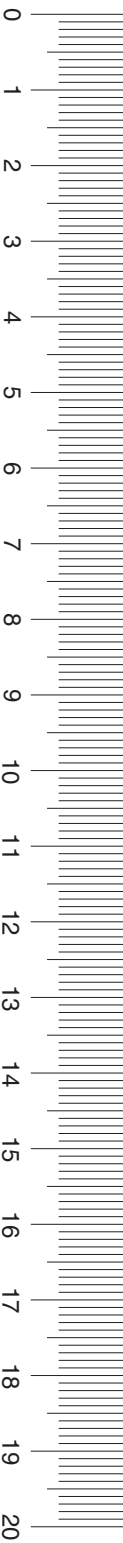


FORMULA CHART

for Grade 11 Science Assessment

Centimeters



Density = $\frac{\text{mass}}{\text{volume}}$	$D = \frac{m}{v}$
$\left(\begin{array}{l} \text{heat gained or} \\ \text{lost by water} \end{array} \right) = \left(\begin{array}{l} \text{mass in} \\ \text{grams} \end{array} \right) \left(\begin{array}{l} \text{change in} \\ \text{temperature} \end{array} \right) \left(\begin{array}{l} \text{specific} \\ \text{heat} \end{array} \right)$	$Q = (m)(\Delta T)(C_p)$
Speed = $\frac{\text{distance}}{\text{time}}$	$s = \frac{d}{t}$
Acceleration = $\frac{\text{final velocity} - \text{initial velocity}}{\text{change in time}}$	$a = \frac{v_f - v_i}{\Delta t}$
Momentum = mass \times velocity	$p = mv$
Force = mass \times acceleration	$F = ma$
Work = force \times distance	$W = Fd$
Power = $\frac{\text{work}}{\text{time}}$	$P = \frac{W}{t}$
% efficiency = $\frac{\text{work output}}{\text{work input}} \times 100$	$\% = \frac{W_o}{W_i} \times 100$
Kinetic energy = $\frac{1}{2} (\text{mass} \times \text{velocity}^2)$	$KE = \frac{mv^2}{2}$
Gravitational potential energy = mass \times acceleration due to gravity \times height	$GPE = mgh$
Energy = mass \times (speed of light) ²	$E = mc^2$
Velocity of a wave = frequency \times wavelength	$v = f\lambda$
Current = $\frac{\text{voltage}}{\text{resistance}}$	$I = \frac{V}{R}$
Electrical power = voltage \times current	$P = VI$
Electrical energy = power \times time	$E = Pt$

Constants/Conversions		
$g = \text{acceleration due to gravity} = 9.8 \text{ m/s}^2$		
$c = \text{speed of light} = 3 \times 10^8 \text{ m/s}$		
speed of sound = 343 m/s at 20°C		
$1 \text{ cm}^3 = 1 \text{ mL}$		
1 wave/second = 1 hertz (Hz)		
1 calorie (cal) = 4.18 joules		
1000 calories (cal) = 1 Calorie (Cal) = 1 kilocalorie (kcal)		
newton (N) = kgm/s^2		
joule (J) = Nm		
watt (W) = J/s = Nm/s		
volt (V)	ampere (A)	ohm (Ω)

Periodic Table of the Elements

Atomic number — 14
 Symbol — **Si**
 Atomic mass — 28.086
 Silicon — Name

		18 VIII		17 VIIA		16 VIA		15 VA		14 IVA		13 IIIA		12 IIB		11 IB		10 VIII		9 VIII		8 VIII		7 VIIB		6 VIB		5 VB		4 IVB		3 IIIB		2 IIA		1 IA																																																																									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71																																							
H 1.008 Hydrogen	He 4.0026 Helium	Li 6.941 Lithium	Be 9.012 Beryllium	B 10.81 Boron	C 12.011 Carbon	N 14.007 Nitrogen	O 15.999 Oxygen	F 18.998 Fluorine	Ne 20.179 Neon	Na 22.990 Sodium	Mg 24.305 Magnesium	Al 26.982 Aluminum	Si 28.086 Silicon	P 30.974 Phosphorus	S 32.066 Sulfur	Cl 35.453 Chlorine	Ar 39.948 Argon	K 39.098 Potassium	Ca 40.08 Calcium	Sc 44.956 Scandium	Ti 47.88 Titanium	V 50.942 Vanadium	Cr 51.996 Chromium	Mn 54.938 Manganese	Fe 55.847 Iron	Co 58.933 Cobalt	Ni 58.69 Nickel	Cu 63.546 Copper	Zn 65.39 Zinc	Ga 69.72 Gallium	Ge 72.61 Germanium	As 74.922 Arsenic	Se 78.96 Selenium	Br 79.904 Bromine	Kr 83.80 Krypton	Rb 85.468 Rubidium	Sr 87.62 Strontium	Y 88.906 Yttrium	Zr 91.224 Zirconium	Nb 92.906 Niobium	Mo 95.94 Molybdenum	Tc (98) Technetium	Ru 101.07 Ruthenium	Rh 102.906 Rhodium	Pd 106.42 Palladium	Ag 107.868 Silver	Cd 112.41 Cadmium	In 114.82 Indium	Sn 118.71 Tin	Sb 121.763 Antimony	Te 127.60 Tellurium	I 126.904 Iodine	Xe 131.29 Xenon	Cs 132.905 Cesium	Ba 137.33 Barium	La 138.906 Lanthanum	Hf 178.49 Hafnium	Ta 180.948 Tantalum	W 183.84 Tungsten	Re 186.207 Rhenium	Os 190.23 Osmium	Ir 192.22 Iridium	Pt 195.08 Platinum	Au 196.967 Gold	Hg 200.59 Mercury	Tl 204.383 Thallium	Pb 207.2 Lead	Bi 208.980 Bismuth	Po (209) Polonium	At (210) Astatine	Rn (222) Radon	Fr (223) Francium	Ra 226.025 Radium	Ac 227.028 Actinium	Ru (261) Rutherfordium	Db (262) Dubnium	Sg (263) Seaborgium	Bh (262) Bohrium	Hs (265) Hassium	Mt (266) Meitnerium	110 (269) Ununnilium	Ce 140.12 Cerium	Pr 140.908 Praseodymium	Nd 144.24 Neodymium	Pm (145) Promethium	Sm 150.36 Samarium	Eu 151.97 Europium	Gd 157.25 Gadolinium	Tb 158.925 Terbium	Dy 162.50 Dysprosium	Ho 164.930 Holmium	Er 167.26 Erbium	Tm 168.934 Thulium	Yb 173.04 Ytterbium	Lu 174.967 Lutetium	Th 232.038 Thorium	Pa 231.036 Protactinium	U 238.029 Uranium	Np 237.048 Neptunium	Pu (244) Plutonium	Am (243) Americium	Cm (247) Curium	Bk (247) Berkelium	Cf (251) Californium	Es (252) Einsteinium	Fm (257) Fermium	Md (258) Mendelevium	No (259) Nobelium	Lr (262) Lawrencium

Mass numbers in parentheses are those of the most stable or most common isotope.

Lanthanide Series
 Actinide Series