

Review Sheet for Background Concepts Pre-Exam

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The pre-exam on background concepts will consist of 50 multiple-choice/true-false questions. The questions will be evenly distributed to test both your understanding of these concepts and your ability to perform the required calculations. The time value of money practice problems should give you examples of each of the calculations discussed below.

- 1) Future Value and Compounding
 - a) Be able to calculate the future value of a lump sum.
 - b) Know how different compounding periods affect future value calculations.
 - c) Be able to calculate the number of periods it takes for a lump sum to grow to a specified amount.
 - d) Know how to calculate the size of periodic payment necessary to grow to a specified amount over a given period.
- 2) Present Value and Discounting
 - a) Understand the relationship between discounting and compounding.
 - b) Know how to calculate the present value of a lump sum received in the future.
 - c) Know how to calculate the present value of an (ordinary) annuity.
 - d) Know how to calculate the required payment (annuity) to repay a loan.
 - e) Know how to calculate the number of periods it will take to repay a loan (annuity).
 - f) Know how to calculate the implicit interest rate on loan.
 - g) Know how to adjust all of the calculations above to account for different compounding periods.
 - h) Be able to calculate the present value of an irregular cash flow.
- 3) Perpetuities
 - a) Understand the intuition behind a perpetuity and its valuation.
 - b) Know how to calculate the present value of a perpetuity.
 - c) Know how to calculate the present value of a growing perpetuity.
 - d) Be able to estimate the implied growth rate of income from a growing perpetuity given its value and a known discount rate.
- 4) NPV and IRR
 - a) Be able to calculate the most you should pay for an investment with regular cash flows (annuity).
 - b) Be able to calculate the most you should pay for an investment with irregular cash flows.
 - c) Know how to calculate the NPV and IRR of an annuity investment
 - d) Be able to calculate the NPV and IRR of investments with irregular cash flows.

- e) Given a required discount rate, know how to decide whether an investment is worthwhile using the NPV and IRR rules.
 - f) Understand the relationship between NPV and IRR. If the NPV is positive, what does that mean about the IRR?
 - g) What are the limitations of the IRR? How do you decide between two investments when the NPV and IRR rules give you different recommendations?
- 5) Other Problems
- a) Know how to do time value of money calculations for investments that contain multiple types of these basic cash flows.
 - b) Be able to solve basic algebraic expressions and interpret the results.