

Factor Labeling • Quick Reference

CHEM 125 • LIFE CHEMISTRY LAB
WORKSHOP 1

The one rule: build every conversion factor so the unit you are converting **TO is on top** and the unit you are converting **FROM is on the bottom**. The "from" unit cancels with your starting amount, leaving the answer in the "to" unit. **Wrong unit left? You flipped it — put "from" on the bottom.**

METRIC ↔ ENGLISH

PROPERTY	CONVERSION FACTOR
Length	2.54 cm = 1.00 in
Mass	454 g = 1.00 lb
Volume	29.5 mL = 1.00 fl oz
Volume	1 cm³ = 1 mL

CHEMISTRY POWER-UP FACTORS

CONVERTS BETWEEN	FACTOR
mass ⇌ volume	density = g / cm³
grams ⇌ moles	molar mass = g / mol
moles ⇌ particles	6.02 × 10²³ / mol
volume (exact)	1 cm³ = 1 mL

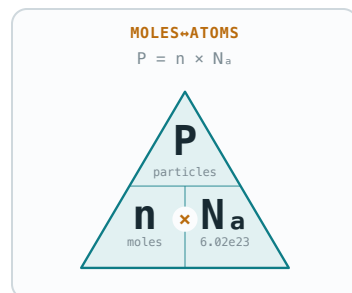
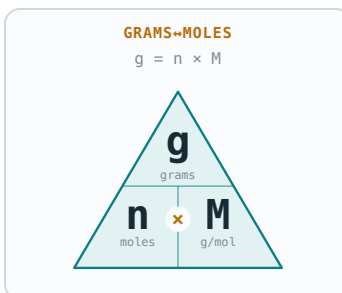
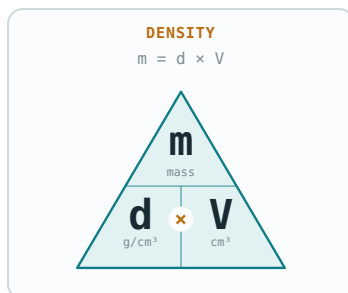
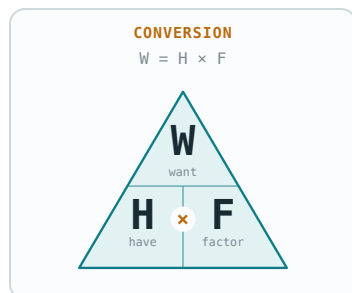
MOLAR MASSES USED IN WORKSHOP 1 (G/MOL)

AL	FE	CU	CO	AU	K	NA	HE
26.98	55.85	63.55	58.93	196.97	39.10	22.99	4.003

METRIC PREFIXES (BASE = GRAM / LITER / METER)

PREFIX	SYM	CHANGES BY	EXAMPLE FACTOR
Mega	M	1×10 ⁶	1 Mg = 1,000,000 g
kilo	k	1×10 ³	1 kg = 1000 g
deci	d	1×10 ⁻¹	10 dL = 1 L
centi	c	1×10 ⁻²	100 cm = 1 m
milli	m	1×10 ⁻³	1000 mg = 1 g
micro	mc/μ	1×10 ⁻⁶	1,000,000 mcg = 1 g
nano	n	1×10 ⁻⁹	1,000,000,000 ng = 1 g

THE TRIANGLE TOOLKIT – COVER WHAT YOU WANT; SIDE-BY-SIDE = ×, STACKED = ÷



DECIMAL TRICK – CANCEL THE ×10²³ LIKE A UNIT ("LEFT = LARGER EXPONENT")

Move decimal **LEFT** → exponent goes **UP** • move **RIGHT** → exponent goes **DOWN**.

Ex: 3.05 × 10²⁰ atoms ÷ 6.02 × 10²³ → match to 10²³: **0.00305 × 10²³** → 0.00305 × **10²³** ÷ 6.02 × **10²³** = **5.07 × 10⁻⁴ mol**