Financial Maths Cheat Sheet

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	Capitalization		Discount	
	$I_{0,n} = C_n - C_0$		$D_{0,n} = C_n - C_0$	
Simple	Simple Capitalization Law: $C_n = C_0 \cdot (1 + i \cdot n)$	$i_m = \frac{i}{m}$ $i = i_m \cdot m$	Simple Commercial Discount Law: $C_0 = C_n \cdot (1 - d \cdot n)$	$d_m = \frac{d}{m}$
			Simple Rational Discount Law: $C_0 = \frac{C_n}{(1 + i \cdot n)}$	
Compound	Compound Capitalization Law: $C_n = C_0 \cdot (1 + i)^n$	$i_m = (1 + i)^{1/m} - 1$ $i = (i_m + 1)^m - 1$	Compound Discount Law: $C_0 = C_n \cdot (1 - d)^n$	
Fractional	$i_m = \frac{j_m}{m}$			

$m =$ subperiods

$j_m =$ annual nominal interest rate that pay's at m

	Simple Capitalization Laws	Compound Capitalization Laws
End capital, C_n	$C_n = C_0 \cdot (1 + i \cdot n)$	$C_n = C_0 \cdot (1 + i)^n$
Initial capital, C_0	$C_0 = \frac{C_n}{(1 + i \cdot n)}$	$C_0 = \frac{C_n}{(1 + i)^n}$
Interest rate, i	$i = \frac{\left(\frac{C_n}{C_0} - 1\right)}{n}$	$i = \left(\frac{C_n}{C_0}\right)^{1/n} - 1$
Periods, n	$n = \frac{\left(\frac{C_n}{C_0} - 1\right)}{i}$	$n = \frac{\log\left(\frac{C_n}{C_0}\right)}{\log(1 + i)}$

$$a^x = b \to x = \frac{\log b}{\log a} = \log_a b$$

		Unitary	Geometric progression
Temporal	Postpayable	$\mathrm{a}_{n\rceil i} = \dfrac{1-(1+i)^{-n}}{i}$	$\mathrm{A}(C;q)_{n\rceil i} = \begin{cases} C \cdot \dfrac{1-\left(\dfrac{q}{1+i}\right)^n}{1+i-q} & \text{if} \quad q \neq 1+i \\ \dfrac{C \cdot n}{1+i} & \text{if} \quad q = 1+i \end{cases}$
		$\mathrm{s}_{n\rceil i} = \mathrm{a}_{n\rceil i} \cdot (1+i)^n$	$\mathrm{S}(C;q)_{n\rceil i} = \mathrm{A}(C;q)_{n\rceil i} \cdot (1+i)^n$
	Prepayable	$\ddot{\mathrm{a}}_{n\rceil i} = (1+i) \cdot \mathrm{a}_{n\rceil i}$	$\ddot{\mathrm{A}}(C;q)_{n\rceil i} = (1+i) \cdot \mathrm{A}(C;q)_{n\rceil i}$
		$\ddot{\mathrm{s}}_{n\rceil i} = (1+i) \cdot \mathrm{s}_{n\rceil i}$	$\ddot{\mathrm{S}}(C;q)_{n\rceil i} = (1+i) \cdot \mathrm{S}(C;q)_{n\rceil i}$
Perpetual	Postpayable	$\ddot{\mathrm{a}}_{\infty\rceil i} = \dfrac{1}{i}$	$\mathrm{A}(C;q)_{\infty\rceil i} = \begin{cases} \dfrac{C}{1+i-q} & \text{if} \quad q < 1+i \\ \infty & \text{if} \quad q \geq 1+i \end{cases}$
	Prepayable	$\ddot{\mathrm{a}}_{\infty\rceil i} = (1+i) \cdot \mathrm{a}_{\infty\rceil i}$	$\ddot{\mathrm{A}}(C;q)_{\infty\rceil i} = (1+i) \cdot \mathrm{A}(C;q)_{\infty\rceil i}$

discountedpresentvalue $\rightarrow V_0 = C \cdot \mathrm{a}$

capitalizedpresentvalue $\rightarrow V_n = C \cdot \mathrm{s}$

Amortization table

Period	Interest rate	Repayment term	Interests fee	Amortization fee	Live capital	Amortized capital
0	-	-	-	-	C_0	-
t_1	i_1	a_1				
t_2	i_2	a_2				
$\dots$	$\dots$	$\dots$				
t_x	i_x	a_x				
$\dots$	$\dots$	$\dots$				
t_n	i_n	a_n				