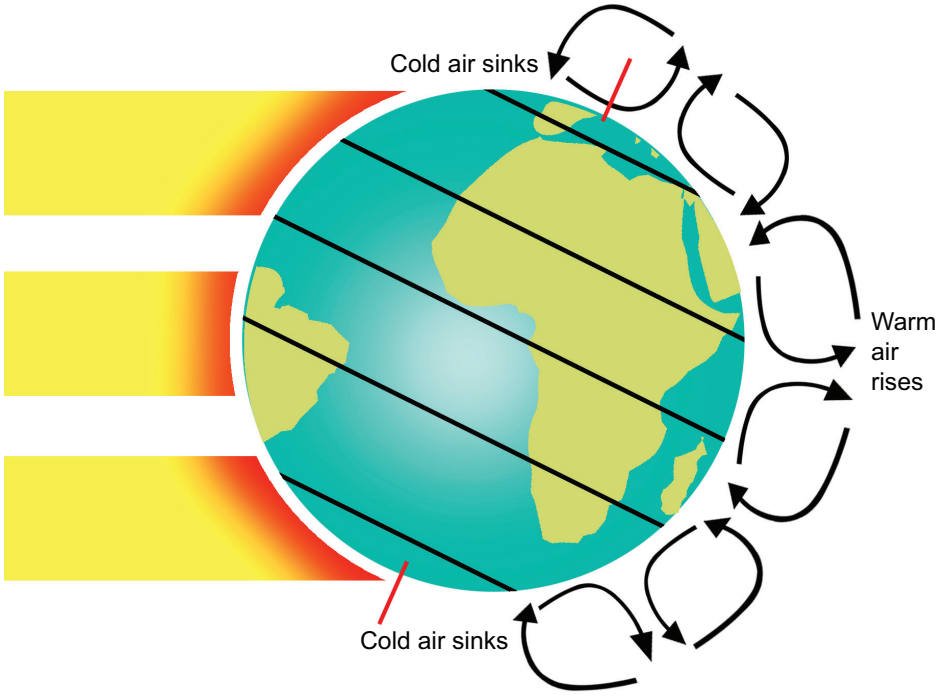
NONRENEWABLE ENERGY SOURCES

Refraction

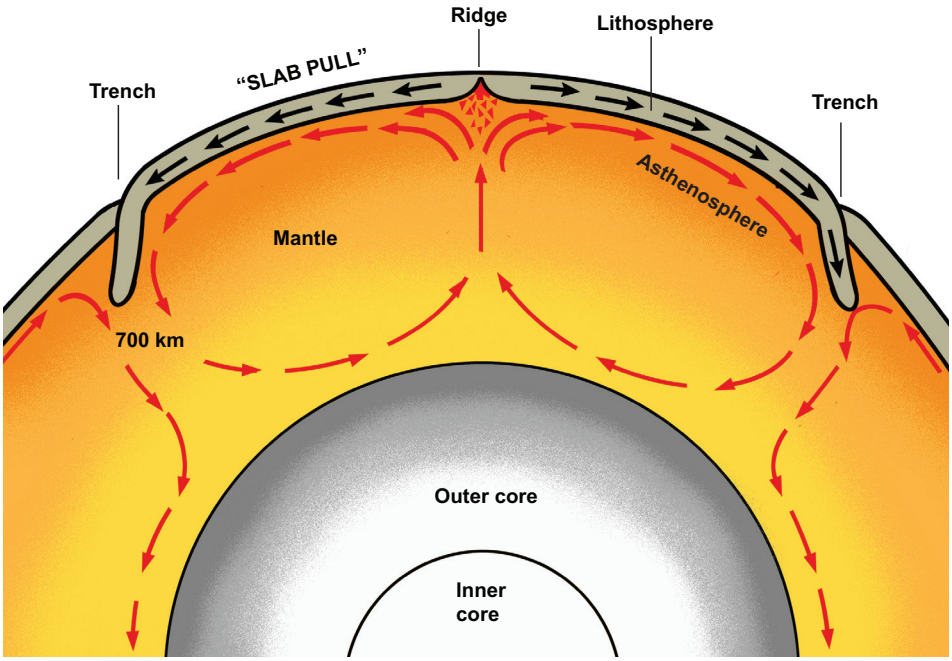

incident ray
normal
medium 1
θ_1
interface
medium 2
θ_2
refracted ray


Normal

Convection Currents in the Atmosphere and in the Mantle



CONVECTION IN THE ATMOSPHERE



CONVECTION IN THE MANTLE