CFA Level 1 fixed income formula sheet

Bond pricing

- Price = present value of coupons + present value of face value, discounted at the yield per period.
- Semiannual coupons: PMT = annual coupon ÷ 2, I/Y = annual yield ÷ 2, N = years × 2.
- Coupon above yield: price above par. Coupon below yield: price below par.

Yield to maturity

- YTM is the single rate that makes the present value of the cash flows equal the price.
- On the BA II Plus, enter the price as a negative PV, compute I/Y, then multiply by the number of coupons a year.

Between coupon dates

- Accrued interest = coupon per period × t ÷ T (t = days since last coupon, T = days in the period).
- Full price = price on last coupon date × (1 + r)^(t ÷ T), where r is the yield per period.
- Flat price = full price accrued interest.
- 30/360: 30-day months, 360-day year, 180 days in a semiannual period.
- Actual/actual: real calendar days for both t and T.
- A yield change on the same settlement date moves the flat price only. Accrued interest stays the same.

Duration and convexity

- Modified duration = Macaulay duration ÷ (1 + yield per period).
- Price change (%) (modified duration × y) + ½× convexity × $(y)^2$.
- y as a decimal: 1 bp = 0.0001, 25 bp = 0.0025, 100 bp = 0.01.
- Approximate modified duration = (PV PV+) ÷ (2 × y × PV0).
- Money duration = modified duration × full market value of the position.
- Doubling the shock doubles the duration effect and quadruples the convexity effect.

Spot rates, forwards and spreads

- Price from spot rates: discount each cash flow at the spot rate for its own maturity.
- 1y1y forward = $(1 + 2y \text{ spot})^2$ ÷ (1 + 1y spot) 1.
- G-spread = bond yield government bond yield.
- I-spread = bond yield swap rate.
- Z-spread = constant spread added to every spot rate that matches the price.
- OAS = Z-spread value of the embedded option.

BA II Plus set-up

Task	Keys
Set P/Y to 1	[2nd] [I/Y], 1, [ENTER], [2nd] [CPT]
Clear TVM	[2nd] [FV]
Price a bond	N, I/Y, PMT, FV, then [CPT] [PV]
Find yield	N, PV (negative), PMT, FV, then [CPT] [I/Y]
Fractional power	1.02 [y^x] (1 ÷ 3) [=]

Trap checklist

- Did I halve the coupon and yield and double N for semiannual bonds?
- Is PMT from the coupon and I/Y from the yield?
- Did I apply duration to the full price, not the flat price?
- Did I convert Macaulay duration to modified duration?
- Is the yield change a decimal (basis points ÷ 10,000)?
- Does the sign make sense: yields up, price down?
- Did I use the same day count for accrued interest and discounting?

Formulas follow the CFA Program Level I fixed income topic area. Check the current curriculum before your exam.