

Note Card Template — actual size

Many teachers allow one 3×5 note card on a unit exam. The two boxes below are exactly 5" × 3" — the front and back of your card.

Copy this out by hand. Writing it yourself is half the studying, and handwriting fits far more than printing does.

Rules of thumb: put *rules and tables* on the card, not worked examples — you can rebuild an example from a rule, but a rule you didn't write down is gone. Leave the density table on there even if you think you know it; recalling nine numbers under time pressure is exactly what a card is for.

FRONT — cut/copy at 5" × 3"

SIG FIGS — COUNTING

Nonzero digits: **always count**
 Leading zeros: **never** (0.0486 → 3)
 Captive zeros: **always** (16.07 → 4)
 Trailing zeros: **only with a decimal pt**
 9.300 → 4 | 3200 → 2 | 8000. → 4
 Sci. notation: front number only
 Exact/counted numbers: infinite

SIG FIGS — MATH

+ − → fewest **decimal places**
 14.2 + 3.56 = 17.76 → 17.8
 × ÷ → fewest **sig figs**
 3.0 × 4.25 = 12.75 → 13
 Two steps? Apply both, in order.

MEASURING

Record **all certain digits + ONE estimate**.
 Meniscus: read the bottom, at eye level.
 More decimal places = more precise tool.

DENSITY

D = m / V m = D×V V = m/D
1 cm³ = 1 mL exactly
 Cube: V = s × s × s
 Odd shape: V = final − initial water
 Density belongs to the **substance**, not the amount.

GRAPHS (mass vs volume)

Straight line through (0,0).
slope = density; steeper = denser
 y-intercept should be 0 — if not, **experimental error**
 (balance not zeroed)
 Steeper than water line → sinks

SINK / FLOAT

Water = **1.00 g/mL**. Above → sinks. Below → floats.

THICKNESS (3 moves)

V = m/D → A = L×W → t = V/A

BACK — cut/copy at 5" × 3"

DENSITY TABLE (g/mL)

Water 1.00 • Aluminum 2.70 • Zinc 7.13
 Iron 7.87 • Copper 8.96 • Silver 10.50
 Lead 11.35 • Mercury 13.6 • Gold 19.3

CONSERVATION OF MASS

Sealed system: **mass before = mass after**.
 Steel wool burns → mass **up**: oxygen from the air bonded to the iron.
 Sugar dissolves → mass **same**: particles spread out, none lost.
 Reading changed? Something entered or left.

MASS vs WEIGHT

Mass = amount of matter (g); never changes with location.
Weight = force of gravity; changes on the Moon.

PARTICLE DIAGRAMS

Solid: touching, ordered rows — densest
Liquid: touching, jumbled
Gas: far apart, mostly empty — least dense
Same particle COUNT in every box (unless atoms were truly added, e.g. burning).
 Shrink the *spaces*, never the particles.

HISTOGRAMS

Spread = measurement uncertainty, not a trend.
 True value sits near the centre.
 Narrower = better tool, sealed container, more trials.

BEFORE YOU HAND IT IN

Units on every number • right sig-fig rule •
 displacement is a **subtraction** • answer in a **sentence**
 • does it make sense?

Check the rules first. Confirm with your teacher whether a note card is allowed at all, and whether both sides count. If it's one side only, use the FRONT — it carries the sig-fig rules and the density formulas, which is where the most points are.