

Physics

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$M = \frac{-d_i}{d_o}$$

$$M = \frac{h_i}{h_o}$$

$$n_{\text{air}} = 1.0003$$

$$n_{\text{vacuum}} = 1.0000$$

$$n_{\text{water}} = 1.333$$

$$\theta_i = \theta_r$$

$$c = 3.00 \times 10^8 \text{ m/s}$$

$$n = c/v$$

EQUATIONS AND CONSTANTS

1A																		2A																		3A																		4A																		5A																		6A																		7A																		8A																		9A																		10A																		11A																		12A																		13A																		14A																		15A																		16A																		17A																		18A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1 H Hydrogen 1.008																		2 He Helium 4.002602																		3 Li Lithium 6.941																		4 Be Beryllium 9.012182																		5 B Boron 10.811																		6 C Carbon 12.011																		7 N Nitrogen 14.00643																		8 O Oxygen 15.999																		9 F Fluorine 18.9984032																		10 Ne Neon 20.1797																		11 Na Sodium 22.98976928																		12 Mg Magnesium 24.304																		13 Al Aluminum 26.9815385																		14 Si Silicon 28.0855																		15 P Phosphorus 30.973761998																		16 S Sulfur 32.06																		17 Cl Chlorine 35.45																		18 Ar Argon 39.948																		19 K Potassium 39.0983																		20 Ca Calcium 40.078																		21 Sc Scandium 44.955912																		22 Ti Titanium 47.88																		23 V Vanadium 50.9415																		24 Cr Chromium 51.9961																		25 Mn Manganese 54.938044																		26 Fe Iron 55.845																		27 Co Cobalt 58.933194																		28 Ni Nickel 58.6934																		29 Cu Copper 63.546																		30 Zn Zinc 65.38																		31 Ga Gallium 69.723																		32 Ge Germanium 72.630																		33 As Arsenic 74.921595																		34 Se Selenium 78.9718																		35 Br Bromine 79.904																		36 Kr Krypton 83.798																		37 Rb Rubidium 85.4678																		38 Sr Strontium 87.62																		39 Y Yttrium 88.90584																		40 Zr Zirconium 91.224																		41 Nb Niobium 92.90637																		42 Mo Molybdenum 95.95																		43 Tc Technetium (98)																		44 Ru Ruthenium 101.07																		45 Rh Rhodium 102.90550																		46 Pd Palladium 106.42																		47 Ag Silver 107.8682																		48 Cd Cadmium 112.414																		49 In Indium 114.818																		50 Sn Tin 118.710																		51 Sb Antimony 121.757																		52 Te Tellurium 127.60																		53 I Iodine 126.90447																		54 Xe Xenon 131.29																		55 Cs Cesium 132.90545196																		56 Ba Barium 137.327																		57-71 Lanthanoids																		58 La Lanthanum 138.9048																		59 Ce Cerium 140.12																		60 Pr Praseodymium 140.90766																		61 Nd Neodymium 144.242																		62 Pm Promethium (145)																		63 Eu Europium 151.964																		64 Gd Gadolinium 157.25																		65 Tb Terbium 158.92532																		66 Dy Dysprosium 162.50014																		67 Ho Holmium 164.93032																		68 Er Erbium 167.259																		69 Tm Thulium 168.934																		70 Yb Ytterbium 173.054																		71 Lu Lutetium 174.967																		72 Hf Hafnium 178.49																		73 Ta Tantalum 180.94788																		74 W Tungsten 183.84																		75 Re Rhenium 186.207																		76 Os Osmium 190.23																		77 Ir Iridium 192.222																		78 Pt Platinum 195.084																		79 Au Gold 196.966569																		80 Hg Mercury 200.592																		81 Tl <th colspan="18">82 Pb Lead 207.2</th> <td colspan="18">83 Bi Bismuth 208.98040</td> <td colspan="18">84 Po Polonium (209)</td> <td colspan="18">85 At Astatine (210)</td> <td colspan="18">86 Rn Radon (222)</td> <td colspan="18">87 Fr Francium (223)</td> <td colspan="18">88 Ra Radium (226)</td> <td colspan="18">89-103 Actinoids</td> <td colspan="18">90 Th Thorium (232)</td> <td colspan="18">91 Pa Protactinium (231)</td> <td colspan="18">92 U Uranium (238)</td> <td colspan="18">93 Np Neptunium (237)</td> <td colspan="18">94 Pu Plutonium (244)</td> <td colspan="18">95 Am Americium (243)</td> <td colspan="18">96 Cm Curium (247)</td> <td colspan="18">97 Bk Berkelium (247)</td> <td colspan="18">98 Cf Californium (251)</td> <td colspan="18">99 Es Einsteinium (252)</td> <td colspan="18">100 Fm Fermium (257)</td> <td colspan="18">101 Md Mendelevium (258)</td> <td colspan="18">102 No Nobelium (259)</td> <td colspan="18">103 Lr Lawrencium (262)</td> <td colspan="18">104 Rf Rutherfordium (261)</td> <td colspan="18">105 Db Dubnium (268)</td> <td colspan="18">106 Sg Seaborgium (266)</td> <td colspan="18">107 Bh Bohrium (270)</td> <td colspan="18">108 Hs Hassium (285)</td> <td colspan="18">109 Mt Meitnerium (276)</td> <td colspan="18">110 Ds Darmstadtium (281)</td> <td colspan="18">111 Rg Roentgenium (282)</td> <td colspan="18">112 Cn Copernicium (285)</td> <td colspan="18">113 Nh Nihonium (286)</td> <td colspan="18">114 Fl Flerovium (289)</td> <td colspan="18">115 Mc Moscovium (288)</td> <td colspan="18">116 Lv Livermorium (293)</td> <td colspan="18">117 Ts Tennessine (294)</td> <td colspan="18">118 Og Oganesson (294)</td>																		82 Pb Lead 207.2																		83 Bi Bismuth 208.98040																		84 Po Polonium (209)																		85 At Astatine (210)																		86 Rn Radon 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Name of Polyatomic Ion	Ion Formula
carbonate	CO_3^{2-}
chlorate	ClO_3^-
nitrate	NO_3^-
sulphate	SO_4^{2-}
phosphate	PO_4^{3-}
hydroxide	OH^-
bicarbonate	HCO_3^-
ammonium	NH_4^+

Biology Formulae:

Total Magnification Formula:

$$\textit{Total Magnification} = (\textit{Objective Lens}) \times (\textit{Ocular Lens})$$

Field of view (FOV) Conversion Formula:

$$\frac{\textit{low power diameter} \times \textit{magnification of low power objective}}{\textit{magnification of medium or high power objective}} = \textit{medium or high power diameter}$$

Magnification Formula:

$$\textit{Drawing size} = (\textit{Actual size}) \times (\textit{Magnification})$$