Finance Quantitative

Calcul Actuariel

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Time Value of Money (Van Horne)

Consider the following cash flow streams:

Year	1	2	3	4	5
W	100	200	200	300	300
X	600				
Y					1200
Z	200		500		300

1. Compute the future value of each stream at a compounded rate of 10%.
2. Compute the present value of each stream at a compounded rate of 14%.

Comparing contracts (Van Horne)

On a contract, you have a choice of receiving 25,000 €in six years or 50,000 €in 12 years. At which compound annual rate would you be indifferent between the two options?

Mortgage (Van Horne)

You obtain a 10-year, 50,000 € loan. The compound annual interest rate is 8%. The loan is paid back by 10 annual installments of 7,451.47 €.

1. How much of the first year payment is principal?
2. How much total interest will be paid over the life of the loan?

Savings Plan

You need to have 50,000 € at the end of ten years. To accumulate this sum, you plan to save a certain amount at the end of each year, for the next ten years. The bank pays 8% interest, compounded annually. How much should you save each year?

Mortgage Paydown

You have borrowed 14,300 € at a compound annual interest rate of 15%. You can make annual payments of 3,000 € on your loan. How long will it be before your loan is completely paid down?