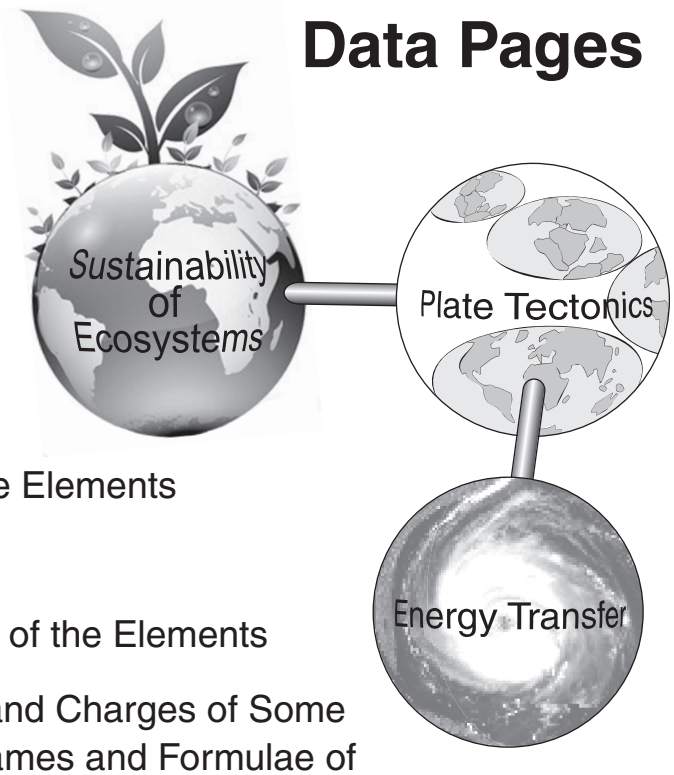
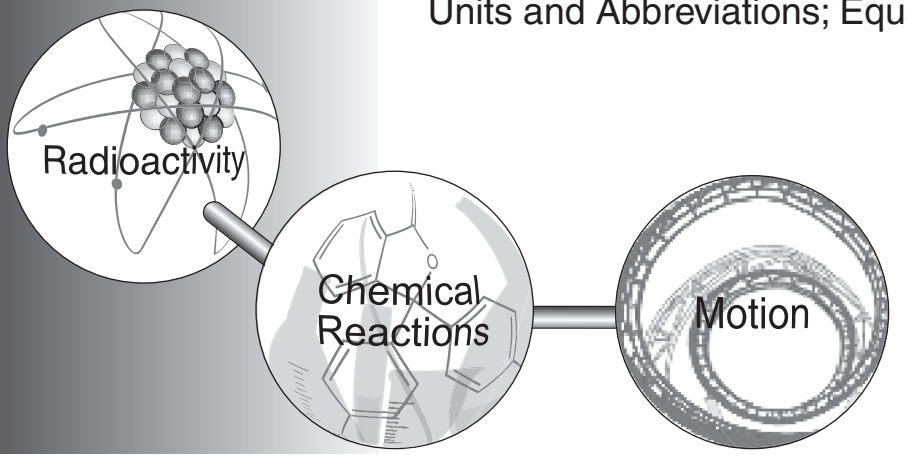
SCIENCE 10

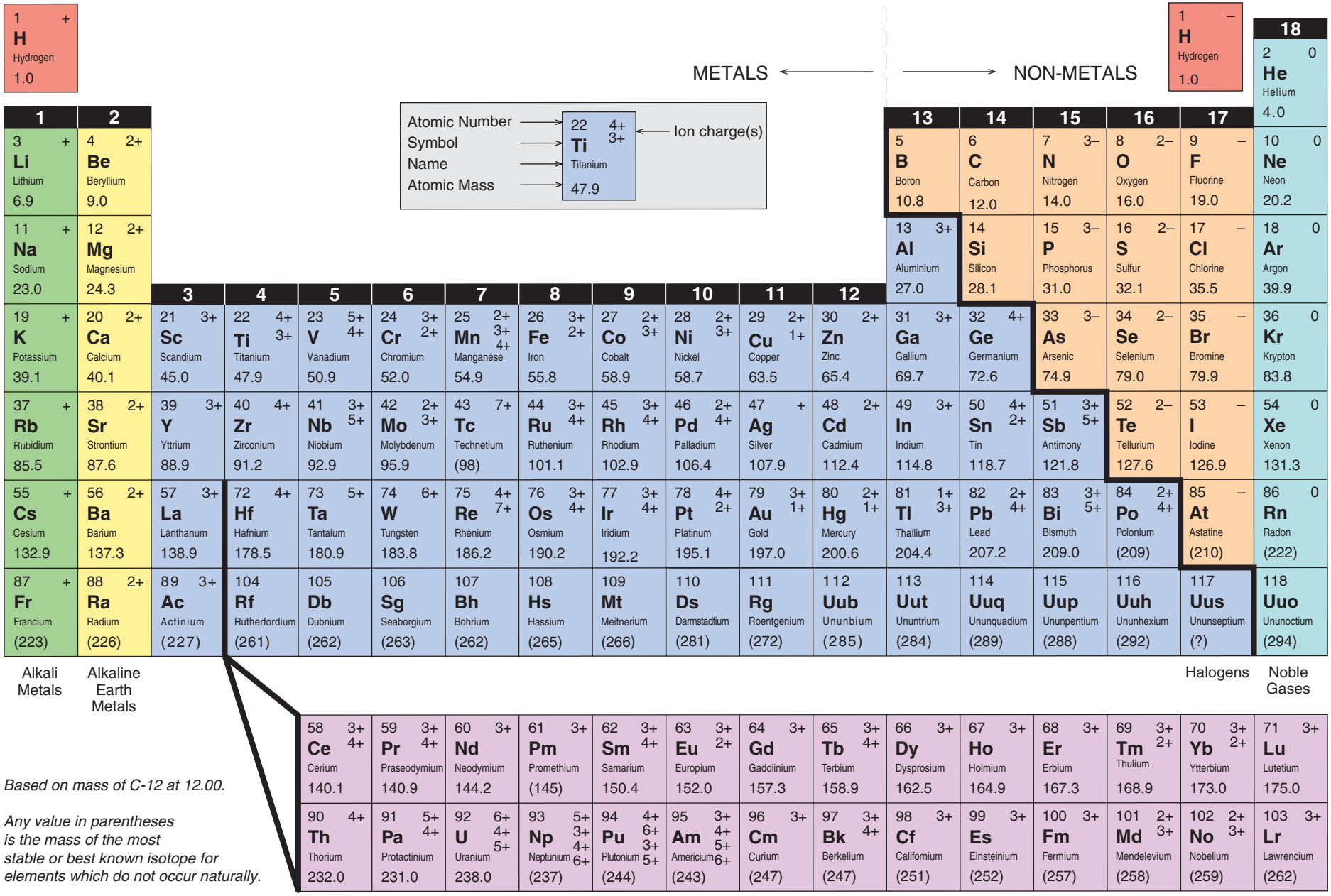
Data Pages





* These Science 10 Data Pages may be retained for classroom use. They **do not** need to be returned to the Ministry with the completed examinations.

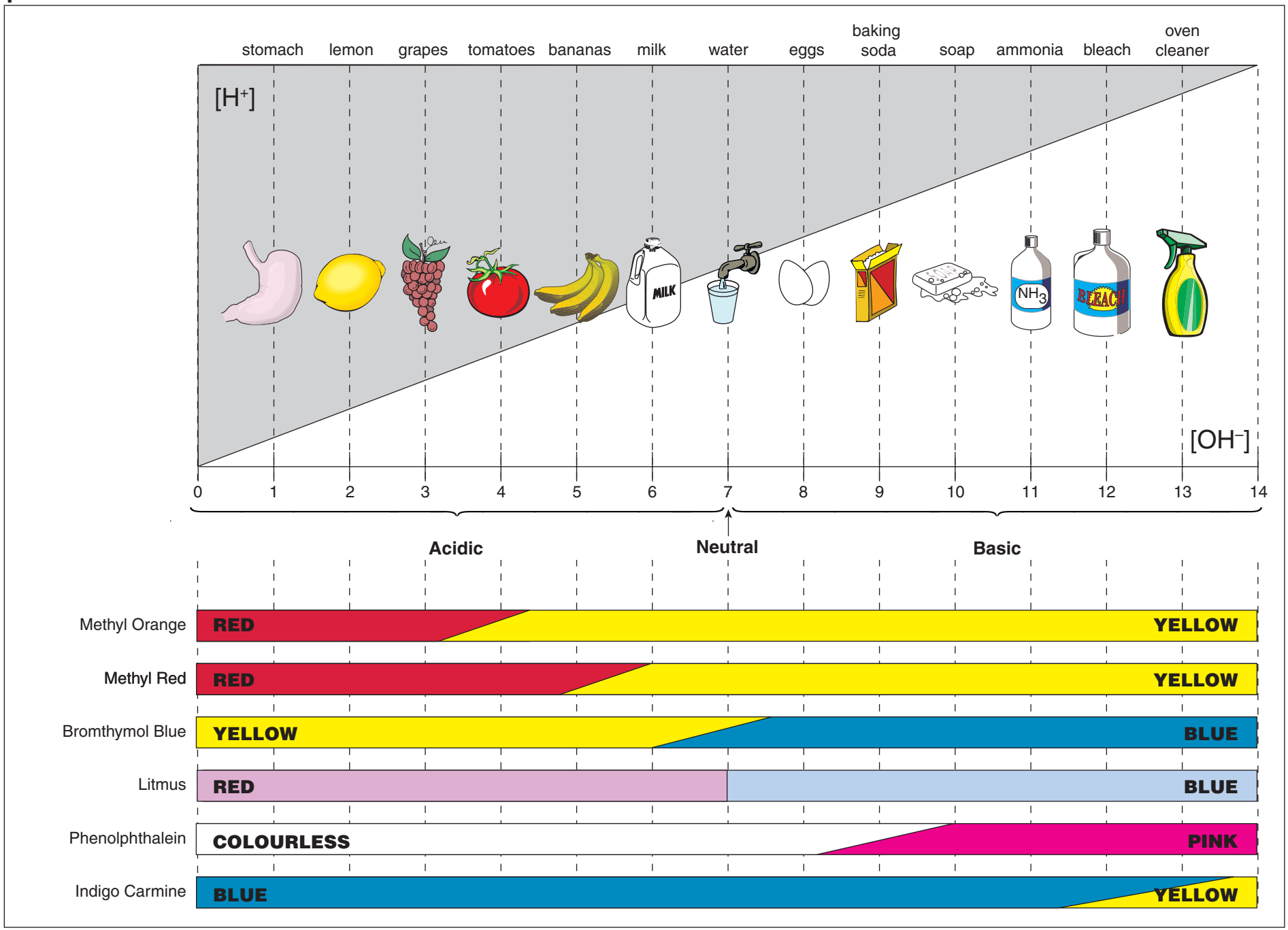
PERIODIC TABLE OF THE ELEMENTS



Based on mass of C-12 at 12.00.

Any value in parentheses is the mass of the most stable or best known isotope for elements which do not occur naturally.

pH SCALE


stomach
lemon
grapes
tomatoes
bananas
milk
water
eggs
baking soda
soap
ammonia
bleach
oven cleaner
[H+]
[OH−]
MILK
NH3
BLEACH
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Acidic
Neutral
Basic
Methyl Orange
RED
YELLOW
Methyl Red
RED
YELLOW
Bromthymol Blue
YELLOW
BLUE
Litmus
RED
BLUE
Phenolphthalein
COLOURLESS
PINK
Indigo Carmine
BLUE
YELLOW

ALPHABETICAL LISTING OF THE ELEMENTS

Element	Symbol	Atomic Number
Actinium	Ac	89
Aluminium	Al	13
Americium	Am	95
Antimony	Sb	51
Argon	Ar	18
Arsenic	As	33
Astatine	At	85
Barium	Ba	56
Berkelium	Bk	97
Beryllium	Be	4
Bismuth	Bi	83
Bohrium	Bh	107
Boron	B	5
Bromine	Br	35
Cadmium	Cd	48
Calcium	Ca	20
Californium	Cf	98
Carbon	C	6
Cerium	Ce	58
Cesium	Cs	55
Chlorine	Cl	17
Chromium	Cr	24
Cobalt	Co	27
Copper	Cu	29
Curium	Cm	96
Darmstadtium	Ds	110
Dubnium	Db	105
Dysprosium	Dy	66
Einsteinium	Es	99
Erbium	Er	68
Europium	Eu	63
Fermium	Fm	100
Fluorine	F	9
Francium	Fr	87
Gadolinium	Gd	64
Gallium	Ga	31
Germanium	Ge	32
Gold	Au	79
Hafnium	Hf	72
Hassium	Hs	108
Helium	He	2
Holmium	Ho	67
Hydrogen	H	1
Indium	In	49
Iodine	I	53
Iridium	Ir	77
Iron	Fe	26
Krypton	Kr	36
Lanthanum	La	57
Lawrencium	Lr	103
Lead	Pb	82
Lithium	Li	3
Lutetium	Lu	71
Magnesium	Mg	12
Manganese	Mn	25
Meitnerium	Mt	109
Mendelevium	Md	101
Mercury	Hg	80
Molybdenum	Mo	42
Neodymium	Nd	60
Neon	Ne	10
Neptunium	Np	93
Nickel	Ni	28
Niobium	Nb	41
Nitrogen	N	7
Nobelium	No	102
Osmium	Os	76
Oxygen	O	8
Palladium	Pd	46
Phosphorus	P	15
Platinum	Pt	78
Plutonium	Pu	94
Polonium	Po	84
Potassium	K	19
Praseodymium	Pr	59
Promethium	Pm	61
Protactinium	Pa	91
Radium	Ra	88
Radon	Rn	86
Rhenium	Re	75
Rhodium	Rh	45
Roentgenium	Rg	111
Rubidium	Rb	37
Ruthenium	Ru	44
Rutherfordium	Rf	104
Samarium	Sm	62
Scandium	Sc	21
Seaborgium	Sg	106
Selenium	Se	34
Silicon	Si	14
Silver	Ag	47
Sodium	Na	11
Strontium	Sr	38
Sulfur	S	16
Tantalum	Ta	73
Technetium	Tc	43
Tellurium	Te	52
Terbium	Tb	65
Thallium	Tl	81
Thorium	Th	90
Thulium	Tm	69
Tin	Sn	50
Titanium	Ti	22
Tungsten	W	74
Uranium	U	92
Vanadium	V	23
Xenon	Xe	54
Ytterbium	Yb	70
Yttrium	Y	39
Zinc	Zn	30
Zirconium	Zr	40

NAMES, FORMULAE AND CHARGES OF SOME POLYATOMIC IONS

Positive Ions	Negative Ions	
NH_4^+ Ammonium	CH_3COO^-	Acetate
	CO_3^{2-}	Carbonate
	ClO_3^-	Chlorate
	ClO_2^-	Chlorite
	CrO_4^{2-}	Chromate
	CN^-	Cyanide
	$Cr_2O_7^{2-}$	Dichromate
	HCO_3^-	Hydrogen carbonate, bicarbonate
	HSO_4^-	Hydrogen sulfate, bisulfate
	HS^-	Hydrogen sulfide, bisulfide
	HSO_3^-	Hydrogen sulfite, bisulfite
	OH^-	Hydroxide
	ClO^-	Hypochlorite
	NO_3^-	Nitrate
	NO_2^-	Nitrite
	ClO_4^-	Perchlorate
	MnO_4^-	Permanganate
	PO_4^{3-}	Phosphate
	PO_3^{3-}	Phosphite
	SO_4^{2-}	Sulfate
	SO_3^{2-}	Sulfite

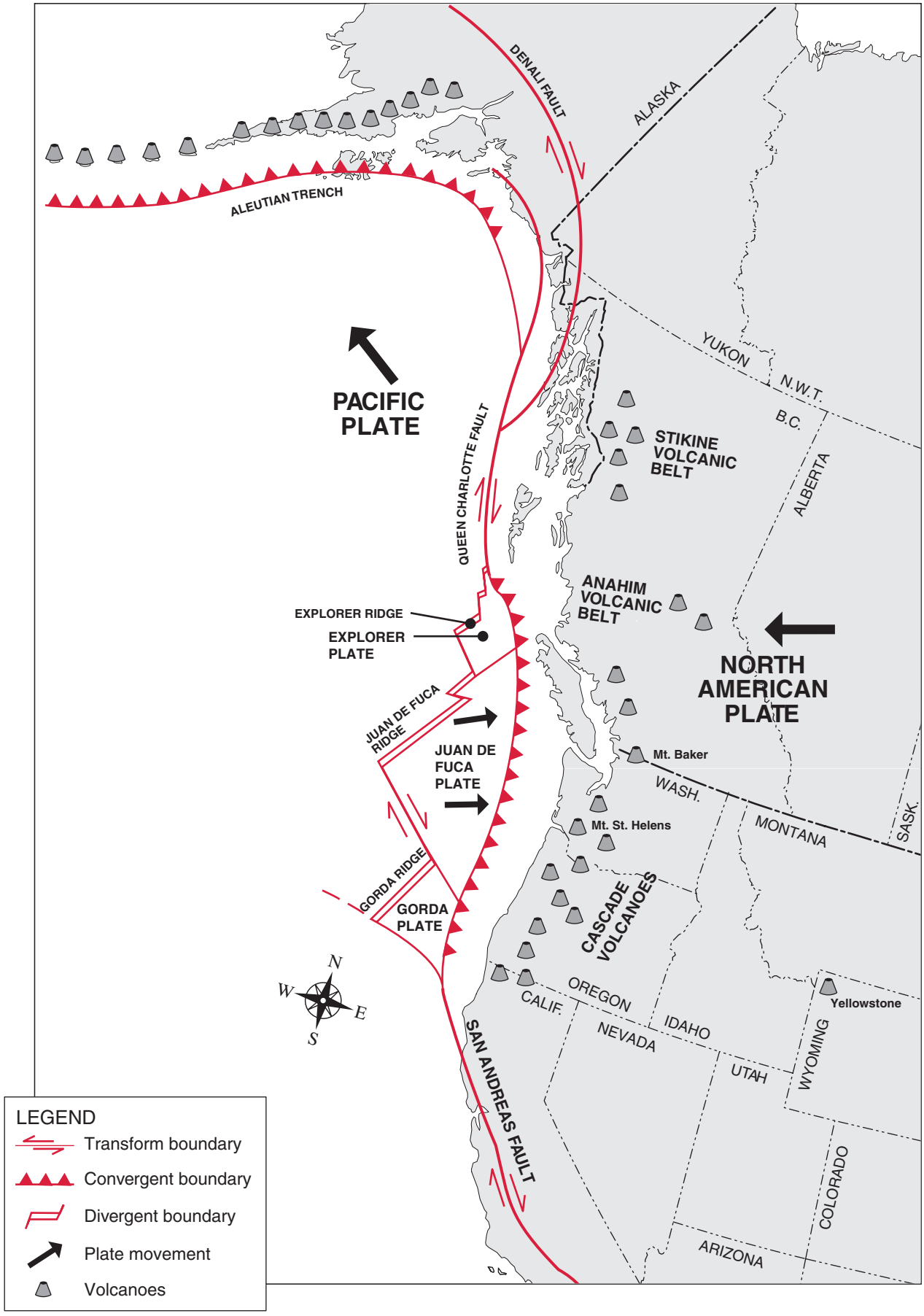
NAMES AND FORMULAE OF COMMON ACIDS

Hydrochloric acid	HCl
Sulfuric acid	H_2SO_4
Nitric acid	HNO_3
Acetic acid	HCH_3COO

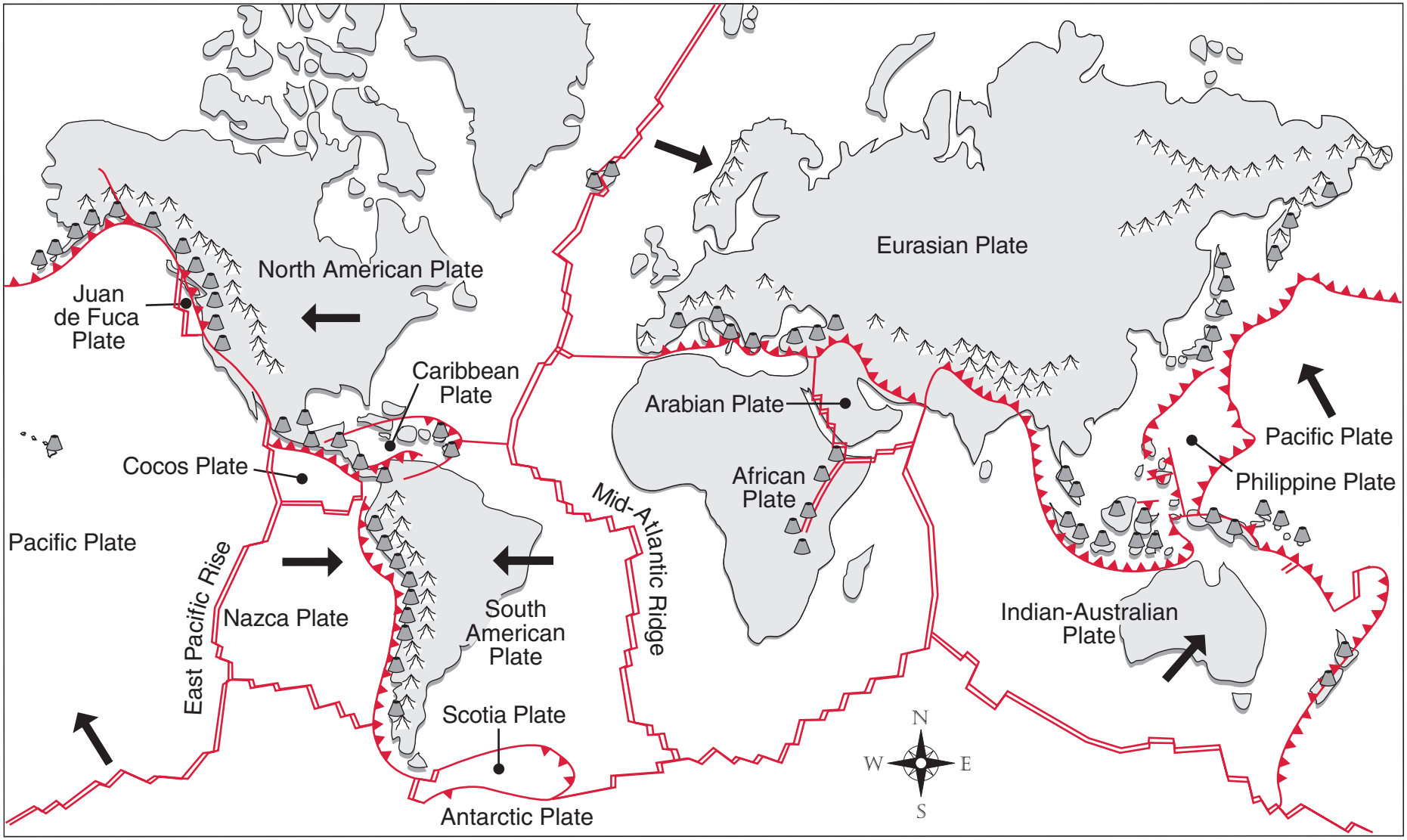
PREFIXES

1	mono
2	di
3	tri
4	tetra
5	penta
6	hexa
7	hepta
8	octa
9	nona
10	deca

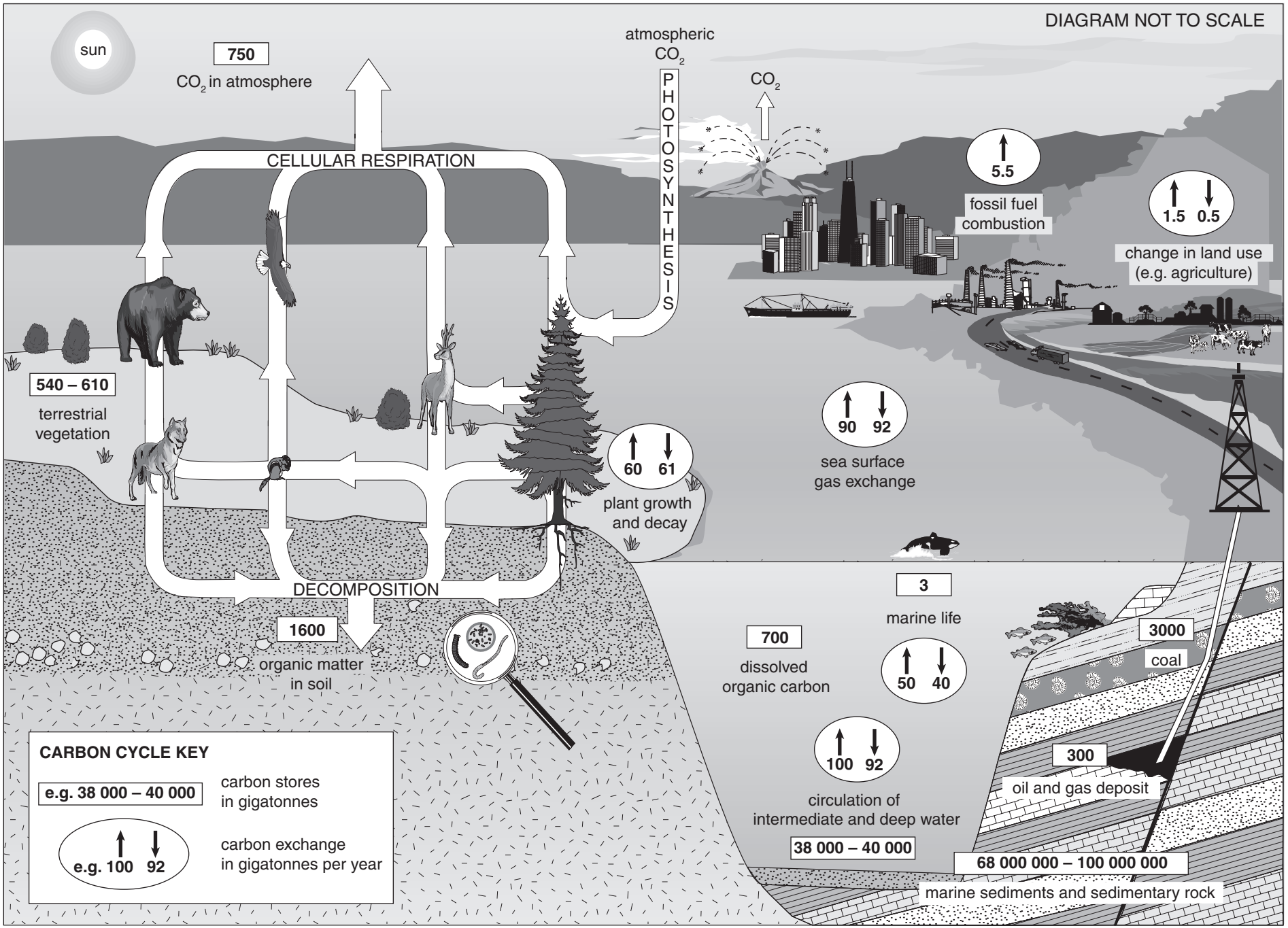
MAP OF THE PACIFIC COAST OF NORTH AMERICA



WORLD TECTONIC PLATE BOUNDARIES MAP

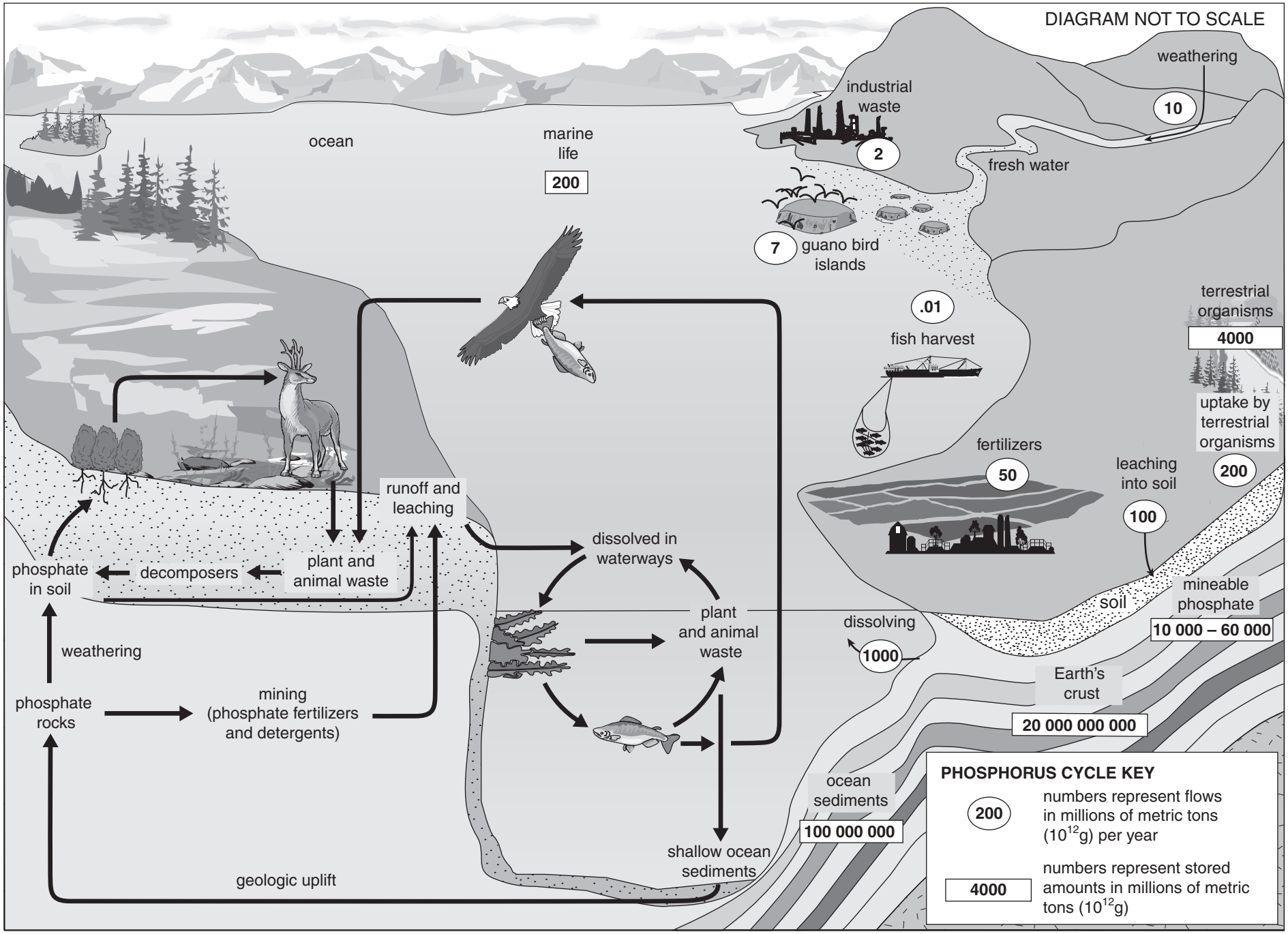


THE CARBON CYCLE



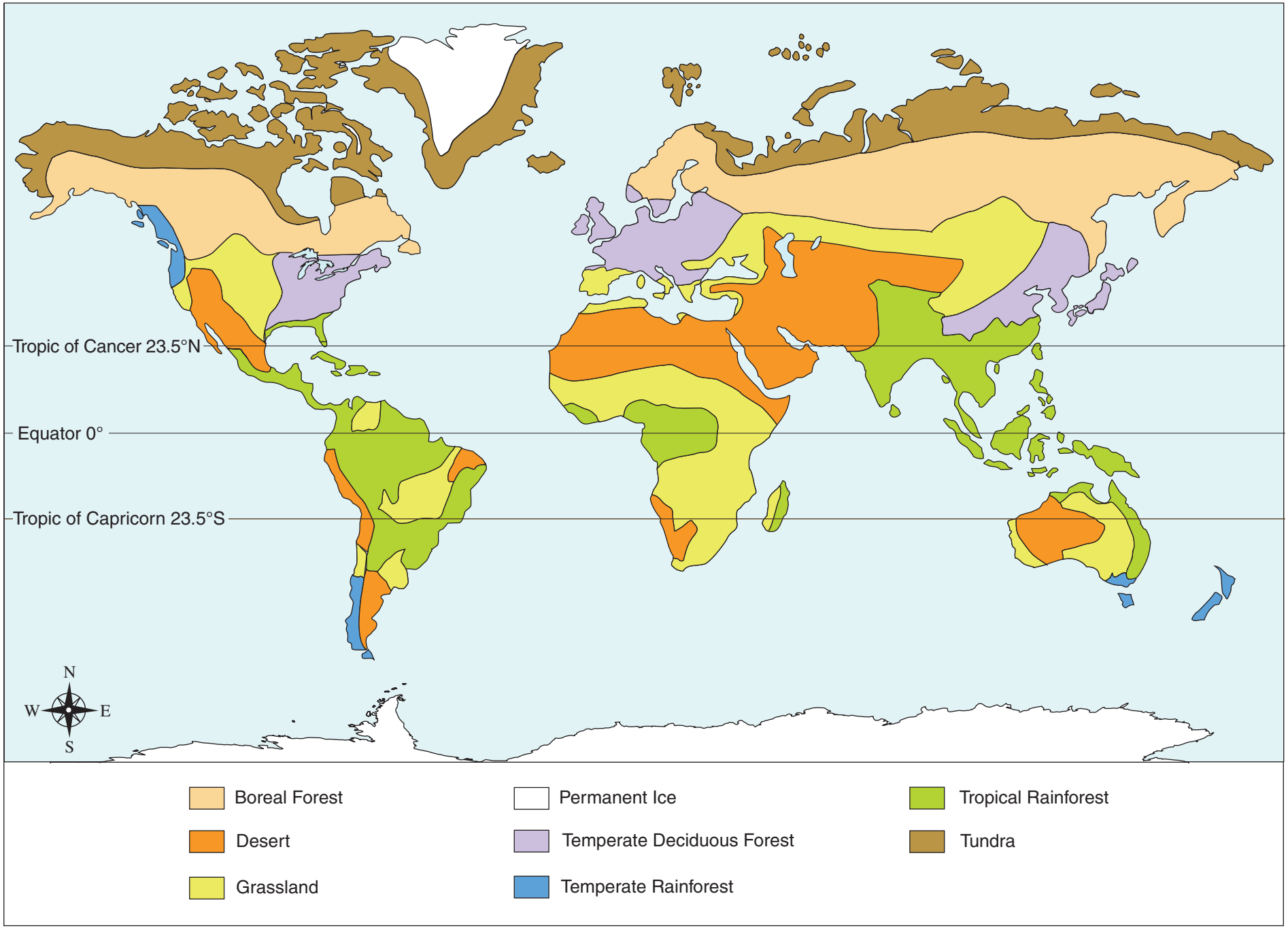
Different sources will provide varying information.

THE PHOSPHORUS CYCLE



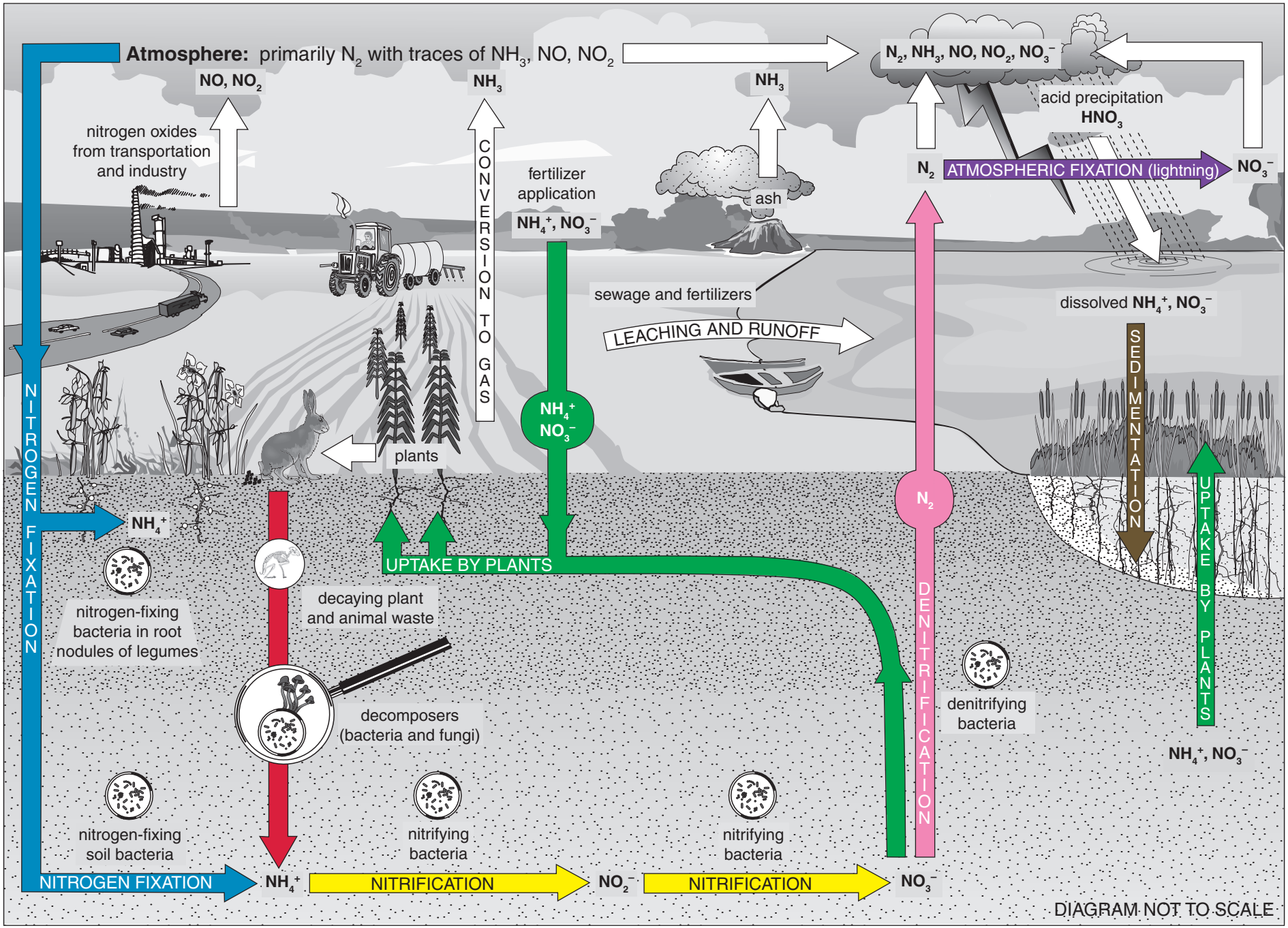
Different sources will provide varying information.

BIOMES OF THE WORLD



Different sources will provide varying information.

THE NITROGEN CYCLE



COMMON ISOTOPE PAIRS CHART

Isotope		Half-life of Parent (years)
Parent	*Daughter*	
Carbon-14	Nitrogen-14	5730
Uranium-235	Lead-207	710 million
Potassium-40	Argon-40	1.3 billion
Uranium-238	Lead-206	4.5 billion
Thorium-235	Lead-208	14 billion
Rubidium-87	Strontium-87	47 billion

RADIOACTIVITY SYMBOLS

${}^{4}_{2}\alpha$, ${}^{4}_{2}\mathrm{He}$	${}^{0}_{-1}\beta$, ${}^{0}_{-1}e$	${}^{0}_{0}\gamma$
${}^{1}_{0}n$	${}^{1}_{1}p$, ${}^{1}_{1}\mathrm{H}$	

UNITS AND ABBREVIATIONS

Quantity	Unit	Symbol
distance (d)	metre	m
time (t)	second	s
	minute	min
	hour	h
	year	a

EQUATIONS OF MOTION

$v_{av} = \frac{\Delta d}{\Delta t}$	$a = \frac{\Delta v}{\Delta t}$	$\Delta v = v_f - v_i$
$\Delta d = v_{av}\,\Delta t$	$\Delta v = a\Delta t$	$v_i = v_f - \Delta v$
$\Delta t = \frac{\Delta d}{v_{av}}$	$\Delta t = \frac{\Delta v}{a}$	$v_f = v_i + \Delta v$