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Basic Appraisal Procedures

Solutions Booklet

PC101GRSBG

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II. Step 1: Identification of the Problem

A. Identify the client and other intended users.

2. **Identification of other intended users** goes beyond simply recognizing who they are, although that is certainly an important first step. So let's see if we can properly recognize the client and other intended users in a typical assignment.

Example. Identify the role of the following parties in an FHA assignment for a bank with the intended use of assisting the bank in a lending decision:

- Bank and its representatives — *Client and other intended user*
- HUD/FHA — *Intended user*
- Appraisal management company (AMC) — *May or may not be an other intended user*
- Borrower — *Not the client or other intended user*

Each assignment type in the previous example presents unique issues in properly identifying the client and other intended users.

Review Quiz

Fill in the missing data to the following questions.

1. A tax appeal assignment will commonly involve a *retrospective* effective date.
2. Intended use affects both appraisal *development* and reporting.
3. A systematic procedure appraisers can employ to provide the answer to a client's question about the value of a property is called the *valuation process*.
4. In *highest and best use* analysis, the appraiser analyzes the ideal improvement for the property.
5. The relevant characteristics of a property are part of *identifying* the problem.

Check the appropriate box for each question.	**TRUE**	**FALSE**
6. Scope of work is the type and extent of research and analyses in an appraisal or appraisal review assignment.	☒	☐
7. Identifying relevant characteristics of the subject property is specific data rather than general data.	☒	☐
8. The client and intended user are never the same.	☐	☒
9. A prospective appraisal has an effective date contemporaneous with the date of the report.	☐	☒
10. Developing an opinion of insurable value can be identified as the purpose of an appraisal assignment.	☒	☐

I. Step 5: Land Value Opinion

C. The appraiser can choose among **six procedures** for analyzing land (improved or unimproved) or site value. Four of the procedures require improved sales.

1. *Sales comparison*

   a. The appraiser searches for sales of similar **vacant** parcels.

   b. Each selected sale is analyzed and compared to the subject parcel and then adjusted for salient differences.

   c. Sales comparison is the most common and preferred method of valuing land, assuming sufficient data is available.

Exercise

When appraisers collect data, it needs to be organized to further the analytical process. For example, if you uncovered the following vacant land sales in an appraisal assignment, you would typically organize the data for further analysis.

Here's what you find in the market.

Sale Price	Property Size
$90,000	20 acres
$81,600	17 acres
$103,600	28 acres
$105,000	30 acres
$75,000	15 acres
$94,600	22 acres

Here's the same data organized for further analysis.

#	Size	Sale Price	Price/Acre
1	15 acres	$75,000	$5,000
2	17 acres	$81,600	$4,800
3	20 acres	$90,000	$4,500
4	22 acres	$94,600	$4,300
5	28 acres	$103,600	$3,700
6	30 acres	$105,000	$3,500

Next step: Once the initial data is organized, it is ready for further analysis. What should an appraiser do to further analyze the above market data?

If the subject is 24 acres, what is the preliminary value indication based on the data?

Guidance: *The pattern shows that pricing changes by $100 per acre, so interpolate the price per acre for the sales involving 22 and 28 acres. The result is $4,100 per acre × 24 acres = $98,400.*

Six procedures, *cont.*

2. *Extraction*

   a. When vacant sales are unavailable, the appraiser can analyze improved property sales similar to the subject property in relevant land characteristics.

   b. The appraiser forms an opinion of the improved land value by subtracting the contributory value (that is, depreciated cost) of the improvements from the sale price.

	Sale Price
(Minus) –	*Contributory Value of the Improvements*
=	*Extracted Value of Land*

   c. When this procedure is applied, it can provide reliable data to assist the appraiser in forming a value opinion of the improved land. However, ample sales should be used, and the appraiser must be experienced in the use of cost and depreciation methodology.

   d. This procedure is most applicable when improvements can be reliably valued, such as when the improvements are either new or very old (that is, nearing the point when the improvements will be demolished).

3. *Allocation*

   a. As the name of this procedure implies, the appraiser analyzes improved property sales and allocates prices paid between the improved land and total property, usually on a ratio basis.

   b. The process can be based on vacant improved land sales that are compared to improved property sales, or the appraiser can use an extractive process by isolating the depreciated cost of improvements from the improved land.

      - This procedure is rarely used as a primary improved land valuation technique, but it has secondary applications in the analysis of subdivision lot sales when there is a uniform ratio of land value to total property value.

      - The procedure also might be useful in tax assessment studies.

II. Step 6: Application of the Three Approaches

B. Sales comparison approach

2. **Example.** Let's say an appraiser's market research indicates the following:

   a. Improved lots in Heritage Estates are priced at $2.00 per square foot.

   b. Improved lots with river views are $15,000 and are superior to improved lots with pond views.

   c. House size differences are $50 per square foot.

If the subject property and comparable property are alike except for the three items identified in the market grid below, what is the indicated value (that is, the adjusted price) of the subject property?

FEATURE	SUBJECT	COMPARABLE SALE 1	
Sale price	Refinance		*$ 450,000*
VALUE ADJUSTMENTS	DESCRIPTION	DESCRIPTION	+(–) $ Adjustment
Date of sale/time	Current	Current	
Financing	Cash	Cash	
Location	Heritage Estates	Heritage Estates	
Site (lot)	150 ft. × 200 ft.	200 ft. × 200 ft.	*– 20,000*
View	River view	Pond view	*+ 15,000*
Design and appeal	1 story/good	1 story/good	
Quality of construction	Good	Good	
Energy efficient	Good—HERS 56	Good—HERS 56	
Effective age	10 years	10 years	
Gross living area	2,800 sq. ft.	3,000 sq. ft.	*– 10,000*
Net adjustment (total)			*– 15,000*
Adjusted sale price			*$435,000*

Hint: Superior items in the comparable property require a negative adjustment, and inferior items require a positive adjustment.

Subject site = $60,000 (30,000 sq. ft. × $2)

Comparable 1 site = $80,000 (40,000 sq. ft. × $2)

Difference in two site values is the adjustment (–$20,000)

Review Quiz

This quiz covers content in both Parts 1 and 2.

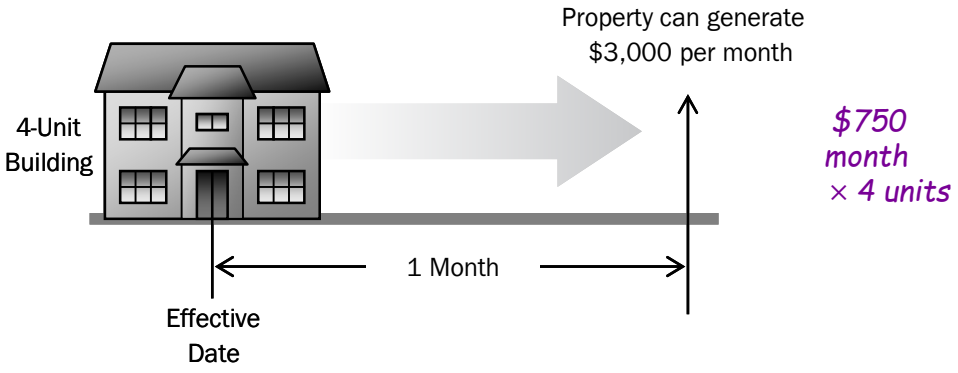
Answer the following true and false questions.

Check the appropriate box for each question.	**TRUE**	**FALSE**
1. A hypothetical condition is contrary to what exists but is supposed for the purpose of analysis.	☒	☐
2. The valuation process provides a framework for deriving an opinion of market value as well as other types of value.	☒	☐
3. The first two assignment elements of problem identification are identifying the real estate and the real property rights to be appraised.	☐	☒
4. Comparable sales having a different highest and best use than the subject should be used if similar in other relevant characteristics.	☐	☒
5. Non-realty components of value are an element of comparison considered within the sales comparison approach.	☒	☐
6. Extraction is an improved land valuation procedure that can be used when a property sells and includes building improvements on the site.	☒	☐
7. The final step in the valuation process is the reconciliation of the value indications.	☐	☒
8. An appraiser must use all three approaches in every assignment.	☐	☒
9. The first step in the cost approach is to value the land as vacant and ready for development to its highest and best use.	☒	☐
10. Purpose defines the intended use of the appraisal.	☐	☒

I. Income Capitalization Approach—Setting the Stage

Example: Direct Capitalization—Residential

Reese is appraising a four-unit residential property that is 5,000 square feet. The appraiser has researched rentals in the area and found that apartment units of similar size and amenities are being leased for $650 to $800 per month. Reese estimates the monthly income for the subject property at $3,000.

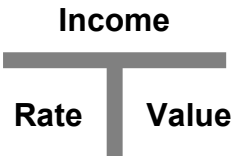


Reese has found several comparable properties in the same market area as the subject property. In this case, the appraiser is going to analyze the gross monthly rent and derive a gross rent multiplier (referred to as *GRM*) from the selected sales. To find the *GRM*, divide the sale price by the total monthly rent for the property.

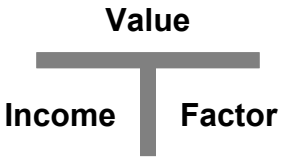
	#	Building Size	Sale Price	Monthly Rent	Gross Rent Multiplier*
Market Data	1	4,800 sq. ft.	$337,500	$2,800	121
	2	5,300 sq. ft.	$372,000	$3,100	120
	3	4,500 sq. ft.	$320,000	$2,600	123
	4	5,500 sq. ft.	$386,000	$3,200	121

*Gross rent multiplier (*GRM*) is typically rounded to the nearest whole number.

In *Basic Appraisal Principles,* we introduced the T-Bar and showed you how it can be used to solve various mathematical problems—particularly problems that involve percents. There are two basic formulas used in direct capitalization, and both formulas will be discussed in greater detail in Part 4.

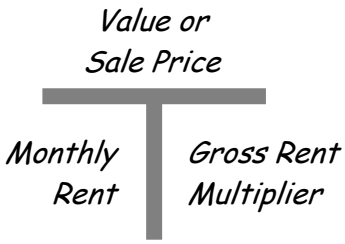


IRV Formula

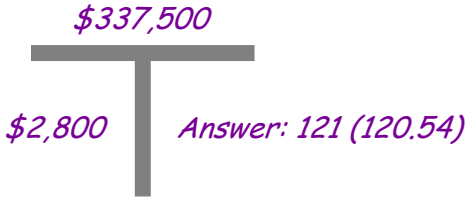


VIF Formula

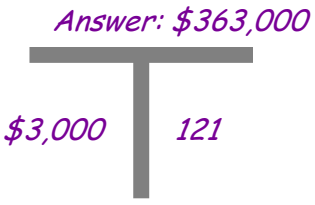
We can use the T-Bar to derive the gross rent multiplier *(GRM)* for each of the four sales using the **VIF formula.**



Calculate the *GRM* for the first sale.



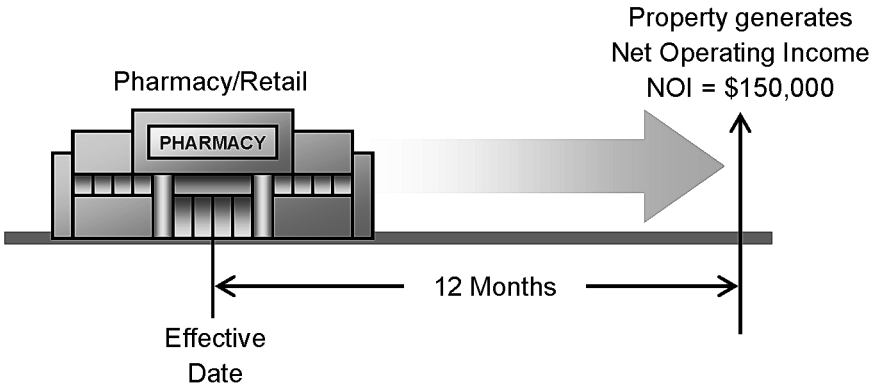
Next, calculate the *GRM* for the remaining three sales. Once you have the indicated *GRM*s for all four sales, you can use them to derive a value for the subject property using the VIF formula. In this example, let's assume Sales 1 and 4 are the most comparable to the subject property. Use the direct capitalization process to derive a value for the property.



Direct capitalization process: Gross rent per month x Gross rent multiplier = Value

Example: Direct Capitalization—Commercial

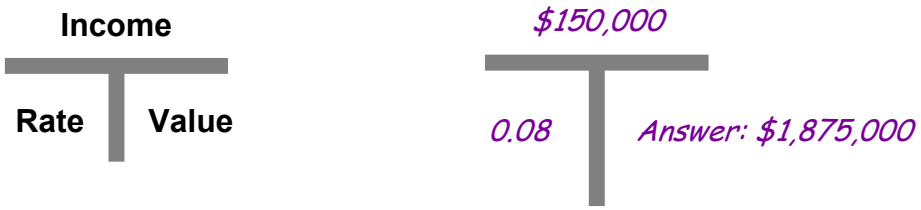
Rodriguez has been asked to perform an appraisal on a pharmacy/convenience store that has a building size of 13,000 square feet. In this type of assignment, the appraiser will research market data to analyze rent and expenses for this kind of retail operation. After restructuring the income and expense based on market evidence, Rodriguez estimates the net operating income (referred to as *NOI*) in the first year at $150,000.



Before Rodriguez can capitalize the income, he must first derive the overall capitalization rate by an acceptable method. In this case, Rodriguez has researched market data and found the following sales of similar class pharmacy stores. To find the indicated capitalization rate for each sale, divide the estimated *NOI* by the sale price.

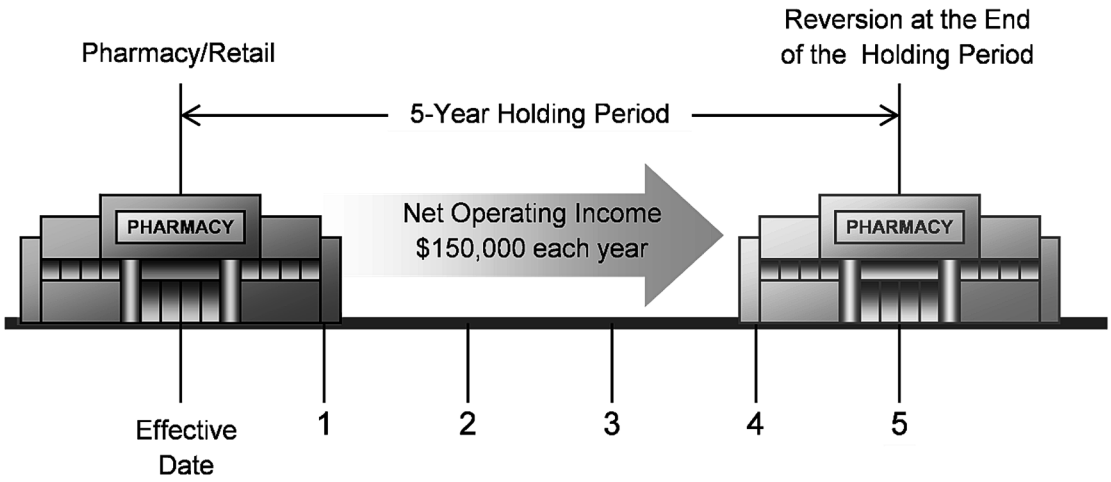
Market Data	#	Building Size	Sale Price	Estimated Annual *NOI*	Indicated Overall Capitalization Rate
	1	13,900 sq. ft.	$2,015,000	$158,000	*0.0784*
	2	12,500 sq. ft.	$1,820,000	$146,000	*0.0802*
	3	14,500 sq. ft.	$2,100,000	$160,000	*0.0762*
	4	11,500 sq. ft.	$1,700,000	$141,000	*0.0829*

Direct capitalization process: Net operating income / Overall capitalization rate = Value. Use the IRV formula to derive the value.



Example: Yield Capitalization—Commercial

Let's stay with the pharmacy/convenience store example, but let's change the problem slightly. Say it is in the last five years of its lease and has a flat rent over the remaining term. To make it easier for our example, we'll keep the *NOI* at $150,000 but we're going to analyze this income over a five-year holding period. In the prior example, we saw that direct capitalization provides a snapshot of the property's value based on the annual net income at a specific moment in time. Yield capitalization is more like a video clip that analyzes income and reversion for the property over the identified holding period.



The first step is to analyze the income stream. The *NOI* is $150,000 each year over the holding period. If the appraiser's research indicates a discount rate of 10%, what is the present value of this income stream based on annual compounding?

HP 12C: 5 [n] 10 [i] 150,000 [CHS] [PMT] [PV] → $568,618.02

***Note:** For the next step, clear the calculator.*

The second step is to analyze the reversion of the property. To do this, the appraiser must estimate what the property would sell for in five years. If the appraiser's research indicates a value of $2.1 million at the end of the holding period, what is the present value of the reversion (assuming we stay with an annual discount rate of 10%)?

HP 12C: [f] [REG] $2,100,000 [CHS] [FV] 5 [n] 10 [i] [PV] → $1,303,934.78

***Note:** A shortcut method is provided in the appendix.*

What is the indicated value of the property?

$568,618.02 + $1,303,934.78 = $1,872,552.80, or rounded to $1,873,000

II. Terms and Definitions

B. The concept of future benefits

1. Future benefits include the right to receive all revenues accruing to the real property over the holding period (the term of ownership) plus the net proceeds from resale or reversion of the property at the termination of the investment.

2. Commonly used measures of future benefits

   a. *Potential gross income (PGI)* *The total* potential *income attributable to property at full occupancy before vacancy and operating expenses are deducted.* (The word *potential* was added to the definition.)

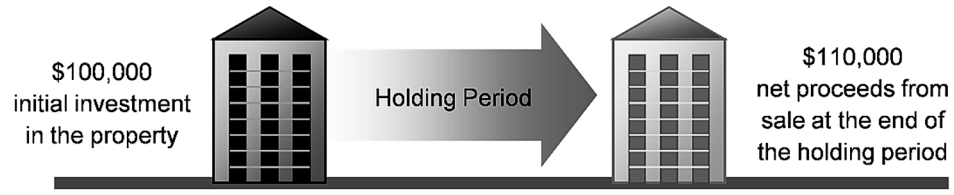
   b. *Effective gross income (EGI)* *The anticipated income from all operations of the real estate after an allowance is made for vacancy and collection losses and an addition is made for any other income.*

   c. *Net operating income (NOI or I_O)* *The actual or anticipated net income that remains after all operating expenses are deducted from effective gross income, but before mortgage debt service and book depreciation are deducted*.

   d. *Pre-tax cash flow (PTCF)* *The portion of net operating income that remains after total mortgage debt service is paid but before income tax on operations is deducted; also called* before-tax cash flow or equity dividend.

   e. *After-tax cash flow (ATCF)* *The portion of pre-tax cash flow that remains after all income tax liabilities have been deducted.*

   f. *Reversion* *A lump-sum benefit that an investor receives or expects to receive upon the termination or sale of an investment.*

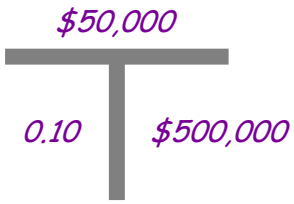


C. Income rates

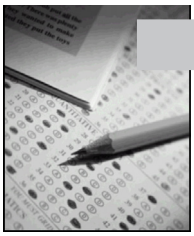
1. An income rate expresses the relationship between one year's income and the corresponding value of a property.

   b. **Overall capitalization rate *(R_O).*** *The relationship between a single year's net operating income expectancy and the total property price or value.*

   Example. A property has a net operating income (*NOI*) of $50,000 and sold for $500,000. What is the overall capitalization rate?



In this example the overall rate is 10%.



Practice Test — Section 1

This multiple-choice test is for your benefit and provides a review of everything covered in section 1. This is a closed-book test. Choose the most correct answer.

1. What does the purpose of an appraisal assignment define?

   A. a summary of the scope of work decision

   B. the definition of the client's problem

   C. the intended use of the assignment

* D. the type and definition of value used in the assignment

2. A value opinion of a proposed office building based on a current effective date would generally require what kind of assignment condition?

* A. a hypothetical condition

   B. an extended limiting condition

   C. an extraordinary assumption/special assumption

   D. a standard assumption

3. The ratio of annual debt service to the principal amount of the mortgage loan is called the

   A. discount rate.

   B. equity capitalization rate.

   C. interest rate.

* D. mortgage capitalization rate.

4. If the net operating income of a property is $187,500 and the market indicates an overall capitalization rate of 7.5%, what is the indicated value using direct capitalization?

   A. $201,563

   B. $328,125

* C. $2,500,000 *$187,500 / 0.075 = $2,500,000*

   D. $2,678,571

5. What are the three traditional approaches to value?

* A. cost, sales comparison, and income capitalization

B. income capitalization, sales comparison, and extraction

C. market analysis, highest and best use analysis, and cost analysis

D. sales comparison, extraction, and allocation

6. What is the indicated overall capitalization rate of a property that sold for $825,000 and has a net operating income of $53,625?

A. 0.063%

B. 0.15%

* C. 6.5% *$53,625 / $825,000 = 0.065 (or 6.5%)*

D. 15.38%

7. What is the gross rent multiplier of a property that sold for $174,000 and has a gross monthly rent of $1,500?

A. 8.6%

B. 98

C. 113

* D. 116 *$174,000 / $1,500 = 116 GRM*

8. The amount left after debt service has been deducted from net operating income is called

A. after-tax cash flow.

B. discounted cash flow.

* C. pre-tax cash flow.

D. reversion.

9. What method is used to convert an estimate of a single year's income expectancy into an indication of value?

* A. direct capitalization

B. discounted cash flow analysis

C. reversion

D. yield capitalization

10. Jackson is appraising a large tract of land that is being farmed for agricultural use. The land use surrounding the farm is currently in transition from agricultural to one-unit residential developments. For this assignment, what two procedures should Jackson consider in analyzing the land value of the property?

A. extraction and allocation

B. ground rent capitalization and allocation

C. residual land technique and extraction

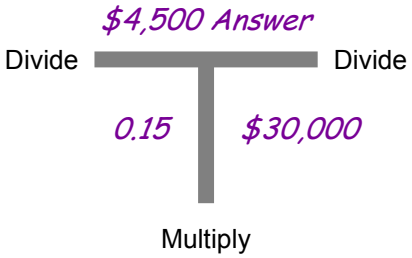
* D. sales comparison and subdivision development analysis

I. Capitalization Formulas Without Fear

A. The T-bar is a ***visual*** way to express three formulas in one package. It can be used to solve various mathematical problems involving rates or factors.

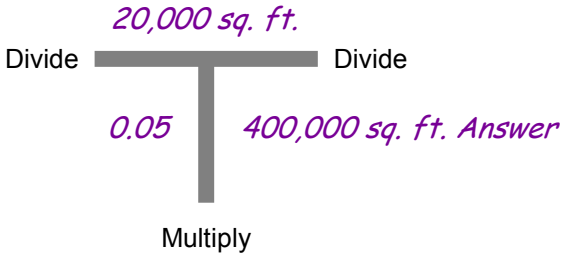
2. Before looking at formulas for income capitalization, use the T-bar to solve a few percentage problems that have an unknown component. This will help you to recall the concepts you learned in *Basic Appraisal Principles*.

a. Alpha Leasing offered an incentive to a potential tenant by providing a 15% rent discount over the first six months of the lease. If the rent is $30,000 over this period, *how much is the prospective tenant going to save?*

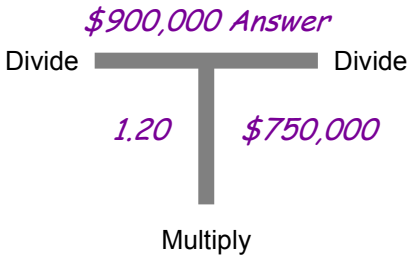


In the above problem, what if the amount saved was provided, but the rate of discount was the unknown? Could you solve for the rate using the T-bar?

b. The state highway department has acquired 20,000 square feet of land through condemnation. If the land taken is 5% of the total parcel, *what is the size of the entire site?*



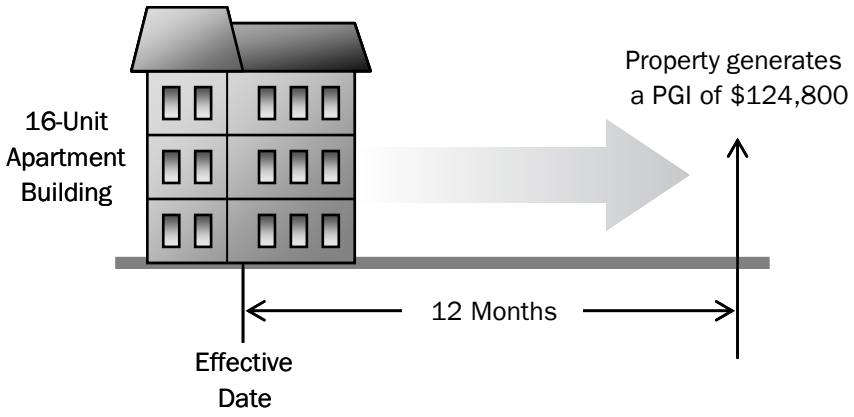
c. Jamal purchased a property three years ago for $750,000 that has since appreciated in value by 20%. *What is the current value?*



Note. The above problem can be solved two ways. If 20% is inserted into the formula, the resulting appreciation has to be added to the purchase price of $750,000. A shortcut is to use a rate of 120% (that is, 1.20). Even if the "part" is larger than the "total," the formula still works.

C. Formulas for direct capitalization

2. Solving valuation problems with the IRV formula



a. A 16-unit apartment building has a potential gross income of $124,800. The vacancy rate is 5% and the operating expenses and replacement allowance is $40,000. *If the overall capitalization rate is 8.25%, what is the value by direct capitalization?*

$124,800 PGI – vacancy loss of $6,240 = $118,560 EGI

Shortcut: $124,800 PGI × 0.95 occupancy = $118,560 EGI

$118,560 EGI – $40,000 expenses = $78,560 NOI

$78,560

0.0825 | *$952,242.42 Answer*
or round to $952,000

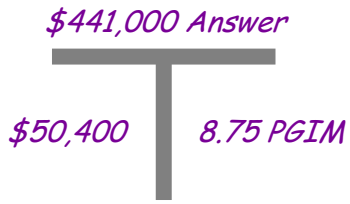
b. *If the same 16-unit apartment building sold for $924,000, what is the indicated overall capitalization rate?*

$78,560

Answer 8.50% | *$924,000*

4. Solving valuation problems using the VIF formula

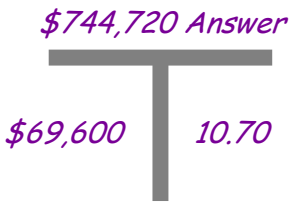
   b. Garcia is analyzing the value of a six-unit rental property in a residential district. The *PGI* is $50,400 and sales indicate a potential gross income multiplier (*PGIM*) of 8.75. *Based on this data, what is the value of the property?*



   c. Hines is appraising a 10-unit property and found the following data:

	Sale	Sale Price	Annual PGI	PGI Multiplier
Market Data	1	$775,000	$72,000	10.76
	2	$693,000	$66,000	10.50
	3	$825,000	$79,800	10.34
	4	$790,000	$74,400	10.62

   Hines believes that Sales 1 and 4 are the most similar in features to the appraised property. *If Hines estimates the annual PGI for the subject property at $69,600, what is the indicated value of the 10-unit apartment property?*



III. Income Rates

B. Derivation of overall capitalization rates (R_O)

2. **Example using comparable sales**.

d. *What is the subject property's appropriate overall capitalization rate* (R_O)*? Why?*

	Building Size		Number of Tenants	Year Built	Indicated R_O
Subject	30,000 sq. ft.		12	1988	*9.25%*

e. *If market research indicates an* NOI *of $270,000, what is the indicated value of the subject property using direct capitalization?*

$270,000

0.0925 *$2,919,000 Answer*

Review Quiz

Solve the following problems. Please note that some questions are connected to each other (for example, Question 1 has two parts).

1. A three-unit residential property sells for $232,000, two units rent for $725 per month, and one unit rents for $550 per month. What is the monthly rent for the property?

   $725 + $725 + 550 = $2,000 monthly rent

   What is the *GRM* for this sale property?

   $232,000 / $2,000 = 116 GRM (use the VIF formula)

2. After analyzing market data of comparable rentals, a *GRM* of 98 is derived. If the monthly rent for the subject property is $4,000, what is the indicated value?

   $4,000 × 98 = $392,000

3. If the capitalization rate (*R*) is 9.5%, what is the equivalent factor (that is, multiplier)?

   1 / 0.095 = 10.526315, or 10.53 (take the reciprocal of the rate)

4. I_O is $112,500 and R_O is 7.5%. What is the indicated value of the property?

   $112,500 / 0.075 = $1,500,000 value

5. If a property has annual gross income of $80,000 and the gross income multiplier is 11.5, what is the indicated value of the property?

   $80,000 × 11.5 = $920,000 value

6. An appraiser is analyzing a sale that sold for $1,400,000. If the indicated *NOI* for the property is $126,000, what is the overall capitalization rate?

   $126,000 / $1,400,000 = 0.09 (or 9%) R_O

7. An appraiser is analyzing a sale that sold for $1,500,000. If the *EGI* for the property is $200,000, what is the *EGIM*?

   $1,500,000 / $200,000 = 7.5 EGIM

II. Developing Income and Expense Estimates

D. **Effective gross income (*EGI*).** Derive by subtracting an allowance for vacancy and collection loss from (*PGI*).

Operating Statement Worksheet			
ITEM		**AMOUNT**	**SYMBOL**
Potential gross income	=	$ 125,000	*PGI*
Vacancy/collection losses (minus)	–	– 5,000	
Effective gross income	=	120,000	*EGI*
Operating expenses (minus)	–	– 54,000	*OE*
Net operating income	=	$ 66,000	I_O
Debt service (minus)	–		I_M
Pretax cash flow	=		*PTCF*

F. **Total operating expenses.** *The sum of all fixed and variable operating expenses and the replacement allowance cited in the appraiser's operating expense estimate.*

Operating Statement Worksheet (Revisited)			
ITEM		**AMOUNT**	**SYMBOL**
Potential gross income	=	$ 125,000	*PGI*
Vacancy/collection losses (minus)	–	– 5,000	
Effective gross income	=	120,000	*EGI*
Operating expenses (minus)	–	– 54,000	*OE*
Net operating income	=	$ 66,000	I_O
Debt service (minus)	–	– 52,000	I_M
Pretax cash flow	=	$ 14,000	*PTCF*

J. Expense and income ratios

1. **Operating expense ratio (*OER*).** *The ratio of total operating expenses to effective gross income* (TOE/EGI)*; the complement of the net income ratio, i.e.,* OER = 1 − NIR.

   Guidance: *Use figures from worksheet on Page 86.*

   $54,000 OE / $120,000 EGI *= 0.45* OER *(1 – 0.55* NIR*)*

2. **Net income ratio (*NIR*).** *The ratio of net operating income to effective gross income* (NOI/EGI); *the complement of the operating expense ratio, i.e.,* NIR = 1 − OER.

   Guidance: *Example using figures from Page 86*

   $66,000 NOI */ $120,000* EGI *= 0.55* NIR *(1 – 0.45* OER*)*

Review Quiz

Write a number in the blank opposite each definition that matches the number of one of the following:

1. Graduated rental lease
2. Revaluation lease
3. Net operating income
4. Effective gross income
5. Operating expense ratio
6. Contract rent
7. Debt coverage ratio
8. Market rent
9. Overage rent
10. Potential gross income
11. Pretax cash flow
12. After-tax cash flow
13. Percentage lease
14. Excess rent

4 *PGI* minus allowance for vacancy and collection losses

3 *EGI* minus operating expenses

11 I_O minus debt service

1 A contract calling for changes in the amount of rent at one or more points during the lease term

13 A lease in which some or all of the rent is based on the volume of business

6 The actual rent specified in a lease

14 The amount by which contract rent exceeds market rent

9 Percentage rent paid over and above the base rent

7 Ratio of net operating income to annual debt service

5 Ratio of operating expenses to effective gross income

1. A commercial property has *PGI* of $55,000 and 6% vacancy. The operating expense ratio (*OER*) for the property is 48%. If the market indicates an 8.5% overall capitalization rate (R_O), *what is the indicated value of the property?*

   Hint: Break down the income to derive *NOI*, then use the IRV formula.

   Step 1: $55,000 PGI × *0.94 occupancy = $51,700* EGI

   Step 2: $51,700 EGI × *0.48* OER = *$24,816* OE

   Step 3: $51,700 EGI – *$24,816* OE = *$26,884* I_O

   Step 4: See T-bar below

   $26,884

   0.085 | *$316,300 (rounded)*

2. The *EGI* for a property is $225,000. If vacancy and collection loss are 10%, what is the potential gross income (*PGI*) for the property?

   Hint: This is an application of the math functions that you learned in *Basic Appraisal Principles.* Think of *EGI* as representing 90% of *PGI.*

   $225,000 EGI / *0.90* = *$250,000* PGI

3. The *NOI* for a property is $120,000 with vacancy at 5%. If the operating expense ratio (*OER*) is 40%, what is the potential gross income (*PGI*) for the property?

   Hint: Take the same approach as the previous question.

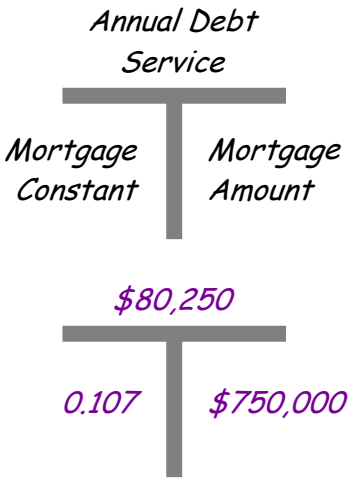
   Step 1: $120,000 NOI / *0.60* NIR = *$200,000* EGI

   Step 2: $200,000 / 0.95 occupancy = $210,526.32 PGI

   Note: NIR *is the complement of* OER.

4. An investor learned that a financial institution would lend 75% of value on a specific property. The lender indicated the mortgage constant was 10.7% based on a 15-year term. If the investor purchases the property for $1 million, what is the annual debt service?

   Hint: Use the formula below to solve the problem.



5. An investor queried a financial institution and found that it will lend 80% of the sale price, and the mortgage constant (R_M) is 8.5%. The investor is considering a $625,000 purchase of a property with *NOI* (I_O) at $125,000. *What is the pre-tax cash flow (*PTCF*) for this property using the mortgage constant supplied by the bank?*

   Hint: Use the mortgage constant to derive the annual debt service, then solve for PTCF (the formula for the last step is $I_O - I_M$ = PTCF*).*

   Step 1: $625,000 × 0.80 = $500,000 V_M (loan amount)

   Step 2: $500,000 V_M × 0.085 R_M = $42,500 I_M (annual debt serv.)

   Step 3: $125,000 I_O – $42,500 I_M = $82,500 PTCF

6. The PGI for a property is $120,000 and there is a 3% vacancy rate. The annual debt service is $24,640 and the OER is 40%. *What is the pre-tax cash flow (*PTCF*) for this property?*

   Hint: Derive I_O then $I_O - I_M$ = PTCF.

   Step 1: $120,000 PGI × 0.97 occupancy = $116,400 EGI

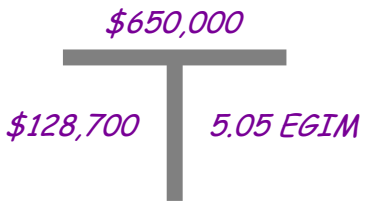
   Step 2: $116,400 EGI × 0.40 OER = $46,560 OE

   Step 3: $116,400 EGI – $46,560 OE = $69,840 I_O

   Step 4: $69,840 I_O – $24,640 I_M = $45,200 PTCF

7. Appraiser Howard is analyzing a property that sold for $650,000. The operating expense for the property is 38% and PGI is $130,000 with a 1% collection loss. *What is the effective gross income multiplier (*EGIM*) for the property?*

   Hint: Use VIF to derive the factor.

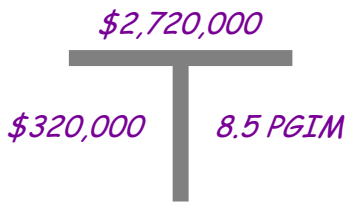
   $130,000 PGI × 0.99 to reflect collection loss = $128,700 EGI

   $650,000 V / $128,700 EGI = 5.0505, or 5.05 EGIM

   ***Note:** OER is a decoy. It's not needed to solve for EGIM.*

8. An office building has an *EGI* of $304,000 and a 5% vacancy. If the market indicates a *PGIM* of 8.5, *what is the value of the property?*

   Hint: Think of the property as having 95% occupancy. Use VIF for the final calculation.



Divide the EGI by 0.95 occupancy to get PGI.

Step 1: $304,000 EGI / 0.95 occupancy = $320,000 PGI

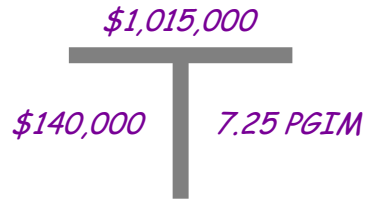
Step 2: $320,000 PGI × 8.5 PGIM = $2,720,000 value

Challenge Question

9. *Using the following data, what is the value?*

I_O	=	$79,800
OER	=	40%
Vacancy	=	5%
PGIM	=	7.25

   Hint: Here's the formula to start: *NOI / NIR = EGI;* remember that *NIR* is the mathematical complement of *OER*.



Step 1: $79,800 NOI / 0.60 NIR = $133,000 EGI

Step 2: $133,000 EGI / 0.95 occupancy = $140,000 PGI

Step 3: $140,000 PGI × 7.25 PGIM = $1,015,000 value

***Note:** NIR is the complement of OER (NIR = 1 – OER).*

Review Quiz

Fill in the missing data to the following questions.

1. There are two common types of slab foundations. One is the slab on a perimeter stem wall, and the other is called a *monolithic* slab.

2. The two wall framing types are *platform* and *balloon*.

3. A lender often requires a water test if a property has *a private well*.

4. If an appraiser observes missing flashing, what construction system is the appraiser viewing? *Roof system*

5. Foundation walls are generally built on *footings*.

6. The envelope encompasses *everything that separates conditioned air from unconditioned air, including roof or ceiling, foundation, windows, and doors*.

Check the appropriate box for each question.

		TRUE	FALSE
7.	Colonial style is an example of a two-story design for a residence.	☒	☐
8.	Foundations are sometimes constructed of specially prepared wood and referred to as a permanent wood foundation.	☒	☐
9.	Tighter construction standards since the 1980s have proven to have little or no unfavorable side effects.	☐	☒
10.	Drain tile is another term used in lieu of gutters on the roof.	☐	☒
11.	Engineered trusses are sometimes used in lieu of hand framing a roofing support system.	☒	☐

I. Getting Started with Cost

> **Cost.** "The actual or estimated amount required to create, reproduce, replace, or obtain a property." (USPAP, DEFINITIONS)

A. Four reasons why appraisers must be proficient in cost analysis

1. *Cost can be a proxy for value (cost to build, cure, or replace).*

2. *It allows the appraiser to evaluate individual component costs.*

3. *Cost is often used in the other approaches as a basis of analysis or used as . . . a crosscheck for adjustments.*

Applying the Cost Approach—Residential Example

To help you get an overview of the approach, let's apply the steps of the approach in a typical residential appraisal format used by lending institutions.

COST APPROACH TO VALUE (not required by Fannie Mae)*

COST APPROACH							
	OPINION OF SITE VALUE				*Step 1 (and maybe Step 3)*	= $	*50,000*
	Dwelling	*1,200*	Sq. Ft. @ $	*73.50*	*Step 2*	= $	*88,200*
			Sq. Ft. @ $			= $	
	2 fireplaces and built-in kitchen appliances				*Step 2*	= $	*4,600*
	Garage/Carport	*528*	Sq. Ft. @ $	*25.00*	*Step 2*	= $	*13,200*
	Total Estimate of Cost-New				*Step 4*	= $	*106,000*
	Less	Physical	Functional	External			
	Depreciation	*16,000*	*5,000*	*8,500*	*Step 5*	= $	*(29,500)*
	Depreciated Cost of Improvements				*Step 6*	= $	*76,500*
	"As-is" Value of Site Improvements				*Step 7*	= $	*5,000*
	INDICATED VALUE BY COST APPROACH				*Step 8*	= $	*131,500*

Source: Adapted from the Fannie Mae Form 1004 (aka, Freddie Mac Form 70) dated March 2005
*Site commonly refers to improved land (or parcel) that does not require further land development or subdivision. It is ready for property improvements suited to its highest and best use; for example, a building site.

Subject property: A 1,200-sq.-ft., ranch-style, one-story dwelling with an effective age of 15 years. The residence has some design inadequacies. The property backs up to a freeway with heavy traffic.

Market research specific to this property revealed the following:

1. Physical depreciation is estimated at **$16,000**.
2. Functional design inadequacies are estimated at **$5,000**.
3. The external influence of the freeway traffic is estimated at **8,500**.

Instructions: Your instructor will walk you through the steps of the cost approach in this example. The goal of this exercise is to work through the eight steps and find the indicated value by the cost approach.

You might think that we forgot Step 3 (entrepreneurial incentive). In this example, we're going to assume it was included in the base rate of $73.50 *or* with the site value of $50,000.

II. The Basics of Estimating Cost

A. Reproduction cost vs. replacement cost

2. Definitions

> **Reproduction cost.** *The estimated cost to construct, at current prices as of the effective date of the appraisal, an exact duplicate or replica of the building being appraised, using the same materials, construction standards, design, layout, and quality of workmanship and embodying all the deficiencies, superadequacies, and obsolescence of the subject building.*

> **Replacement cost.** *The estimated cost to construct, at current prices as of a specific date, a substitute for a building or other improvements, using modern materials and current standards, design, and layout.*

Reproduction	Replacement
Field stone foundation	*Block or poured concrete*
Plaster interior walls and ceilings	*Drywall (gypsum board)*
Embossed asphalt siding (i.e., a material that is similar to roll roofing with a faux brick pattern)	*Vinyl or hardboard siding*
Steam heat	*Hot water heat*
Post and beam construction	*Stud and joist construction*

D. Cost-estimating methods

1. *Comparative-unit method*

   a. The most commonly used cost-estimating method. It is *used to derive a cost estimate in terms of dollars per unit of area or volume based on known costs of similar structures that are adjusted for* market conditions, geographic location, *time and physical differences; usually applied to total building area* (e.g., size). (The non-italicized words were added to the definition.)

   b. The method requires the appraiser to compare the subject building with similar, recently constructed buildings for which cost data is available.

   c. If a building's contract price is available, the unit-cost figures are usually expressed in terms of cost per square foot of gross building area or cost per cubic foot. If they are in different markets, an adjustment for location may have to be made.

   d. If contract prices are not available, the cost of new buildings can be extracted from sales of similar buildings by subtracting the value of the improved land together with site improvements (such as driveway,

   e. Cost-service manuals are most commonly utilized in this method.

2. *Unit-in-place method*

   a. In this method, the total building cost is estimated by adding together the unit costs for the various building components as installed (e.g., the roof, walls, foundation, excavation, electrical system, etc.).

   b. Standardized costs are used for structural components. The costs may be applied on the basis of square feet of floor area or linear feet of wall length at a certain height.

3. *Quantity survey method*

   a. In this method, *the quantity and quality of all materials used and all categories of labor required are estimated and unit cost figures are applied to arrive at a total cost estimate for labor and materials.*

   b. It is the most comprehensive, time consuming, and detailed method of measurement. It frequently requires the services of an experienced cost estimator and is rarely used in routine appraisal assignments.

Review Quiz

Choose the *most* correct answer.

1. Chandra is appraising a residential property. The house was built in 1981 and is in average condition. The appraiser is using a cost-service provider to develop the cost approach. What type of cost is she using in this appraisal?

   A. direct costs only

   B. hard costs plus entrepreneurial profit

   C. reproduction cost

* D. replacement cost

2. The cost estimating method that considers all materials used and all categories of labor required to construct the improvement is called

   A. comparative-unit method.

* B. quantity survey method.

   C. segregated cost method.

   D. unit-in-place method.

3. Which of the following is ***NOT*** an identified type of accrued depreciation applicable to property improvement?

* A. entrepreneurial obsolescence

   B. external obsolescence

   C. functional obsolescence

   D. physical deterioration

4. Labor and materials are an example of what kind of cost?

* A. direct cost

   B. indirect cost

   C. replacement cost

   D. reproduction cost

5. A buyer will not pay more for a property than the cost to construct one of equal desirability and utility without undue delay. What principle does this illustrate?

A. balance

B. highest and best use

* C. substitution

D. supply and demand

6. What type of property is the gross living area (GLA) generally based on interior dimensions?

A. cluster home in a PUD

* B. condominium

C. manufactured home

D. twin home

7. An appraiser is analyzing the soft costs in a building project. In this analysis, what might the appraiser consider in this category?

* A. architectural fees

B. building permits

C. material storage facilities

D. security during construction

8. What is left when the total cost of development is deducted from the sale price of a property?

A. administrative expenses of the developer

B. entrepreneurial coordination

* C. entrepreneurial profit or loss

D. contractor's overhead

9. An appraiser measured a one-story residence as 26’ x 40’ on the main floor, and the house had a below-grade-level finished basement area of 20’ x 16’. The residence also had an attached screen porch on the main level of 12’ x 14’. What is the gross living area (GLA) for the residence?

* A. 1,040 sq. ft. *(26 ft. × 40 ft. = answer)*

B. 1,208 sq. ft.

C. 1,360 sq. ft.

D. 1,528 sq. ft.

10. The cost of a structure was $300,000 when it was built 18 months ago. The cost index at that time was 150.5. What is the estimated cost today if the cost index is 168.56?

A. $267,857

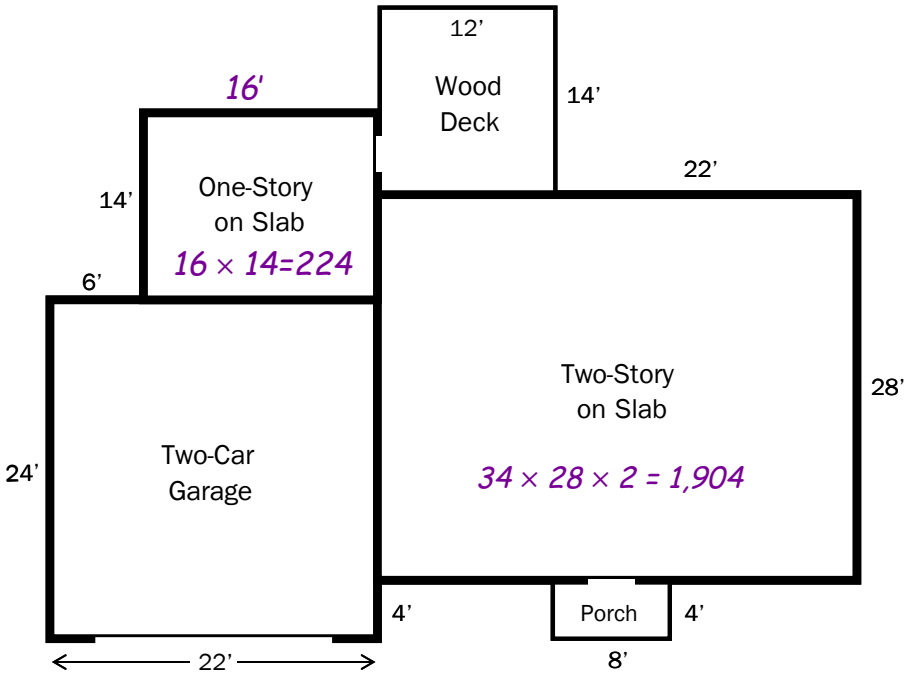
B. $327,587

* C. $336,000 *(168.56 / 150.5 = 1.12 × $300,000 = answer)*

D. $354,180

II. Oak Street Case Study (Part I)—Cost Analysis

Perimeter Sketch for the Subject



			Foundation	1,176	Sq. Ft.
1-Story Area	224	Sq. Ft.	2-Car Garage	528	Sq. Ft.
2-Story Area	1,904	Sq. Ft.	Wood Deck	168	Sq. Ft.
Total GLA	2,128	Sq. Ft.	Entry Porch	32	Sq. Ft.

COST RATES

TWO STORY

Square Foot Costs
Average Quality

Use total GLA as your base **RESIDENCE**

STUD FRAMED				MASONRY		
Total Area	Plywood or Hardboard	Metal or Vinyl Siding	Stucco	Concrete Block	Stucco on Block	Common Brick
1900	49.75	50.11	50.05	51.61	52.93	58.37
2000	49.22	49.56	49.50	51.06	52.32	57.59
2100	48.72	49.04	48.98	50.54	51.76	56.85
2200	48.25	48.55	48.50	50.04	51.22	56.16

SQUARE FOOT ADJUSTMENTS

ROOFING:

Composition shingle or Built-up, small rock		(base)
Clay tile	+	$ 3.11
Concrete tile	+	1.97
Metal, preformed	+	.52
Wood shake	+	.85
Wood shingle	+	.74
Composition roll	–	.44

ENERGY ADJ: Moderate Climate

		(base)
Mild climate	–	$ 1.00
Extreme climate	+	1.38
Superinsulated	+	3.32

FOUNDATION ADJ: Mod. Climate

		(base)
Mild climate	–	$ 1.60
Extreme climate	+	2.94
Hillside, moderate slope	+	1.47
Hillside, steep slope	+	4.41

Add for SEISMIC ZONES (Z) / HURRICANE (Wind) ADJ:
Frame: (Z2) + $1.29, (Z3–4/Wind) + $2.19 Masonry: (Z2) + $0.83, (Z3–4/Wind) + $1.76

ONE STORY

Square Foot Costs
Average Quality

Use total GLA as your base **RESIDENCE**

STUD FRAMED				MASONRY		
Total Area	Plywood or Hardboard	Metal or Vinyl Siding	Stucco	Concrete Block	Stucco on Block	Common Brick
1900	53.39	54.33	54.28	56.03	57.06	61.20
2000	52.88	53.81	53.76	55.48	56.48	60.53
2100	52.41	53.32	53.27	54.96	55.92	59.91
2200	51.96	52.86	52.81	54.47	55.40	59.32

SQUARE FOOT ADJUSTMENTS

ROOFING:

Composition shingle or Built-up, small rock		(base)
Clay tile	+	$ 5.55
Concrete tile	+	3.51
Metal, preformed	+	.93
Wood shake	+	1.51
Wood shingle	+	1.32
Composition roll	–	.79

ENERGY ADJ: Moderate Climate

		(base)
Mild climate	–	$ .91
Extreme climate	+	1.46
Superinsulated	+	3.01

FOUNDATION ADJ: Mod. Climate

		(base)
Mild climate	–	$ 1.89
Extreme climate	+	3.47
Hillside, moderate slope	+	1.74
Hillside, steep slope	+	5.21

Add for SEISMIC ZONES (Z) / HURRICANE (Wind) ADJ:
Frame: (Z2) + $1.15, (Z3–4/Wind) + $2.01 Masonry: (Z2) + $0.81, (Z3–4/Wind) + $1.68

COST RATES

REFINEMENTS

Square Foot Costs
Average Quality

SQUARE FOOT ADJUSTMENTS

SUBFLOOR:

Wood subfloor		(base)
Concrete slab	–	$ 2.04
Asphalt (for garage or carport)	–	1.64

PLASTER INTERIOR: + 2.90

FLOOR COVER:

Allowance (if not itemized)	+	2.59
Carpet and pad	+	2.24
Ceramic tile	+	8.84
Wood flooring	+	6.23
Hardwood	+	7.57
Parquet blocks	+	8.41
Vinyl sheet	+	3.04

FLOOR INSULATION:

Mild climate	–	$ .70
Moderate climate	+	.87
Extreme climate	+	1.17

HEATING/COOLING

Forced air		(base)
Oil-fired	+	$ .58
Floor or wall furnace	–	1.42
Electric, radiant	–	.34
Baseboard or panel	–	.25
Hot water, baseboard	+	1.47
Warm and cooled air	+	1.61
Heat Pump	+	2.01
Ground-loop heat system	+	3.41
Air-to-air exchange system	+	1.20

LUMP SUM ADJUSTMENTS

PLUMBING: 8 fixtures + rough-in (base)

Per fixture	+ or –	$ 845
Per rough-in	+ or –	340

FIREPLACES:

Single one-story	$ 2,250	–	2,750
Single two-story	2,800	–	3,400
Double one-story	3,000	–	4,050
Direct-vented, gas	1,025	–	1,250

BUILT-IN APPLIANCES:

Allowance (if not itemized)	+	$ 2,350
Dishwasher	+	590
Exhaust fan or bath heater	+	140
Garbage disposer	+	205
Hood and fan	+	220
Range and oven	+	775
Radio intercom	+	785

PORCH/BREEZEWAYS

	FLOOR STRUCTURE:			WALL ENCLOSURE:				
Square Feet (Each)	Open Slab	Open W/Steps	Wood Deck	Screen Only	Knee Wall W/Glass	Solid Walls	Add For Roof	Add For Ceiling
25	4.97	13.43	21.68	14.40	50.55	30.50	11.08	4.46
50	4.54	11.24	19.41	9.60	33.70	20.33	9.71	3.51
100	4.30	9.43	13.52	7.20	25.27	15.25	9.03	3.04
150	4.23	8.92	12.14	5.60	19.66	11.86	8.69	2.88
200	4.16	7.40	7.98	4.00	14.04	8.47	7.66	2.72

GARAGES

Square Foot Costs
Average Quality

STUD FRAMED							
Type	Total Area	Plywood or Hardboard	Metal or Vinyl Siding	Stucco	Wood Siding	Wood Shingles	Add For Finish
Attached	400	17.79	18.10	18.17	18.03	18.27	4.08
	600	15.82	16.05	16.10	16.00	16.18	3.71

WORKSHEET NOTES

Wall Height Factor

For an average quality residence, the base cost assumes a wall height of 8 feet. For each additional foot of wall height, the appraiser must add 3%. Therefore, if your subject residence has a 9-foot wall, the factor is 1.03. You'll notice in our case study that the attached garage has 9-foot walls. Therefore, the factor is 1.03 because 3% was added for the one additional foot of wall height. This factor only applies to the base rate and not to any other refinement cost such as roofing, heating, or cooling.

Floor-Cover Calculations

The appraiser can use the allowance for floor cover or itemize the cost for the individual floor-cover components. The way to obtain the floor-cover cost rate is to apply the area percent to the actual cost rate. The result can then be easily placed on the form.

Floor Cover	Area %	Cost Rate	Amount
Carpet and pad	0.75	*$ 2.24*	*$ 1.68*
Ceramic	0.10	*8.84*	*0.88*
Vinyl sheet	0.15	*3.04*	*0.46*
Total	100%		*$ 3.02*

Summary of Plumbing Fixtures

Plumbing fixtures are added or subtracted as **lump sum adjustments**. The average quality cost rate includes eight fixtures and one rough-in. Each full bath has three fixtures, and a half bath has two fixtures. The kitchen sink, the laundry tub, and the water heater each count as one plumbing feature. The base cost rate already includes two outdoor spigots.

Floor	Tub and Shower	Sink	Toilet	Water Heater	Total
First		*3*	*1*	*1*	*5*
Second	*2*	*2*	*2*		*6*
Total Plumbing Fixtures ➡					*11*

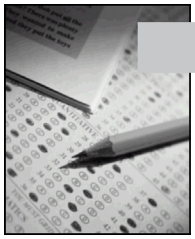
Multipliers

On line 24 of the *Square Foot Appraisal Form,* you will find a *Current Cost Multiplier* (CCM) and a *Local Multiplier*. These factors update the cost rate to the most recent quarter of the year and also adjust for the local area (such as San Diego, Minneapolis, or Biloxi). The two multipliers are multiplied together to obtain one factor. The CCM and the local multiplier are on the form, but you must multiply them together to derive the factor.

SQUARE FOOT APPRAISAL FORM

Wall Height Factor x Floor Area x Selected Sq. Ft. Cost ➡	Factor	Quantity	Cost	Extended Cost
1. **COMPUTE RESIDENCE BASIC COST**	1.00	1,904	$ 49.04	$ 93,372
	1.00	224	53.32	11,944
Square Foot and Lump Sum Adjustments				
2. Roofing			Base	
3. Energy: ☐ Mild ☒ Moderate ☐ Extreme ☐ Superinsulated			Base	
4. Foundation: ☐ Mild ☐ Moderate ☐ Extreme Hillside: ☐ Flat ☐ Moderate ☐ Steep				
5. Seismic: ☒ None ☐1 ☐ 2 ☐ 3 ☐ 4 Wind: ☒ No ☐ Yes				
6. Subfloor *This applies only to the foundation*		1,176	– 2.04	(2,399)
7. Floor Insulation: ☐ Mild ☐ Moderate ☐ Extreme				
8. Floor Cover		2,128	3.02	6,427
9. Plaster Interior		2,128	2.90	6,171
10. Heating/Cooling *Warm and cooled air*		2,128	1.61	3,426
11. Plumbing Fixtures: Total 11 Base 8		3	845	2,535
12. Plumbing Rough-ins: Total 0 Base 1		1	– 340	(340)
13. Dormers				
14. Fireplaces *$2,750 + $1,000 for brick*		1	3,750	3,750
15. Built-in Appliances *5 items*		5		1,930
16. **SUBTOTAL: ADJUSTED RESIDENCE COST** (Lines 1 to 15)				126,816
17. Basement				None
18. Porches, Decks, Breezeways, etc.		168	12.14	2,040
Front Entry Porch ($13.43 + $11.08 + $4.46)		32	28.97	927
19. Balconies				
20. Exterior Stairways				
21. **SUBTOTAL: RESIDENCE COST** (Lines 16 to 20)				129,783
22. Garages/Carports *Add 3% for 9′ wall*	1.03	528	16.05	8,729
23. **SUBTOTAL OF ALL IMPROVEMENTS** (Lines 21 and 22)				138,512
24. Multipliers: CCM 1.08 x Local 0.96				x 1.0368
25. Additional Components				
26. **TOTAL BUILDING COST NEW** (Line 23 x Line 24 + Line 25)				143,609

The above format was adapted from the Marshall & Swift *Form 1007* and used with permission for educational purposes.



Practice Test Section 3

This multiple-choice test is for your benefit and provides a review of everything covered in Section 3. This is a closed-book test. Choose the most correct answer.

1. Mr. Chatsworth's residence is on the historic register, and he wants to know the insurable value in order to replicate the building in the event of fire or storm damage. What type of cost should the appraiser use?

   A. direct cost

   B. replacement cost

* C. reproduction cost

   D. indirect cost

2. What area is included in gross living area?

   A. all floor areas in the house, garage, porches, decks, etc.

* B. finished and habitable floor areas above grade

   C. finished floor areas above and below grade

   D. open non-floored area of a two-story foyer

3. Because of the unique attributes of the cost approach, it is ideally suited for

* A. estimating insurable value.

   B. estimating market value for lenders.

   C. estimating value in a condemnation.

   D. subdivision development analysis.

4. Condon has estimated the cost of excavation, the floor, wall, and roof components, and the packaged costs for the electrical, heating, and plumbing. What cost method is Condon using?

   A. comparative unit method

   B. price-index method

   C. quantity survey method

* D. unit-in-place method

5. Fogarty knows that the original cost of the building three years ago was $750,000. If the cost index was 235 when the structure was built, what is the estimated cost now if the index is at 267.9?

A. $657,895

* B. $855,000 *(267.9 / 235 = 1.14 × $750,000 = answer)*

C. $996,750

D. $1,117,735

6. What is the predominant type of frame construction used after World War II?

A. balloon

B. concrete block and stucco

* C. platform

D. post and beam

7. An appraiser observes that the distance between a private sewage system's drain field and the water well does not meet the minimum requirements. Under which component of a building does this fall?

A. electrical

B. foundation

C. framing

* D. plumbing

8. What type of foundation is likely to be found in housing that is located in a warm climate and subject to occasional standing water?

A. basement wall foundation

B. monolithic slab foundation

* C. pier foundation

D. slab with stem wall foundation

9. An earth-sheltered dwelling would likely be placed into which of the following categories of housing design?

   A. contemporary

* B. specialized

   C. split level

   D. zero-story

10. An appraiser is analyzing the cost on a 1,500 sq.-ft., one-story residence and has estimated the base cost at $75 per sq. ft. If the local multiplier is 1.10 and the current cost multiplier is 1.05, what is the cost for the dwelling?

   A. $107,386

   B. $117,857

* C. $129,937

   D. $241,875

11. Reilly is counting the plumbing fixtures in a second-floor bath and found that there are two sinks, a toilet, a bathtub, and a separate shower stall. How many plumbing fixtures should Reilly include in his count?

   A. 3

   B. 4

* C. 5

   D. 7

12. In an appraisal of a typical detached residential structure, an appraiser determines the gross living area by

   A. measuring the exterior perimeter dimensions of the residence and multiplying it by the current cost modifier.

* B. using the exterior perimeter dimensions of the residence.

   C. using the interior dimensions of the residence's overall perimeter shell.

   D. using the size provided by the real estate broker.

ONE STORY

Square Foot Costs
Good Quality

SQUARE FOOT ADJUSTMENTS

A foundation adjustment is unnecessary even though the property is located in an extreme climate. This is because the footings are more than 4 feet below the ground surface and thus well protected from frost and freezing temperatures.

LUMP SUM ADJUSTMENTS

Plumbing fixtures are $1,300 per fixture, and the main floor already meets the base requirement. The three fixtures for the full bath in the basement must be added as lump sum adjustments.

BASEMENTS

Unfinished Basements	400	800	1200	1600	2000	2400
Concrete walls 6”	21.90	17.45	15.41	14.37	13.94	13.36
8”	23.23	18.41	16.18	15.05	14.58	13.92
Conc. block walls 8”	21.22	16.96	15.01	14.02	13.61	13.08
12”	23.64	18.71	16.42	15.25	14.78	14.09
Add for finish, minimal	7.23	6.78	6.57	6.47	6.42	6.35
Partitioned	29.12	27.03	26.17	25.73	25.52	25.23

Outside Entrance: $1,175 – $1,825

For radon removal fan and alarm, add $310.

Instructions: Complete the line item components for the basement, finished area within the basement, and add in the plumbing fixtures for the bathroom. Apply the multipliers supplied on Line 24 and estimate the total cost for the basement and finished area.

Square Foot Appraisal Form

	Wall Height Factor x Floor Area x Selected Sq. Ft. Cost ➡	Factor	Quantity	Cost	Extended Cost
11.	Plumbing Fixtures: Total *14* Base *11*		*3*	*1,300*	*$ 3,900*
17.	Basement *(8-foot wall height)*	*1.00*	*1,650*	*15.25*	*25,162*
	Finished partitioned area	*1.00*	*800*	*25.73*	*20,584*
23.	**SUBTOTAL OF IMPROVEMENTS**				*$ 49,646*
24.	Multipliers: CCM *1.08* x Local *1.10*				*x 1.188*
26.	**TOTAL BUILDING COST NEW**				*$ 58,979*

4. **Problem to work out.** Let's say the three-season porch illustrated on the prior page has a 6-foot vaulted and finished ceiling (14 ft. – 8 ft. = 6 ft.) and the adjusted height is 3 feet. Therefore, the 3-foot factor × 3% equals 9%. As a result of this calculation, you use a vaulted ceiling factor (or wall height factor) of 1.09 and apply that to the base cost for the area that has the vault. If the porch area is 300 sq. ft., **what is the cost of the porch?**

PORCH/BREEZEWAYS

FLOOR STRUCTURE:				WALL ENCLOSURE:				
Square Feet (Each)	Open Slab	Open w/Steps	Wood Deck	Screen Only	Knee Wall w/Glass	Solid Walls	Add for Roof	Add for Ceiling
150	5.11	11.41	15.45	7.31	23.48	16.24	11.90	3.65
200	5.03	10.78	13.78	6.27	20.13	13.92	11.53	3.56
300	4.88	9.54	10.43	5.22	16.78	11.60	10.78	3.46

Square Foot Appraisal Form

	Wall Height Factor × Floor Area × Selected Sq. Ft. Cost ➡	Factor	Quantity	Cost	Extended Cost
18.	Porches, Decks, Breezeways, etc.	*1.09*	*300*	*41.45*	*$ 13,554*
24.	Multipliers: CCM *1.08* × Local *1.10*				× *1.188*
26.	**TOTAL BUILDING COST NEW**				*$ 16,102*

II. Depreciation Basics

B. Definitions

1. *Economic life*

   a. This is *the period over which improvements to real property contribute to property value.*

   b. It is usually shorter than physical life (which means how long the building is expected to stand and provide shelter).

   c. The period can be extended by means of renovations or remodeling of the improvements.

2. *Remaining economic life*

   This is *the estimated period over which existing improvements are expected to contribute economically to a property.*

3. *Actual age*

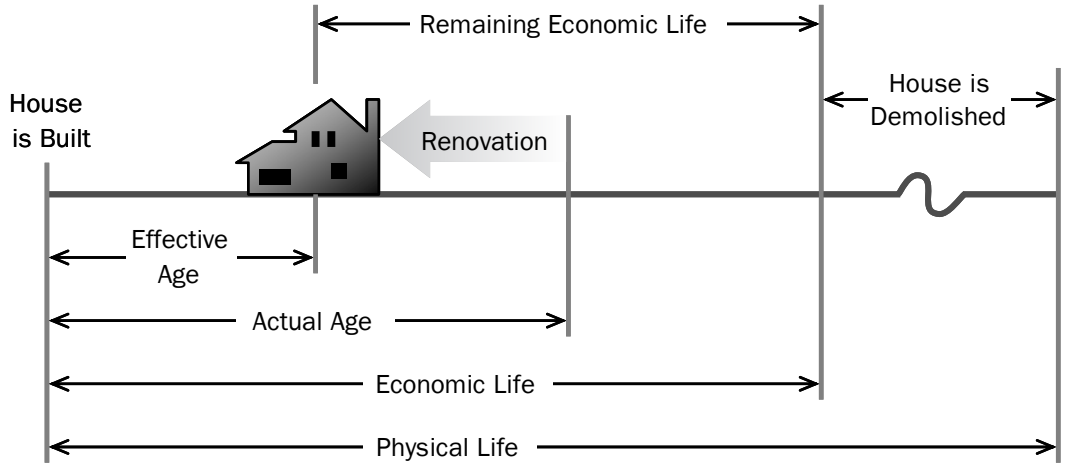
   The number of years that have elapsed since construction of an improvement was completed; also called historical ***or*** chronological age. (Bold added for emphasis.)

4. *Effective age*

   a. *The age of property that is based on the amount of observed deterioration and obsolescence it has sustained, which may be different from its chronological age.*

   b. This may be greater or less than actual age, depending on the maintenance, quality, or design of a structure.

   c. Renovation or rehabilitation may decrease the effective age.



C. Estimating effective age

Residence Description	Effective Age?
1. A 15-year-old house with good maintenance and overall condition.	*15 years or less*
2. Same house, but now 25 years old. Updated with new roof shingle, water heater, and furnace. Also new floor covers and new counters and sink in the kitchen.	*Less than 25 years, possibly 15 years*
3. Same house, but now 50 years old. Same level of updates as when 25 years old, but includes complete redo of kitchen and baths. Siding replaced and retrofitted with energy-efficient windows, addition of Energy Star® appliances and lighting, and new energy-efficient heating and air conditioning system.	*Maybe 20 years*
4. Same house, 75 years old, but nothing done since it was updated at age 50. House is kept clean and neat. Real estate agent mentions in the listing data sheet that house needs fresh décor.	*40 to 45 years*
5. Same house, 100 years old. Structure has been moved to a desirable location and placed on a new foundation. Interior is totally gutted and new components installed throughout.	*Could be 10 to 15 years*

D. Overview of depreciation methods

You identify depreciation by analyzing improvements and the market's reaction to their perceived condition. For now, you'll take a quick overview of the three methods. A more in-depth discussion will follow in Part 12.

1. *Market extraction method*

   This method relies on the availability of comparable sales from which you can extract the depreciation.

2. *Age-life method*

   Depreciation from all sources is grouped together in a lump-sum amount that is derived through the use of a ratio applied to the current cost of the structure.

3. *Breakdown method*

   In this method, *the total diminution in the value of a property is estimated by analyzing and measuring each cause of depreciation (physical, functional, and external) separately.*

Review Quiz

Below are examples of different kinds of depreciation. Classify each by entering on the line next to the statement a letter that is best represented by one of the following:

P Physical deterioration

F Functional obsolescence

E External obsolescence

_F_ A warehouse building rated for 80 mph winds that is located in a hurricane zone with the potential for 120 mph winds

_P_ A 40-year-old oak floor

_F_ A 40-year-old kitchen

_P_ A broken screen door

_E_ A house with a 24-hour truck-stop next door

_F_ A house with six bedrooms and one bath

_F/E_ A $200,000 house in a $100,000 neighborhood *(Functional or External)*

_F_ A hotel in Phoenix without air conditioning

_E_ A restaurant in a town where a major employer has just closed

_F_ A restaurant with inadequate on-site parking

_F_ A two-bedroom house in a development of four-bedroom houses

Suggested answers are provided in the Solutions Booklet.

I. Market Extraction Method

C. Example of extraction of depreciation

Assume a one-story residence with an actual age of 15 years recently sold, and you're appraising a similar residence located near that sale.

Step	Procedure	Amount
1	Sale price of comparable property	*$ 355,000*
2	Adjustments to sale, if necessary	*-0-*
3	Estimate land value and subtract it from the price	*– $ 80,000*
	Depreciated cost of the improvements	*$ 275,000*
4	Estimate cost of improvements (rounded)	*$ 327,000*
5	Subtract the depreciated cost of the improvements	*– $ 275,000*
	Dollar amount of depreciation	*$ 52,000*
6	Convert to percentage (see formula below)	*15.9%*
7	Convert percent of *depreciation* to an annual rate by dividing it by the age of 15 years	*1.06%*

The formula for Step 6 above:

Depreciation amount
$52,000

(15.9%) 0.15902
Percent of depreciation

$327,000
Cost of improvements

II. Age-Life Method of Depreciation

B. The best way to learn the various components of the age-life method is to work with them. Here are six problems that will bring it together for you.

1. Cole has been working on an appraisal assignment and has estimated the land value at $75,000 and the replacement cost at $260,000. Cole estimates the economic life at 80 years and the remaining economic life at 60 years.

   a. *What is the effective age?*

   b. *What is the percent of accrued depreciation?*

   c. *What is the depreciated cost of the improvement?*

   d. *What is the indicated value using the cost approach?*

   a. 80 years – 60 years = 20 years effective age (1)

   b. 20 years / 80 years = 0.25 or 25% depreciation (2)

   c. $260,000 × 0.25 = $65,000 depreciation (3)
   $260,000 – $65,000 = $195,000 depreciated cost of building (4)

   d. $195,000 + $75,000 = $270,000 value by cost approach

2. *If the effective age is 15 years and the remaining economic life is 60 years, what is the percent of accrued depreciation?*

   If the participants get an answer of 25%, that's incorrect!

   15 effective age / 75 economic life = 20% (2)

3. Bob is taking courses in how to become an appraiser and has a dog named Bart. He owns a building that has a current cost of $400,000. Economic life is 80 years and I_0 is $35,000. The capitalization rate is 9% and remaining economic life is 70 years. *What is the percent of depreciation for the building?*

   80 years – 70 years = 10 years effective age (1)

   10 / 80 = 0.125 or 12.5% accrued depreciation (2)

4. **Challenge:** Pierce was given the acquisition cost of the property as $876,000 including the land. Actual age is unknown, but Pierce estimated the economic life of the building at 50 years. *What is the annual percent of depreciation?*

   1 / 50 = 0.02 or 2% annual depreciation per year (2)

5. A property sold for $925,000 and the appraiser concluded the land value is $250,000 based on a comparison of land sales. The appraiser's analysis of the improvements estimates the building has an effective age of 10 years and its replacement cost today is $843,750.

   What is the annual percent of depreciation for the building?

   a. 2.5%

   b. 18.25%

   c. 2%

   d. 20%

   Hint: An initial step must be taken to derive the depreciated cost of the building before the depreciation formulas can be applied.

   $925,000 – $250,000 = $675,000 depreciated building cost

   $843,750 – $675,000 = $168,750 amount of depreciation (4)

   $168,750 / $843,750 = 0.20 or 20% accrued depreciation (3)

   0.20 / 10 years = 0.02 or 2% annual depreciation rate

6. Hagen has estimated the current cost on a building at $435,000 and the land is valued at $150,000. Comparable buildings of similar age and condition have an economic life of about 90 years. Hagen has estimated the remaining economic life at 75 years.

   What is the value of the property by the cost approach?

   a. $512,500

   b. $362,500

   c. $541,500

   d. $487,500

   90 years – 75 years = 15 years effective age (1)

   15 / 90 = 0.1666... or 16.666...% depreciation (2)

   $435,000 × 0.1666... = $72,500 amount of depreciation (3)

   $435,000 – $72,500 = $362,500 building cost (4)

   $362,500 + $150,000 = $512,500

   Note: *15 divided by 90 produces a nonterminating decimal.*

III. Breakdown Method of Depreciation

While the breakdown method of depreciation typically is used more in commercial appraisal applications, it is used in residential applications as well. Here is an overview of this method as well as definitions of the associated terms.

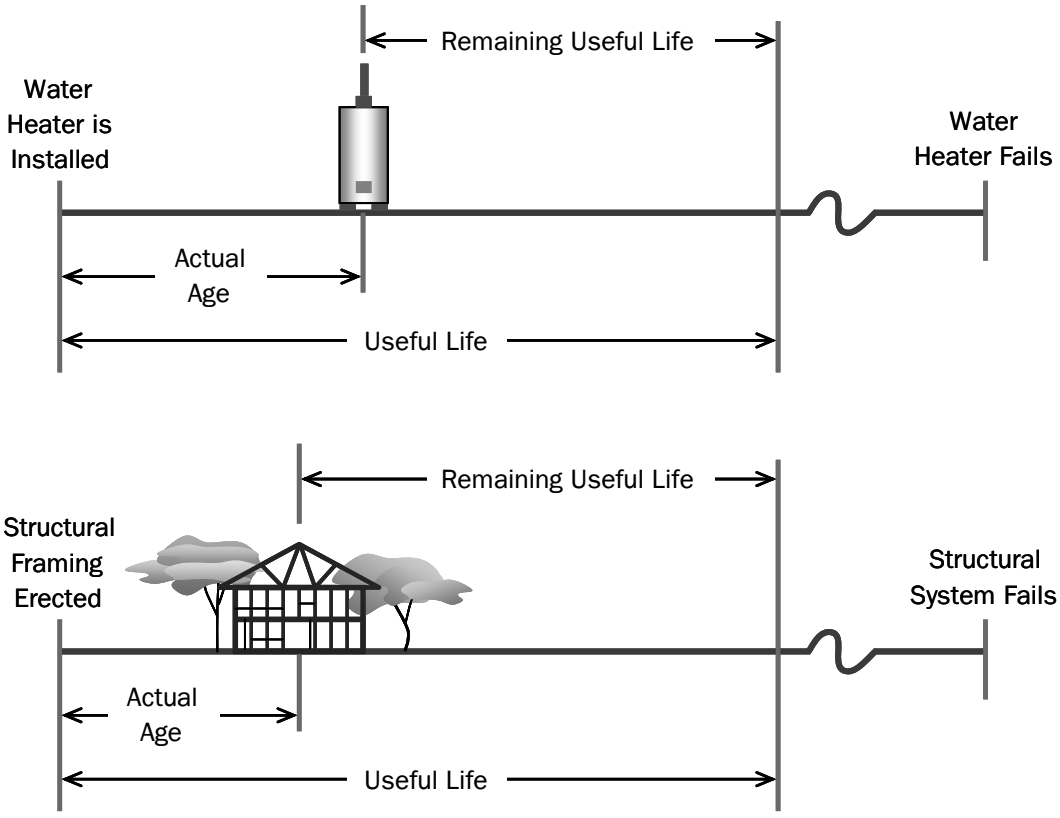
A. Definitions

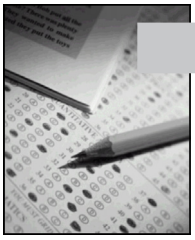
1. *Useful life*

   This is *the period of time over which a structure or a component of a property may reasonably be expected to perform the function for which it was designed.* Useful life is used in the breakdown method to estimate physical depreciation on short-lived and long-lived components.

2. *Remaining useful life*

   The estimated period during which improvements will continue to provide utility; an estimate of the number of years remaining in the useful life of the structure or structural components as of the effective date of the appraisal; used in the breakdown method of estimating depreciation.





Practice Test — Section 4

This multiple-choice test is for your benefit and provides a review of everything covered in Section 4. This is a closed-book test. Choose the most correct answer.

1. What type of wall enclosure for a porch is the most costly?

* A. knee wall with glass

B. open with post supports

C. screen only

D. solid wall

2. In the marketplace, a commercial broker might refer to a property as a "Class A" building. This rating refers to

A. a rating established by the taxing district.

* B. competitive ranking for leasing purposes.

C. construction classification based on Marshall and Swift/Boeckh.

D. the building's Blue Book classification.

3. In the cost approach, an appraiser may categorize high interest rates as what type of depreciation accruing to the property?

* A. external obsolescence

B. financial obsolescence

C. functional obsolescence

D. physical deterioration

4. Jacobs is trying to estimate the depreciation of a building's roof by the breakdown method. He knows that the useful life of the roof is 25 years and the actual age is 10 years. Jacobs' trainee, however, believes the effective age of the roof is 15 years due to some storm damage. What is the percent of depreciation for the roof?

A. 28.5%

B. 37.5%

* C. 40% *(10 / 25 = 40% depreciation)*

D. 60%

5. Hopkins sold a warehouse for $950,000, in which the land value was estimated at $250,000. If the cost to replace the existing warehouse building is $1.5 million, what is the dollar amount of depreciation accrued to the building?

A. $550,000

B. $700,000

* C. $800,000 *(Step 1: $950,000 – $250,000 = $700,000 bldg. value)*

D. $1,250,000 *(Step 2: $1,500,000 – $700,000 = answer)*

6. A manufactured home has an effective age of 30 years and a remaining economic life of 20 years. What is the percent of depreciation for the building?

A. 40%

B. 50%

* C. 60% *(30 / 50 = 60% depreciation)*

D. 67%

7. An apartment building has plumbing and electrical systems that are deteriorated to the point of requiring complete replacement. This depreciation can be identified as

A. external obsolescence.

B. functional curable obsolescence.

C. physical curable deterioration.

* D. physical incurable deterioration.

8. When using the economic age-life method of depreciation, what type of depreciation is actually measured?

A. external obsolescence

B. functional obsolescence

C. physical deterioration

* D. all types of depreciation

9. **Challenge:** A buyer was interested in building on a lot next to a highway and wanted to know how much of a loss might be attributed to the traffic influence. The buyer's new house will cost $375,000 and the site was recently purchased for $150,000. What is the value of the property if the market indicates a 15% loss due to the highway influence?

A. $431,250

B. $446,250

* C. $468,750 *(Land sale already reflects the external obsolescence.)*

D. $502,500

Solution:
$375,000 × 0.85 = $318,750 depreciated cost
$318,750 + $150,000 land = answer

Unit of Comparison Problem

Examine the sale data below and determine which unit of comparison the market appears to be favoring for comparison purposes.

DATA	Sale 1	Sale 2	Sale 3	Sale 4
Sale price	$110,000	$160,000	$126,000	$143,500
Size	5 acres	8 acres	6 acres	7 acres
Front footage	846 feet	800 feet	840 feet	820 feet
Buildable units	10	16	10	10

WORKSHEET	Sale 1	Sale 2	Sale 3	Sale 4
Sale price	*$110,000*	*$160,000*	*$126,000*	*$143,500*
Price per acre	*$22,000*	*$20,000*	*$21,000*	*$20,500*
Price/front foot	*$130*	*$200*	*$150*	*$175*
Price per unit	*$11,000*	*$10,000*	*$12,600*	*$14,350*

What is the best unit of comparison?

Guidance: *Price per acre appears to be the most consistent unit of comparison based on the market evidence.*

8. Entering adjustments on a market grid

Based on the features below, write in whether the adjustment should be a plus or a minus for the comparable sale.

Feature	Subject Property	Comparable Sale	
Value Adjustments	Description	Description	+/– Adjustment
If the feature is…	Average	Superior	*Minus*
If the feature is…	Average	Inferior	*Plus*
If the feature is…	Size related	Smaller	*Plus*
If the feature is…	Quantity related	More	*Minus*
If the feature is…	Absent	Present	*Minus*

a. The subject property is treated as the base, and the comparable sales are adjusted for differences when compared to the subject property.

b. The value of an item superior to the subject property is subtracted from the comparable price. The value of an inferior item is added to the comparable sale price.

c. The net adjustment is the sum of all the individual line adjustments.

d. The net adjustment is added or subtracted from the sale price to provide an adjusted sale price of the comparable sale.

Sales Comparison Adjustment Process

Sales 1 and 4 are considered standard **base lots** for the area. The features identified below are either superior or inferior to this base. Research has uncovered the following:
Guidance: *These adjustment figures are given by the instructor.*

1. Sales backing up to the wooded creek are about *$6,000 superior*
2. Sales with larger (100' wide) lots are about *$9,000 superior*
3. Sales with frontage on Cedar Parkway are about *$3,000 inferior*
4. Sales located on a cul-de-sac are about *$3,000 superior*

Note. If the featured item is superior to the base, subtract the amount; if inferior, add the amount.

Feature	Sale 1		Sale 2		Sale 3	
Address	4240 Maple Street		3512 43rd Avenue		4315 Cedar Parkway	
	Description	+/– Adjust.	Description	+/– Adjust.	Description	+/– Adjust.
Sale price		$62,000		$78,900		$55,500
Dimensions	80' x 160'	*-0-*	100' x 160'	*– 9,000*	80' x 160'	*-0-*
View	None	*-0-*	Creek/Trees	*– 6,000*	None	*-0-*
Amenities	None	*-0-*	Cul-de-sac	*– 3,000*	None	*-0-*
Externalities	None	*-0-*	None	*-0-*	Traffic	*+ 3,000*
Net adjustment		*-0-*		*– 18,000*		*+ 3,000*
Adjusted price		*$62,000*		*$60,900*		*$58,500*

Feature	Sale 4		Sale 5		Sale 6	
Address	4330 Oak Street		4415 Maple Street		4435 Oak Street	
	Description	+/– Adjust.	Description	+/– Adjust.	Description	+/– Adjust.
Sale price		$60,000		$66,500		$68,600
Dimensions	80' x 160'	*-0-*	80' x 160'	*-0-*	100' x 160'	*– 9,000*
View	None	*-0-*	Creek/Trees	*– 6,000*	None	*-0-*
Amenities	None	*-0-*	None	*-0-*	None	*-0-*
Externalities	None	*-0-*	None	*-0-*	None	*-0-*
Net adjustment		*-0-*		*– 6,000*		*– 9,000*
Adjusted price		*$60,000*		*$60,500*		*$59,600*

The subject property is a **base lot** located at 4410 Oak Street. Once the six sales are adjusted to the base, reconcile the sales into an indicated site value for the subject property.

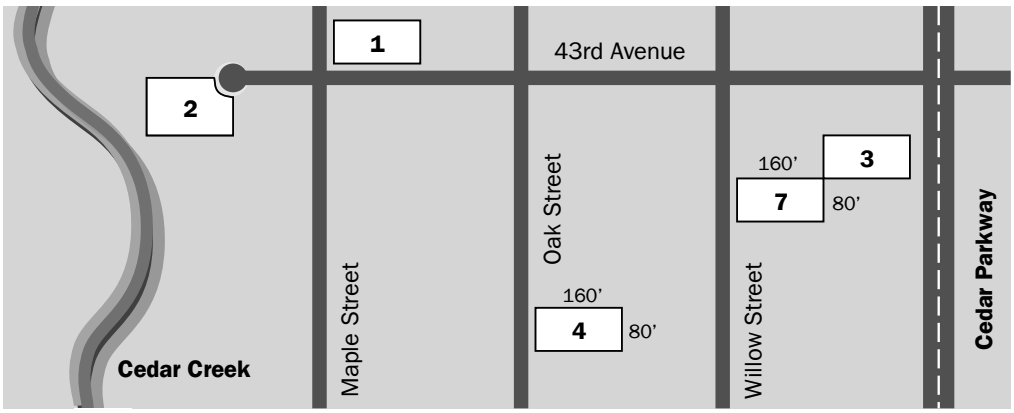
Indicated site value for the subject property by Sales Comparison: *$60,000*

Oak Street Case Study (Part II continued)—Extraction Example

Now that we have an indicated site value based on sales comparison, let's try an extraction procedure to derive a site value for 4410 Oak Street.

Sale 7 is located at 4320 Willow Street and is also a base lot with similar features to the subject property, but it is improved with a residential dwelling.

Feature	Subject Property	Sale 7
Address	4410 Oak Street	4320 Willow Street
Sale Price		**$176,000**
Dimensions	80' × 160'	80' × 160'
View	None	None
Amenities	None	None
Externalities	None	None



Sale 7 includes a one-story dwelling, and the current cost of improvements is **$156,000**. *If the effective age is estimated at 20 years and the remaining economic life at 60 years, what is the depreciated cost of the improvements?*

20/80 = 0.25 (or 25% depreciation)

$156,000 current cost × 0.75 (i.e., 1 – 0.25) = $117,000 depreciated bldg.

What is the indicated site value for the subject property based on extraction of Sale 7?

$176,000 – $117,000 depreciated cost of improvements = $59,000 (land)

Review Quiz

This multiple-choice quiz is similar to a practice test. You can look up an answer if you get stumped on a particular question. Choose the most correct answer.

1. Which land/site valuation procedure requires a cost estimate of the improvements for each of the comparable sales?

* A. extraction

B. ground rent capitalization

C. land residual technique

D. sales comparison

2. Assemblage is the process of combining two or more sites in order to produce greater utility. The increment of value created from assemblage is called

A. ground capitalization.

* B. plottage.

C. residual value.

D. subdivision incremental value.

3. An appraiser made the following dollar adjustments to a comparable sale of vacant land: +$5,000; –$2,000; and –$6,000. What is the gross adjustment for the land comparable?

A. –$8,000

B. –$2,000

C. +$3,000

* D. +$13,000

4. Components into which a property may be divided for purposes of comparison are called

A. adjustment items.

B. attribute characteristics.

C. elements of comparison.

* D. units of comparison.

5. What is the preferred method of land or site valuation when adequate data is available?

   A. allocation

   B. extraction

   C. land residual technique

* D. sales comparison

IV. Cost Approach on the URAR

Toward the bottom of Page 3 of the URAR is the cost approach section of the form. It will be helpful to complete this section of the form now because the data will help you in the sales comparison analysis, which begins in the afternoon session. However, you will need to convert the data from the cost, and your instructor will guide you through those numbers and also help you with deriving the depreciation percentage.

ITEM 1 Insert the land value derived from the work we did in Part 13.

ITEM 2 Go to the *Square Foot Appraisal Form* found in Part 9. Add Lines 1–13 to a subtotal and factor that number by the multipliers on Line 24. Take that total and divide it by the GLA of the subject property to derive the basic cost rate.

COST APPROACH TO VALUE (not required by Fannie Mae)

COST APPROACH						
	OPINION OF SITE VALUE				ITEM 1 = $	60,000
	Dwelling	2,128	Sq. Ft. @ $	59.02	ITEM 2 = $	125,594
			Sq. Ft. @ $		= $	
	Fireplace, Deck, Entry Porch and Built-ins				ITEM 3 = $	8,965
	Garage/Carport	528	Sq. Ft. @ $	17.14	ITEM 4 = $	9,050
	Total Estimate of Cost-New				= $	143,609
	Less	Physical	Functional	External		
	Depreciation	18.75%	None	None	ITEM 5 = $	(26,927)
	Depreciated Cost of Improvements				= $	116,682
	"As-is" Value of Site Improvements				= $	5,000
	INDICATED VALUE BY COST APPROACH				= $	181,700

Source: Adapted from the Fannie Mae Form 1004 (aka, Freddie Mac Form 70) dated March 2005

ITEM 3 From the *Square Foot Appraisal Form,* add Lines 14, 15, 18, and 19 to a subtotal and factor that number by the multipliers on Line 24. Take that total and enter it on the form.

ITEM 4 From the *Square Foot Appraisal Form,* take the cost number for Line 22 and factor it by the multipliers on Line 24. Divide the result by the square foot size of the garage to derive the rate and enter the results on the form.

ITEM 5 Use your estimate of effective age. Your instructor will help you estimate the remaining life. Once you have those components, you can calculate an age-life deprecation rate and complete the cost approach.

Note: *Use an effective age of 15 years and a remaining life of 65 years. Calculations: 15 / 80 = 0.1875, or 18.75% accrued depreciation.*

I. Overview of the Sales Comparison Approach

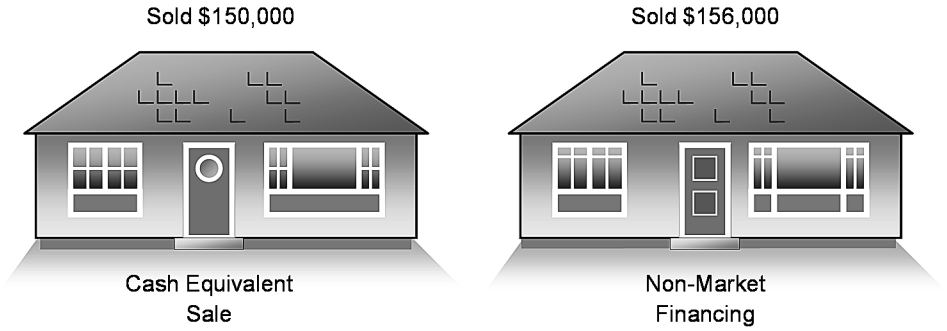
F. Elements of comparison

4. Can vary based on the assignment, but the 10 listed above are the most common and are always considered in sales comparison analysis, even if some elements may not apply.

b. **Financing**

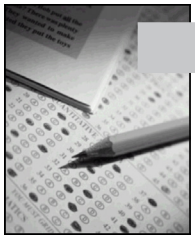
Non-market financing can affect the sale prices of comparable properties. The mode and terms of financing must be investigated and an adjustment made (if necessary) to **establish a cash equivalent price**.

Example



FEATURE	SUBJECT	COMPARABLE SALE # 1		COMPARABLE SALE # 2	
Address	5121 Plymouth Circle Pleasantville	5625 Settlers Lane Pleasantville		5017 Landing Street Pleasantville	
Proximity to Subject		5 Blocks East		3 Blocks South	
Sale Price	Refinance		$150,000		$156,000
Sale Price/Gross Liv. Area	sq.ft.	$125.00 sq.ft.		$130.00 sq.ft.	
Data Source(s)		MLS (63 Days on Market)		MLS (45 Days on Market)	
Verification Source(s)		Public Records		Selling Broker	
VALUE ADJUSTMENTS	DESCRIPTION	DESCRIPTION	+/– Adjust.	DESCRIPTION	+/– Adjust.
Sales or Financing Concessions		Conventional		Points Paid by Seller	– $6,000

In the above example, the financing adjustment can be derived by pairing the two sales. When that option is not available, an initial adjustment can be derived for cash equivalency based on mathematical calculations. However, a cash discount indicated by mathematical calculations may not reflect the market's interaction of buyers and sellers. Therefore, the appraiser must ensure the adjustment reflects the reactions of the market.



Practice Test Section 5

This multiple-choice test is for your benefit and provides a review of everything covered in Section 5. This is a closed-book test. Choose the most correct answer.

1. All of the following data can be considered on sales comparable to the subject property ***EXCEPT***

   A. active listings.

   B. closed sales.

   C. expired listings.

* D. fraudulent contracts.

2. What unit of comparison is appropriate in the appraisal of a hotel?

   A. price per apartment

   B. price per bed

   C. price per cubic foot

* D. price per guest room

3. Which type of market would provide the best market conditions for an appraiser to employ the sales comparison approach?

* A. active market

   B. buyer's market

   C. seller's market

   D. slow market

4. What does grandfathered use mean?

   A. a legal use that is permitted only for a specified time

   B. an illegal use

* C. a use that is nonconforming to the current zoning, but is permitted

   D. housing adapted for the elderly

5. What type of factory-built structure must have a HUD seal affixed to the exterior?

* A. manufactured home

B. modular home

C. panelized housing

D. sectionalized housing

6. In the appraisal of manufactured homes, which of the following is ***NOT*** required by a lending client?

A. The manufactured home must assume the characteristics of a site-built housing.

B. The manufactured home must be built on a permanent foundation.

C. The manufactured home must be legally classified as real estate.

* D. The towing hitch and axles must remain in place and not be removed.

7. A buyer paid more for a property because he was uninformed about the cost to petition for a zoning change. What element of comparison would this fall under?

* A. expenditure made immediately after purchase

B. financing

C. market conditions

D. use

8. Lenders concerned about adverse conditions affecting a property may require appraisers to apply the 3-S Rule, which stands for

* A. safety, soundness, and security.

B. sanitary, safe, and stable.

C. sturdy, safe, and strong.

D. none of the above.

9. What components in a residence should ***NOT*** be accounted for in the value of the property?

A. built-in cabinetry for a home theater

* B. free-standing kitchen appliances

C. installed fiber-optic cables in the walls

D. termites living in the crawl space and wall cavities

10. Aronson is using a comparable sale in which the seller paid discount points to lower the buyer's monthly mortgage payment. The property sold for $300,000 and the buyer is paying 20% down. If the seller paid 5 discount points on the mortgage amount, what is the cash-equivalent sale price?

A. $285,000

* B. $288,000 *($240,000 mortgage × 0.05 = $12,000 for points)*

C. $300,000

D. $315,000

Note. Question 10 is based on mathematical calculations to derive an indication of cash equivalency. In real world appraising, market evidence must support the adjustment made by the appraiser. If the cash discount indicated by the calculations is not recognized by buyers and sellers, the adjustment is not justified.

I. Preliminary Selection Process

B. Considering the residential nature of our subject property, what characteristics within the elements of location or physical attributes would you use to begin the selection process? You know that location will head the list. But which physical characteristics will be in your initial search?

1. *Location (in the Cedar Creek neighborhood if possible)*
2. *Design (two-story rather than one-story or split)*
3. *Size (similar in GLA)*
4. *Age and condition (similar in updating and renovations)*
5. *Features or amenities (similar in decks, fireplaces, etc.)*
6. *Other elements (besides location and physical characteristics)*
7. *Comparable energy-efficient features or updates (HERS Index rating)*
8. The preliminary data will be analyzed and many "comparable" sales will be filtered out. The above considerations are used to obtain the initial data pool of sales. Therefore, try to start out with a large group.

I. Identification and Measurement of Adjustments

C. **Qualitative analysis** recognizes the inefficiencies of real estate markets and the difficulty in expressing adjustments with mathematical precision.

3. **Ranking analysis.** This is a variant of relative comparison analysis. First, sales are ranked in ascending or descending order of desirability. Next, each sale is analyzed to determine the relative position of the subject property in the array. This is a great way to *visualize* value patterns.

   Where would the subject property fit in the ranked data if the features of the 2-bedroom condo included a city park view on the 17th floor?

Ranked Sales	Floor Level	View	Bedrooms	Sale Price
Condo Sale 1	15	City park	2	$300,000
Condo Sale 2	15	City park	2	$300,000
Condo Sale 3	15	Waterfront	2	$325,000
Condo Sale 4	16	City park	2	$302,000
Condo Sale 5	16	Waterfront	2	$327,000
Condo Sale 6	17	City park	2	$304,000
Condo Sale 7	17	Waterfront	2	$329,000
Condo Sale 8	18	City park	2	$306,000
Condo Sale 9	19	City park	2	$308,000
Condo Sale 10	19	Waterfront	2	$333,000

Sales 4, 6, and 8 can be identified for ranking the property on the 17th floor with a city park view.

II. Types of Adjustments

C. **Sequence of adjustments.** The sequence in which adjustments are applied to the comparable sales is determined by the market data and the appraiser's analysis of that data.

2. **Example.** Assuming the percentage adjustments presented below are market derived, what would be the indicated value of a comparable sale?

Sale Price for Comparable	**$400,000**	
Element of Comparison	Adjustment	Comments
Financing terms (transactional)	– 5%	$400,000 x 0.95
Conditions of sale (transactional)	– 10%	x 0.90
Market conditions (transactional)	+10%	x 1.10
Adjusted Sale Price	**$376,200**	**Subtotal**
Location (property)	– 5%	– $18,810
Physical characteristics (property)	+10%	+ $37,620
Indicated value	*$395,010*	$376,200 x 1.05

Transactional adjustments are the first to be performed, and they are carried out in sequence. Next, the property adjustments are performed, but all the percentage adjustments are based on the adjusted sale price ($376,200).

V. Oak Street Case Study (Part V)—Market Grid Adjustments

Instructions: Paired sales analysis is focused on the sales, so don't worry about the subject property in this analysis. The sales listed below are not the ones we selected in Part 16. While these are different properties, they are from the same market area and in the same general price range.

Begin your analysis by pairing two sales that are alike except for one item. The difference in the two sale prices can be attributed to the item. **Important Note.** The item labeled *Room Count* represents Total Rooms/Bedrooms/Baths. There is no market distinction between the number of bedrooms (or total rooms), so this item accounts for baths only.

Once you have identified the five adjustments, fill in the spaces provided below. We will use these adjustments in the URAR market grid in Part 18.

Paired Data Analysis

FEATURE	SALE A	SALE B	SALE C	SALE D	SALE E	SALE F
Sale price	$170,000	**$179,000**	174,000	**$171,500**	$166,000	**$177,500**
Lot size	80' x 160'	**80' x 160'**	80' x 160'	**80' x 160'**	80' x 160'	**80' x 160'**
Age/effective	48A/25E	**34A/15E**	38A/15E	**45A/20E**	41A/20E	**36A/20E**
Room count	8/4/2.5	**7/3/2**	7/3/2	**7/4/2.5**	8/4/2.5	**8/4/2.5**
GLA size	2,300 sq. ft.	**2,200 sq. ft.**	1,900 sq. ft.	**2,100 sq. ft.**	2,000 sq. ft.	**2,300 sq. ft.**
Garage	2-Car	**2-Car**	3-Car	**2-Car**	2-Car	**2-Car**
Fireplace	1	**1**	1	**1**	None	**1**

1. **Effective Age** adjustment per year — *$1,500 per year*
   Hint: Compare A and F and ignore actual age
   Divide the initial adjustment by the difference in effective age

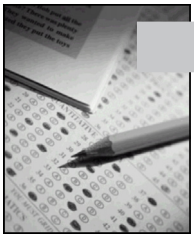
2. **GLA** size adjustment per square foot — *$30 per sq. ft.*
   Hint: Compare D and F
   Divide the initial adjustment by the difference in sq. ft.

3. **Half Bath** adjustment — *$3,000*

4. **Garage** (2-car vs. 3-car) adjustment — *$4,000*

5. **Fireplace** (single, masonry type) — *$2,500*

Additional advice: In some instances, you will need to use adjustments derived from the initial pairing in order to solve subsequent adjustments. In other words, once you have the adjustment for effective age, you can adjust the other sales for any differences in effective age to isolate the next adjustment.



Practice Test Section 6

This multiple-choice test is for your benefit and provides a review of everything covered in section 6. This is a closed-book test. Choose the most correct answer.

1. The part of the valuation process that uses experienced judgment and results in a value opinion is called the

   A. adjustment analysis.

   B. interpolation.

* C. reconciliation.

   D. weighted average.

2. An appraiser used cost-related indicators to derive an adjustment, which is considered what type of adjustment technique?

   A. paired sales

   B. qualitative

* C. quantitative

   D. relative comparison

3. While appraising an apartment building, an appraiser found that the location of a comparable sale was superior by $25,000, but the smaller size was inferior by $50,000. What is the indicated value if the comparable sale sold for $600,000?

   A. $525,000

   B. $575,000

* C. $625,000 *($600,000 + $50,000 – $25,000 = answer)*

   D. $650,000

4. Using the following percentages in the appropriate sequence of adjustments, what is the indicated value of a comparable property that sold for $200,000?

−5% Property rights conveyed
+15% Location
+5% Economic
−5% Conditions of sale
−10% Financing

* A. $194,940 *(Property rights 0.95 × financing 0.90 × sale conditions 0.95 × [location 1.15 + economic 1.05])*

B. $196,158

C. $200,000

D. $215,460

5. Comparable sales are adjusted to the subject property as the base, except financing, which is adjusted to what?

* A. cash equivalency based on the market

B. consumer price index

C. nominal interest rates

D. the other comparable sales

6. The sale price of a comparable sale is $120,000. The lot size is 10,000 sq. ft., and the GLA is 1,600 sq. ft. What is the price per gross living area for this sale?

A. $10.34

B. $12.00

C. $14.28

* D. $75.00 *($120,000 / 1,600 sq. ft. = answer)*

7. An appraiser has selected two sale properties that are alike except for one feature. Comparing the two sales to derive a market adjustment for the feature is called

* A. paired data analysis.

B. ranking analysis.

C. statistical analysis.

D. trend analysis.

8. A comparable sale sold in which the seller paid points on the buyer's $200,000 mortgage. If the appraiser made an adjustment of $12,000 for the points, how many points did the seller pay to lower the buyer's mortgage payment?

   A. 2 points

   B. 3 points

   C. 4 points

* D. 6 points *($12,000 / $200,000 = 0.06, or 6 points)*

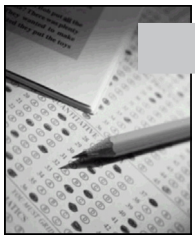
9. An appraiser adjusted a comparable sale to the subject property because it sold 12 months ago. In this instance, the adjustment is for

   A. conditions of sale.

   B. financing terms.

* C. market conditions.

   D. property rights conveyed.



Practice Test Section 7

This multiple-choice test is for your benefit and provides a spot check of everything covered in the course. This is a closed-book test. Choose the most correct answer.

1. Appropriateness, accuracy, and quantity of evidence are terms associated with the

   A. adjustment process.

   B. appraisal review of another appraiser's work.

* C. reconciliation criteria.

   D. scope of work decision.

2. If the subject property and the comparable sales all have fee simple title, no adjustment is required for

   A. conditions of sale.

   B. market conditions.

* C. property rights conveyed.

   D. use.

3. An appraiser has appeared in court and testified to a value opinion on a specific property. The testimony of the appraiser is considered to be

   A. a consulting report.

   B. an appraisal review report.

* C. an oral appraisal report.

   D. testimony and nothing more.

4. Every written appraisal must contain

   A. a detailed legal description.

* B. a signed certification.

   C. the highest and best use of the property as improved.

   D. the land value.

5. Labor and materials fall into the category of

* A. direct cost.

B. indirect cost.

C. replacement cost.

D. reproduction cost.

6. A 10-unit apartment building has a PGI of $78,000 and a 3% vacancy rate. The operating expenses and replacement allowance are $25,000. If the capitalization rate is 9%, what is the value by direct capitalization?

* A. $562,889 *($78,000 × 0.97 = $75,660 EGI − $25,000 = $50,660 I_O / 0.09)*

B. $588,889

C. $614,888

D. $975,000

7. An appraisal is required for determining just compensation in an eminent domain hearing. What type of final opinion of value should the appraiser provide in this assignment?

* A. point estimate

B. probability range

C. range of value

D. trend estimate

8. Site value is $76,000, and the remaining economic life of the improvements is 60 years with an effective age of 20 years. If replacement cost is $550,000, what is the indicated value of the property by the cost approach?

A. $259,332

B. $442,667

* C. $488,500 *(20/80 = 0.25 → $550,000 × 0.75 = $412,500 + $76,000)*

D. $516,000

9. Price per cubic foot, price per front foot, and price per apartment are used as

A. elements of comparison.

B. measures of dispersion.

* C. units of comparison.

D. ways to measure land.

10. A 20-story hotel with 300 rooms, which is serviced by two elevators, is an example of

A. capitalization exceeding demand.

* B. functional obsolescence.

C. reversion.

D. the breakdown method.