Math Formulas Made Easy

Gold Coast School of Real Estate

Ch. 10

Determining Acreage:

How many acres are in a tract identified as the N ½, of the SW ¼, of the N ½?

640 ÷ 2 ÷ 4 ÷ 2 = 40 acres

Ch. 11

Net Listing:

A seller wants to net a minimum of 280,000 from the sale of her home. If closing costs are expected to be $4,000 and her broker charges a 6% commission, her home must sell for:

$280,000 + $4,000 ÷ 94% (100%-6%) = $302,127.66

Ch. 11

Calculating Commission:

Sale Price x Commission %

Example: A sales associate sold a property for $200,000 at a 6% commission rate. Assuming the associate is paid a 70% split; how much will the broker retain?

$200,000 x 6% x 30% (100-70%) = $3,600

Ch. 12

Housing Expense Ratio:

$$\frac{\text{Monthly Housing Expense (PITI)*}}{\text{Gross Monthly Income}}$$

–28% for conventional
–31% for FHA
–None for VA

*PITI = principal, interest, taxes & insurance

Ch. 12

Total Obligations Ratio:

$$\frac{\text{PITI + All other debts}}{\text{Gross Monthly Income}}$$

36% for conventional
43% for FHA
41% for VA

Ch. 12

Discount Points:

A buyer paid 2 discount points and received a loan for 7%.
What was the lenders effective yield?

7.0%
+1/8 -- 1 point
+1/8 – 1 point
$7\ ^{2}/_{8}$ or 7.25% APR

Ch. 12

Loan to Value Ratio:

Shows the loan as a % of value.
A buyer purchases a property for $300,000 and makes a $60,000 down payment.
What is the loan to value?
300,000-60,000 = 240,000 loan

$$\frac{\text{Loan}}{\text{Value}} \quad \frac{240{,}000}{300{,}000} = 80\%$$

Ch. 13

PIP Sandwich:

($$) (Loan) (%) (years)

I = P x R x T

Interest = Principal X Rate% x 1/12*

	Months 1	2
Balance		
Payment		
Interest		
Principal		
Balance		

*either multiply by 1/12 or divide by 12

Ch. 14

	Paid
Mortgage Interest	Arrears
Taxes	Arrears
Rent	Advance

Debit – expense to seller or buyer
Credit – money received by seller or buyer

Ch. 14 +

Transfer Tax on DEED:

(Typically paid by Seller)

Sale Price ÷ 100 x .$.70 = $$$
(.60 in Dade County)

Ch. 14

Transfer Tax on NOTE:

(NEW & ASSUMED paid by Buyer)

Loan Amount ÷ 100 x $.35 = $$$

Ch. 14

Intangible Tax on MORTGAGE:

(NEW LOANS ONLY - Paid by Buyer)

.002 x New Loan = $$$

Ch. 14

Calculating Prorations:

Seller* | Buyer*

Closing Date

*days used or unused – 30, 365 or 360 days

Ch. 16

Sales Comparison Approach:

Residential

Locate comparable properties; adjust the comparable (never the subject).
If comparable is inferior; add, if comparable is better; subtract.
Remember: (CBS/CIA)

Ch. 16

Cost-Depreciation Approach:

1. Estimate today's cost to build
2. Estimate accrued depreciation (cost ÷ economic life x age)
3. Subtract #2 from #1. Result = depreciated value of improvements
4. Estimate value of vacant land
5. Add #3 and #4. Result = Property Value

Math Formulas Made Easy

Ch. 16

Income Approach:

PGI	Potential gross income
- V&C	Vacancies and collections
EGI	Effective gross income
- OE	Operating expenses*
NOI	Net operating income

*operating expenses include, fixed, variable and reserves for replacements

Ch. 16

Income Approach: Determining Value

Income (NOI) / Rate x Value $\quad \frac{I}{R \times V}$

$\frac{\$100,000}{10\%}$ =$1,000,000 $\quad \frac{\$100,000}{15\%}$ = $666,667

When the rate goes up, the value goes down.
When the value goes up, the rate goes down.

Ch. 16

Final Reconciliation: (Weighted Average)

Comps	$200,000 X 70% =	140,000
Cost-Dep.	$210,000 X 20% =	42,000
Income Cap.	$180,000 X 10% =	18,000
	100% =	$200,000

Weighted Average: $200,000

Simple Average:
$200,000 + $210,000 + $180,000 ÷ 3 =
$196,667

Ch. 16

Gross Multiplier Technique:

GRM $\quad \frac{\text{Sales Price}}{\text{Gross Monthly Rent}}$

Multiply the subject property monthly rent by the GRM to estimate value

GIM $\quad \frac{\text{Sales Price}}{\text{Gross Annual Income}}$

Multiply the subject property annual income by the GIM to estimate value

Ch. 17

Calculate Payment:

Loan amount x Monthly loan constant = Monthly Payment

Example:
$100,000 x .0087757 = $877.57

Ch. 17

Operating Expense Ratio:

$\frac{\text{Operating Expenses}}{\text{Effective Gross Income}}$

Provides for comparison with similar properties.

Ch. 17

Calculating Profit or Loss Percentage

A property was purchased for $125,000 and later sold for $142,000. What was the percentage of profit?

Made 17,000* / **Paid** 125,000 = 13.6%

*(142,000 – 125,000)

Ch. 17

Reconstructed Operating Statement

PGI	Potential gross income
-V&C	Vacancies and collections
EGI	Effective gross income
-OE	Operating expenses*
NOI	Net operating income
-ADS	Annual debt service
BTCF	Before tax cash flow (CTO)
-INCOME TAXES	(BTCF x tax rate)
ATCF	After tax cash flow

Ch. 17

Straight Line Depreciation for Investment Properties

27.5 years –residential income producing property

39 years – non-residential income producing property

Ch. 18

Calculating Property Taxes $50,000 or Less

1) Assessed Value x Tax Rate = Tax Liability

$25,000 Homestead Exemption

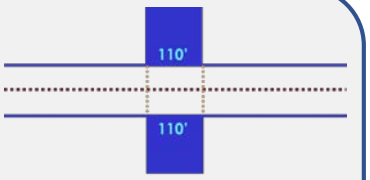
2) Basic Exemption (25,000) x Tax rate = (city/county/school) Total Savings

3) Tax liability (1) minus total savings (2) = Property Taxes

Ch. 18

Special Assessment

Calculate the cost to a homeowner if the county paid for 30% of a $10 per lineal foot special assessment:



110' X $10 = $1,100
$1,100 X 70% = $770
$\frac{\$770}{2}$ = $385

Ch. **18**

Calculating Property Taxes $50,001 to $75,000

1) Assessed Value x Tax Rate = Tax Liability

$25,000 Basic Exemption
2nd Exemption over $50,000

2) Basic Exemption (25,000) x Tax Rate (city/county/school)

= Savings from 1st 25,000

3) Assessed Value (over $50,000) x Tax Rate (city/county)

= Savings from 2nd 25,000

4) Tax liability (1) minus total savings (2&3)

= Property Taxes

Ch. 18

Calculating Property Taxes $75,001 and Up

1) Assessed Value x Tax Rate = Tax Liability

$50,000 Homestead Exemption

2) Basic Exemption (25,000) x Tax Rate (city/county/school)

= Savings from 1st 25,000

3) 2nd Exemption ($25,000) x Tax Rate (city/county)

= Savings from 2nd 25,000

4) Tax liability (1) minus total savings (2&3)

= Property Taxes

Gold Coast School of Real Estate

Math Formulas Made Easy

Common Measurements

- One acre contains 43,560 sq. ft.
- One acre that is a perfect square measures 208.710 ft x 208.710 ft.
- One section contains 640 acres.
- One section is one mile square and contains one square mile.
- One mile is 5,280 ft.
- One township is 6 miles square, contains 36 square miles, and 36 sections
- A check is 24 miles square and contains 16 townships and 576 sections.