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# Important Formulas of Mortgage and Real Estate

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# List of 15 Important Formulas of Mortgage and Real Estate

## Important Formulas of Mortgage and Real Estate

### 1) 70 Percent Rule

$$fx \quad BP_{\max} = (ARV \cdot 0.7) - ERC$$

[Open Calculator !\[\]\(a870788d6ed9b8fd294b7654a8c8526b\_img.jpg\)](#)

$$ex \quad 43500 = (70000 \cdot 0.7) - 5500$$

### 2) Break Even Ratio

$$fx \quad BER = \frac{DSC + OE}{GOI}$$

[Open Calculator !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d\_img.jpg\)](#)

$$ex \quad 1.356522 = \frac{7600 + 8000}{11500}$$

### 3) Capitalisation Rate

$$fx \quad r_{\text{cap}} = \left( \frac{NOI}{CMV} \right) \cdot 100$$

[Open Calculator !\[\]\(f60b7a900783ac3fd531bfd9c111be6d\_img.jpg\)](#)

$$ex \quad 12.93478 = \left( \frac{59500}{460000} \right) \cdot 100$$



4) Commission Value 

$$fx \quad CV = CR \cdot SP$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235\_img.jpg\)](#)

$$ex \quad 125000 = 0.05 \cdot 2500000$$

5) Debt Ratio 

$$fx \quad DR = \frac{TD}{TA}$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0\_img.jpg\)](#)

$$ex \quad 25000 = \frac{2500000000}{100000}$$

6) Debt Service Coverage Ratio using ADS 

$$fx \quad DSCR = NOI - ADS$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f\_img.jpg\)](#)

$$ex \quad 5 = 59500 - 59495$$

7) Floor Area Ratio 

$$fx \quad FAR = \frac{GFA}{TLS}$$

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754\_img.jpg\)](#)

$$ex \quad 8.571429 = \frac{12000}{1400}$$



8) Gross Rent Multiplier 

$$\text{fx GRM} = \frac{\text{PV}}{\text{GRI}}$$

Open Calculator 

$$\text{ex } 17.99914 = \frac{418120}{23230}$$

9) Land to Building Ratio 

$$\text{fx LTB} = \frac{\text{Ar}_L}{\text{Ar}_B}$$

Open Calculator 

$$\text{ex } 1.523333 = \frac{457000\text{m}^2}{300000\text{m}^2}$$

10) Loan to Value Ratio 

$$\text{fx LTV}\% = \left( \frac{\text{MA}}{\text{APV}} \right) \cdot 100$$

Open Calculator 

$$\text{ex } 74.28571 = \left( \frac{26000}{35000} \right) \cdot 100$$

11) Monthly Mortgage Payment 

$$\text{fx } p = \frac{\text{MA} \cdot R \cdot (1 + R)^n}{(1 + R)^n - 1}$$

Open Calculator 

$$\text{ex } 156000 = \frac{26000 \cdot 6 \cdot (1 + 6)^{10}}{(1 + 6)^{10} - 1}$$



12) Price per Square Foot 

$$fx \quad P_{sqf} = \frac{PSP}{T_{sqf}}$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a\_img.jpg\)](#)

$$ex \quad 7500 = \frac{450000}{60}$$

13) Price to Rent Ratio 

$$fx \quad PTRR = \frac{MHP}{MAR}$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021\_img.jpg\)](#)

$$ex \quad 16.66667 = \frac{2700000}{162000}$$

14) Rental Yield 

$$fx \quad RY = \left( \frac{ARI}{PV} \right) \cdot 100$$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd\_img.jpg\)](#)

$$ex \quad 11.95829 = \left( \frac{50000}{418120} \right) \cdot 100$$

15) Return on Equity 

$$fx \quad ROE = \frac{AR}{TE}$$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80\_img.jpg\)](#)

$$ex \quad 0.372979 = \frac{87650}{235000}$$



## Variables Used

- **ADS** Annual Debt Service
- **APV** Appraised Property Value
- **AR** Annual Return
- **Ar<sub>B</sub>** Area of Building (*Square Meter*)
- **Ar<sub>L</sub>** Area of Land (*Square Meter*)
- **ARI** Annual Rental Income
- **ARV** After Repair Value
- **BER** Break Even Ratio
- **BP<sub>max</sub>** Maximum Buying Price
- **CMV** Current Market Value
- **CR** Commission Rate
- **CV** Commission Value
- **DR** Debt Ratio
- **DSC** Debt Servicing Costs
- **DSCR** Debt Service Coverage Ratio
- **ERC** Estimated Repair Costs
- **FAR** Floor Area Ratio
- **GFA** Gross Floor Area
- **GOI** Gross Operating Income
- **GRI** Potential Gross Rental Income
- **GRM** Gross Rent Multiplier
- **LTB** Land to Building Ratio
- **LTV%** Loan to Value Ratio



- **MA** Mortgage Amount
- **MAR** Median Annual Rent
- **MHP** Median Home Price
- **n** Compounding Periods
- **NOI** Net Operating Income
- **OE** Operating Expenses
- **p** Monthly Payment
- **P<sub>sqf</sub>** Price per Square Foot
- **PSP** Property Sale Price
- **PTRR** Price to Rent Ratio
- **PV** Property Value
- **R** Interest Rate
- **r<sub>cap</sub>** Capitalisation Rate
- **ROE** Return on Equity
- **RY** Rental Yield
- **SP** Final Sale Price
- **T<sub>sqf</sub>** Total Square Footage
- **TA** Total Assets
- **TD** Total Debt
- **TE** Total Equity
- **TLS** Total Lot Size



## Constants, Functions, Measurements used

- **Measurement: Area** in Square Meter ( $m^2$ )  
*Area Unit Conversion* 



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