

## NECAP Science Grade 8 Reference Sheet

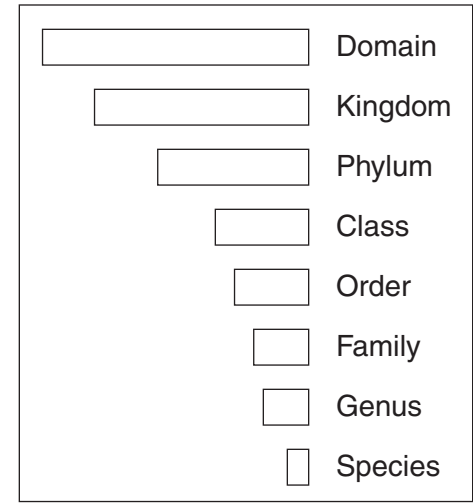
### Solar System Data

Object	Mean Distance to the Sun (AU*)	Diameter Relative to Earth	Density (g/cm <sup>3</sup> )	Relative Gravity to Earth	Rotation (days)	Orbital Period (years)	Relative Mass to Earth	Number of Moons	Planet Type
Planets	Earth	1.0	1.0	5.5	1.0	1.0	1.00	1	rocky
	Jupiter	5.2	11.2	1.3	0.4	11.9	318	16	gas
	Mars	1.5	0.5	3.9	0.4	1.9	0.108	2	rocky
	Mercury	0.4	0.4	5.4	0.4	58.4	0.0553	0	rocky
	Neptune	30.1	3.9	1.6	1.1	0.7	164.8	8	gas
	Saturn	9.6	9.4	0.7	0.9	0.5	29.5	18	gas
	Uranus	19.2	4.0	1.3	0.9	0.7	84.0	21	gas
	Venus	0.7	0.9	5.2	0.9	243.0	0.6	0	rocky
Sun	-	109.0	1.4	-	24.6	-	333000	-	-
Pluto**	39.5	0.2	2.1	0.1	6.4	248.0	0.0021	1	icy
Earth's Moon	1.0	0.3	3.3	0.2	27.5	-	0.0123	-	-

\* *Astronomical Unit (AU) – the average distance between Earth and the Sun ( $1.5 \times 10^{11}$  m)*

\*\* *Pluto is classified as a dwarf planet.*

### Biological Classification System



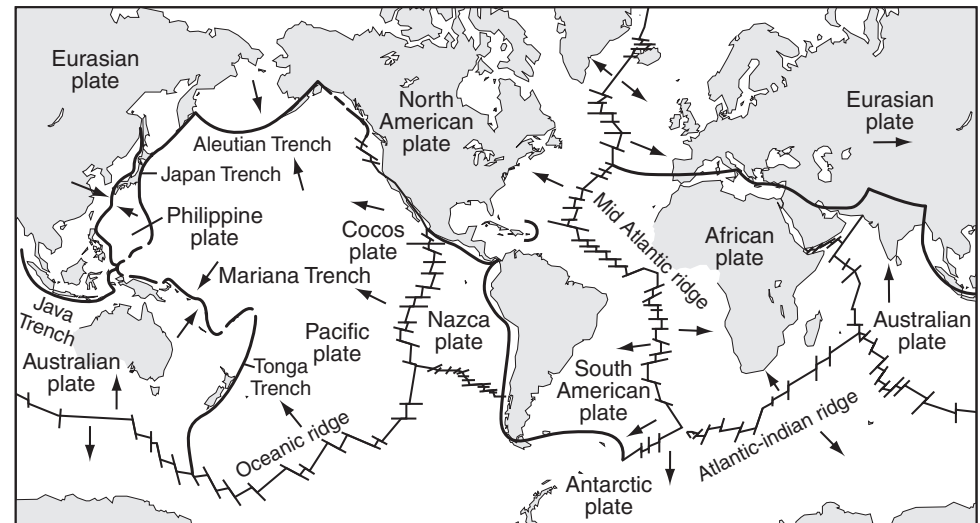
### Standard Units of Measurement

Quantity	Unit (abbreviation)
mass	kilogram (kg)
volume	liter (L)
temperature	degrees Celsius (°C)
time	second (s)
distance	meter (m)
force	newton (N)
energy	joule (J)

### Useful Formulas

$F = ma$ $m = \frac{F}{a}$ $a = \frac{F}{m}$	<i>F = force</i> <i>m = mass</i> <i>a = acceleration</i>
$D = \frac{m}{V}$ $V = \frac{m}{D}$ $m = D \times V$	<i>D = density</i> <i>m = mass</i> <i>V = volume</i>
$s = \frac{d}{t}$ $t = \frac{d}{s}$ $d = st$	<i>s = speed</i> <i>d = distance</i> <i>t = time</i>
$^{\circ}\text{C} = \left(\frac{5}{9}\right) \times (^{\circ}\text{F} - 32)$ $^{\circ}\text{F} = \left(\frac{9}{5}\right) \times ^{\circ}\text{C} + 32$	

### Plate Movements



## PERIODIC TABLE OF THE ELEMENTS

Group →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Period ↓	I A	II A											III A	IV A	V A	VI A	VII A	VIII A
1	Hydrogen <b>H</b> 1.008																	Helium <b>He</b> 4.003
2	Lithium <b>Li</b> 6.941	Beryllium <b>Be</b> 9.012											Boron <b>B</b> 10.811	Carbon <b>C</b> 12.011	Nitrogen <b>N</b> 14.007	Oxygen <b>O</b> 15.999	Fluorine <b>F</b> 18.998	Neon <b>Ne</b> 20.180
3	Sodium <b>Na</b> 22.990	Magnesium <b>Mg</b> 24.305											Aluminum <b>Al</b> 26.982	Silicon <b>Si</b> 28.086	Phosphorus <b>P</b> 30.974	Sulfur <b>S</b> 32.066	Chlorine <b>Cl</b> 35.453	Argon <b>Ar</b> 39.948
4	Potassium <b>K</b> 39.098	Calcium <b>Ca</b> 40.078	Scandium <b>Sc</b> 44.956	Titanium <b>Ti</b> 47.88	Vanadium <b>V</b> 50.942	Chromium <b>Cr</b> 51.996	Manganese <b>Mn</b> 54.938	Iron <b>Fe</b> 55.847	Cobalt <b>Co</b> 58.933	Nickel <b>Ni</b> 58.693	Copper <b>Cu</b> 63.546	Zinc <b>Zn</b> 65.39	Gallium <b>Ga</b> 69.723	Germanium <b>Ge</b> 72.61	Arsenic <b>As</b> 74.922	Selenium <b>Se</b> 78.96	Bromine <b>Br</b> 79.904	Krypton <b>Kr</b> 83.80
5	Rubidium <b>Rb</b> 85.468	Strontium <b>Sr</b> 87.62	Yttrium <b>Y</b> 88.906	Zirconium <b>Zr</b> 91.224	Niobium <b>Nb</b> 92.906	Molybdenum <b>Mo</b> 95.94	Technetium <b>Tc</b> 97.907	Ruthenium <b>Ru</b> 101.07	Rhodium <b>Rh</b> 102.906	Palladium <b>Pd</b> 106.42	Silver <b>Ag</b> 107.868	Cadmium <b>Cd</b> 112.411	Indium <b>In</b> 114.82	Tin <b>Sn</b> 118.710	Antimony <b>Sb</b> 121.757	Tellurium <b>Te</b> 127.60	Iodine <b>I</b> 126.904	Xenon <b>Xe</b> 131.290
6	Cesium <b>Cs</b> 132.905	Barium <b>Ba</b> 137.327	Lanthanum <b>La</b> 138.906	Hafnium <b>Hf</b> 178.49	Tantalum <b>Ta</b> 180.948	Tungsten <b>W</b> 183.84	Rhenium <b>Re</b> 186.207	Osmium <b>Os</b> 190.2	Iridium <b>Ir</b> 192.22	Platinum <b>Pt</b> 195.08	Gold <b>Au</b> 196.967	Mercury <b>Hg</b> 200.59	Thallium <b>Tl</b> 204.383	Lead <b>Pb</b> 207.2	Bismuth <b>Bi</b> 208.980	Polonium <b>Po</b> 208.982	Astatine <b>At</b> 209.978	Radon <b>Rn</b> 222.018
7	Francium <b>Fr</b> 223.020	Radium <b>Ra</b> 226.025	Actinium <b>Ac</b> 227.028	Rutherfordium <b>Rf</b> (261)	Dubnium <b>Db</b> (262)	Seaborgium <b>Sg</b> (263)	Bohrium <b>Bh</b> (262)	Hassium <b>Hs</b> (265)	Meitnerium <b>Mt</b> (266)									
<b>Lanthanide Series</b>				Serium <b>Ce</b> 140.115	Praseodymium <b>Pr</b> 140.908	Neodymium <b>Nd</b> 144.24	Promethium <b>Pm</b> 144.913	Samarium <b>Sm</b> 150.36	Europium <b>Eu</b> 151.965	Gadolinium <b>Gd</b> 157.25	Terbium <b>Tb</b> 158.925	Dysprosium <b>Dy</b> 162.50	Holmium <b>Ho</b> 164.930	Erbium <b>Er</b> 167.26	Thulium <b>Tm</b> 168.934	Ytterbium <b>Yb</b> 173.04	Lutetium <b>Lu</b> 174.967	
<b>Actinide Series</b>				Thorium <b>Th</b> 232.038	Protactinium <b>Pa</b> 231.038	Uranium <b>U</b> 238.029	Neptunium <b>Np</b> 237.048	Plutonium <b>Pu</b> 244.064	Americium <b>Am</b> 243.061	Curium <b>Cm</b> 247.070	Berkelium <b>Bk</b> 247.070	Californium <b>Cf</b> 251.080	Einsteinium <b>Es</b> 252.083	Fermium <b>Fm</b> 257.095	Mendelevium <b>Md</b> 258.099	Nobelium <b>No</b> 259.101	Lawrencium <b>Lr</b> 260.105	

Name — Hydrogen

Atomic Number — 1

Symbol — **H**

Atomic Mass — 1.008