

Physical Science Reference Sheet

Formulas

Force, Mass and Motion

$$\text{Velocity} = \frac{\text{displacement}}{\text{time}} \quad (v = \frac{d}{t})$$

$$\text{Acceleration} = \frac{\text{final velocity} - \text{initial velocity}}{\text{time}} \quad (a = \frac{v_f - v_i}{t})$$

$$\text{Weight} = \text{mass} \times \text{acceleration of gravity} \quad (w = mg)$$

$$\text{Force} = \text{mass} \times \text{acceleration} \quad (F = ma)$$

$$\text{Work} = \text{force} \times \text{distance} \quad (W = Fd)$$

$$\text{Mechanical advantage} = \frac{\text{effort distance}}{\text{resistance distance}} = \frac{\text{resistance force}}{\text{effort force}} \quad (MA = \frac{d_e}{d_r} = \frac{f_r}{f_e})$$

Chemical Reactions and Properties of Matter

$$\text{Density} = \frac{\text{mass}}{\text{volume}} \quad (D = \frac{m}{V})$$

$$\text{Volume of a rectangular solid} = \text{length} \times \text{width} \times \text{height} \quad (V = lwh)$$

$$\text{Heat lost or gained} = \text{mass} \times \text{specific heat capacity} \times \text{change in temperature} \quad (Q = mc\Delta T)$$

Waves, Electricity and Magnetism

$$\text{Voltage} = \text{current} \times \text{resistance} \quad (V = IR)$$



Constants and Relationships

$$\text{Kelvin} = \text{°Celsius} + 273 \quad (\text{K} = \text{°C} + 273) \quad \text{newton: } 1 \text{ N} = 1 \text{ kg} \cdot \frac{\text{m}}{\text{s}^2}$$

$$\text{Acceleration due to gravity: } g \approx 10 \frac{\text{m}}{\text{s}^2} \quad \text{joule: } 1 \text{ J} = 1 \text{ N} \cdot \text{m}$$

Georgia Milestones End of Course (EOC) Physical Science

Periodic Table

1		2		3										13	14	15	16	17	18	
1 H Hydrogen 1.01																				2 He Helium 4.00
3 Li Lithium 6.94	4 Be Beryllium 9.01																			10 Ne Neon 20.18
11 Na Sodium 22.99	12 Mg Magnesium 24.31																			18 Ar Argon 39.95
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80			54 Xe Xenon 131.29
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29			86 Rn Radon (222)
55 Cs Cesium 132.91	56 Ba Barium 137.33	57-71 Lanthanide series ☆	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)			118 Uuo Ununoctium (294)
87 Fr Francium (223)	88 Ra Radium (226)	89-103 Actinide series ☆☆	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (272)	112 Cn Copernicium (285)	113 Uut Ununtrium (284)	114 Fl Flerovium (289)	115 Uup Ununpentium (288)	116 Lv Livermorium (293)	117 Uus Ununseptium (294)	118 Uuo Ununoctium (294)			171 Uuq Ununquadium (294)
		☆ Lanthanide series	57 La Lanthanum 138.91	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.97			103 Lr Lawrencium (262)
		☆☆ Actinide series	89 Ac Actinium (227)	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)			103 Lr Lawrencium (262)

Key

Atomic number	29
Element symbol	Cu
Element name	Copper
Average atomic mass	63.55