Formulae for calculation of interest, loan repayments and deposits

Fotmula for calculation of compounded interest on deposit

D = initial deposit (D_0)
r = interest rate, if floating $\mathbf{r_n}$ is the interest rate in year **n**
n = year

$\mathbf{D_n = D.(1+r)^n}$ at fixed interest rate

$\mathbf{D_n = D.\ (1+r_1).(1+r_2).(1+r_3)\ldots.\ .(1+r_n)}$ at floating interest rate

Formula for calculation of standard loan repayments of self amortising loan

L = loan amount
r = interest rate, if floating $\mathbf{r_n}$ is the interest rate in year **n**
n = tenor of the loan (if the repayment period is 6 months, or 3 months, the number of the repayment periods equals the tenor multiplied by 2, or respectively 4, and the interest rate is the interest rate for that period – 6 or 3 months interest – i.e. annual rate divided by 2 or 4 respectively)
q = current period

end year 1	end year 2	end year 3	……	end year q
$\mathbf{L/n + L.r_1}$	$\mathbf{L/n+ ((L-(L.1)/n).r_2}$	$\mathbf{L/n+ ((L-(L.2)/n).r_3}$		$\mathbf{L/n+ (((L-(L.(q-1))/n).r_q}$

(where L/n is repayment of the principal on equal portions and $L_q.r_q$ is repayment of the interest for the period)

Formula for calculation of interest rate payments on self amortising loan (equal repayments of principal)

L = loan amount
r = interest rate
n = tenor of the loan
q = current period

end year 1	end year 2	end year 3	……	end year q
$\mathbf{L.r_1}$	$\mathbf{(L-L.1/n).r_2}$	$\mathbf{(L-L.2/n).r_3}$		$\mathbf{(L-L.(q-1)/n).r_q}$

Total compounded interest payable over the life of the loan = $\mathbf{((L.r.(n+1))/2}$

Formula for repayment of a loan on equal repayments

L = loan amount
r = interest rate
n = tenor of the loan (or repayment periods)

$\mathbf{Repayment\ per\ period = L.(r(1+r)^n)/((1+r)^n -1)}$