CredGuild

FORMULA SHEET

CFA® Program Level I

Portfolio Construction Formula Sheet

2027 curriculum · 6 readings · 26 formulas

credguild.com

Version v2027.3 · October 2026

ABOUT THIS EDITION

CredGuild · CFA® Program Level I · Portfolio Construction Formula Sheet
2027 curriculum · Version v2027.3 · Generated October 6, 2026

SHARING

© 2026 CredGuild. You may share this file freely, complete and unchanged. Do not sell it, and do not republish it with the CredGuild name, links or watermark removed.

USING THIS BOOK

This sheet is a revision aid. Use it alongside the notes and the CFA Institute curriculum. The latest version is free at credguild.com.

FOUND A MISTAKE?

Email hello@credguild.com, or use "Report an issue with this question" under any question on credguild.com.

TRADEMARKS

CFA Institute does not endorse, promote, review, or warrant the accuracy or quality of the products or services offered by CredGuild. CFA®, Chartered Financial Analyst® and CFA Institute® are trademarks owned by CFA Institute.

Contents

Portfolio Construction **1**

87. Portfolio Risk and Return: Part I 1

88. Portfolio Risk and Return: Part II 1

89. Portfolio Management: An Overview 2

Keep going at credguild.com **3**

Every formula in the CredGuild notes for the 2027 CFA® Program Level I curriculum, Portfolio Construction, reading by reading, each with what it is for. Worked numbers are left out. Use it for a last check of the equations; the notes explain where each one comes from.

To learn a reading in full, open its notes at credguild.com. This sheet is free to print and share: credguild.com/cfa/level-1/formula-sheet/

CFA® PROGRAM LEVEL I · FORMULA SHEET

Portfolio Construction

Exam weight 8–12% · 3 readings · 26 formulas

87 Portfolio Risk and Return: Part I

Utility function	$U = E(r) - \frac{1}{2}A\sigma^2$
Adding the risk-free asset: the capital allocation line	$E(R_p) = w\,E(R_{risky}) + (1-w)R_f$ $\sigma_p = w\,\sigma_{risky}$
One asset	$\sigma^2 = \frac{\sum_{t=1}^{T}(R_t-\mu)^2}{T}$ (population) $s^2 = \frac{\sum_{t=1}^{T}(R_t-\bar{R})^2}{T-1}$ (sample)
Two assets: covariance	$\text{Cov}_{1,2} = \frac{\sum_{t=1}^{T}(R_{1,t}-\bar{R}_1)(R_{2,t}-\bar{R}_2)}{T-1}$
Correlation	$\rho_{1,2} = \frac{\text{Cov}_{1,2}}{\sigma_1\sigma_2}$ $\text{Cov}_{1,2} = \rho_{1,2}\,\sigma_1\,\sigma_2$
Portfolio standard deviation	$E(R_p) = w_1E(R_1) + w_2E(R_2)$ $\sigma_p^2 = w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2\text{Cov}_{1,2} = w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2\rho_{1,2}\sigma_1\sigma_2$ $\sigma_p = \sqrt{\sigma_p^2}$
Investing in assets that are less than perfectly correlated	$\sigma_p^2 = (w_1\sigma_1 + w_2\sigma_2)^2 \quad \Rightarrow \quad \sigma_p = w_1\sigma_1 + w_2\sigma_2$ $w_1 = \frac{\sigma_2}{\sigma_1+\sigma_2}$

88 Portfolio Risk and Return: Part II

Adding a risk-free asset to a risky portfolio	$E(R_C) = w\,E(R_P) + (1-w)\,R_f$ $\sigma_C = w\,\sigma_P$
The capital allocation line (CAL) and the capital market line (CML)	$E(R_P) = R_f + \left[\frac{E(R_M)-R_f}{\sigma_M}\right]\sigma_P$

credguild.com

Systematic and unsystematic risk	$\text{total risk} = \text{systematic risk} + \text{unsystematic risk}$
Return generating models and the market model	$E(R_i) - R_f = \beta_{i,1}E(F_1) + \beta_{i,2}E(F_2) + \cdots + \beta_{i,k}E(F_k)$ $R_i = \alpha_i + \beta_i R_m + e_i$
Calculating and interpreting beta	$\beta_i = \dfrac{Cov(R_i, R_m)}{\sigma_m^2} = \dfrac{\rho_{i,m}\,\sigma_i\,\sigma_m}{\sigma_m^2} = \rho_{i,m}\dfrac{\sigma_i}{\sigma_m}$
The CAPM, its assumptions, and the security market line (SML)	$E(R_i) = R_f + \beta_i\,[E(R_m) - R_f]$ $\beta_i = \dfrac{Cov(R_i, R_m)}{\sigma_m^2}$
Applying the CAPM and the SML: finding mispriced securities	$\text{forecast return} = \dfrac{P_1 - P_0 + D_1}{P_0}$ $\text{required return} = R_f + \beta[E(R_m) - R_f]$

89 Portfolio Management: An Overview

Measuring the benefit: the diversification ratio	$\text{Diversification ratio} = \dfrac{\sigma \text{ of an equally weighted portfolio of the } n \text{ securities}}{\text{average } \sigma \text{ of the } n \text{ individual securities}}$
Mutual funds and other pooled investments	$NAV = \dfrac{\text{fund assets} - \text{fund liabilities}}{\text{shares outstanding}}$

credguild.com

Keep going at credguild.com

The sheet is for revision. These are free on the site and do what a PDF cannot:

- **Diagnostic test:** 36 questions weighted like the exam, a score in each topic and the topics to start with. credguild.com/cfa/level-1/diagnostic/
- **Practice questions:** 398 free questions with full explanations, scored as you answer. A free account answers any question in the bank, up to 50 new questions a day. credguild.com/cfa/level-1/practice/
- **Notes:** every reading of the 2027 curriculum, with worked examples and exam traps, on the site and as a PDF. credguild.com/cfa/level-1/notes/
- **Study plan:** pick your exam window and weekly hours and get a week-by-week schedule. credguild.com/cfa/level-1/plan/
- **Mock exam:** 180 questions in two sessions, on the 2027 topic weights; the first one is free with an account. credguild.com/cfa/level-1/mock/
- **Cheat sheet and formula sheet:** every reading's bottom line and every formula, by topic. credguild.com/cfa/level-1/cheat-sheet/

Found a mistake? Email hello@credguild.com.

credguild.com