

# **The Income Approach to Value**

**A Self-Study Course for  
Assessors and Appraisers**

**Revised by Property Tax Division  
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# The Income Approach to Value

## Foreword

The instructional material in this book will provide assessors and appraisers an understanding of a method for valuing income producing properties. On completion of this material, the interested learner will be able to accomplish the following performance objectives:

- Estimate the market or economic rent for a property.
- Calculate effective gross income for a property.
- Estimate what expenses are necessary and proper to maintain the income flow for a property.
- Calculate and apply capitalization rates to income as a method of estimating market value.

Since this is meant to be an introduction to the use of the income approach to value, more sophisticated methods which apply directly to complex properties have been omitted.

## Introduction

You are preparing for your duties as an appraiser for your county. You have already studied the sales comparison and the cost approaches to estimate value on real property—that is, land, buildings, and other improvements.

In this session of your training you will learn another method for valuing real property, the income approach.

You will work with the material in this publication in much the same way as you did with the previous lessons on the cost and the sales comparison approaches. You must read the material. Then you will respond by answering a question (many times you will be given choices to select the correct answer), filling in a blank, or solving a problem. Remember to be sure to make a response. This is part of the learning process.

The correct answers to all responses will appear in an Answer Section at the end of each lesson.

Now, let us learn about the income approach to value.



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# Lesson 1: Rent—The Basis for the Income Approach

## Types of Rent Information

Some types of property are bought and sold on the basis of their ability to produce income. To appraise these properties, appraisers rely heavily upon the income approach to value.

### 1.1

Rent is the major source of income from real property. If we use rent in appraising the value of a property, we are using the \_\_\_\_\_ (income approach / cost approach / sales comparison approach) to value.

### 1.2

Pat Sampson owns a building. Chris Henry uses the building by operating a hardware business. The monthly payments that Chris Henry makes to Pat Sampson (which are Pat's income) for use of the property are normally called \_\_\_\_\_. (billings / rent / charges)

### 1.3

When you gather the information for an appraisal using the income approach, you need rental information. You will also want to know more about the rent than what the tenants are paying now. You need to know what the tenants were paying in the recent past (two or three successive years, if possible), and the current rents on other comparable properties.

Rent paid in past years is called historical rent. The actual rent presently paid by agreement between the user and the owner is called contract rent.

Contract rent is usually calculated per square foot per year on income properties such as offices and stores. When dealing with apartments, the usual practice is to calculate contract rent per square foot per year or per unit per year.

A few years ago, when the Wyatt Building was new, office space rented for \$15.00/sq.ft. per year. Now office space is being rented by Jean Jones for \$16.50/sq.ft. per year.

For appraisal purposes, the \$15.00/sq.ft. figure would be called \_\_\_\_\_ (historical rent

/ contract rent) and the \$16.50/sq.ft. figure represents \_\_\_\_\_. (historical rent / contract rent)

### 1.4

Let us discuss contract rent a little. Contract rent is the current income resulting from the terms of a rental contract or a lease. (A lease, as you know, is a short- or long-term rental contract.)

Terry Brown rents a property from Kim Smith for one year, and agrees to pay \$2.00/sq.ft. per month. As an appraiser, you would consider this data \_\_\_\_\_ (historical rent / contract rent) information.

### 1.5

To get annual contract rent data using the information above, you would simply multiply the monthly rent by \_\_\_\_\_ (12 / 24 / 6) and the annual contract rent would be \_\_\_\_\_. (\$12 per sq. ft. per year / \$24 per sq. ft. per year / \$36 per sq. ft. per year.)

### 1.6

In general, in appraisal work, you should typically think of contract rent in terms of a(n)

- monthly figure
- annual figure
- daily figure

### 1.7

You know what contract rent is, and how to get the data into a form you can use, but you also need to know where to get accurate information. The key is, "Use the head to save the feet."

But remember, the appraisal process will be accurate only if accurate data is used.

Some sources of contract rent data are:

- The person or company renting or leasing the property. (The legal term for the person or company using the property is lessee.)
- The owner of the property (legal term: lessor).

- The real estate agent (if the property has recently been sold, or if the property is rented, leased, or managed by an agent).

Now, if the lessee (user) and the lessor (owner) are readily available, and in the same location, you have two potential information sources for contract rent.

But, if you live in Salem, and have the following situation:

Lessor: Lives in Seattle, Washington; vacations in California

Lessee: Rents small warehouse in Salem; travels a lot and is rarely home; lives in Albany

Real Estate Agent: Hired by lessor to manage property; office in Salem

List in order your first, second, and third choice to get the information:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### 1.8

When a real estate agent is familiar with the property, they often know the quickest and easiest source of accurate contract rent information.

To sum up this point, the user and the owner of an income property are the principal parties to a rental lease agreement. In legal terms the user is called the \_\_\_\_\_ (lessee / lessor) and the owner is called the \_\_\_\_\_. (lessee / lessor)

### 1.9

Frequently, a real estate agent acts as an intermediary between the lessee and lessor, or as a sales agent. If the property has recently been sold, the agent may have accurate information needed by an appraiser valuing a rental property by the \_\_\_\_\_. (sales comparison approach / income approach / cost approach)

### 1.10

The type of rent information that can be determined from the present lease or rental agreement is called \_\_\_\_\_ (contract / market / historical) rent information.

### 1.11

As an appraiser using the income approach, the initial income information you receive may be in the form of either annual or monthly figures. To conform to standard appraisal practice, you will want to convert all income to a(n) \_\_\_\_\_ basis. (annual / monthly / bi-annual)

### 1.12

Now look at another kind of rent information that is valuable to you when using the income approach. It is called historical rent and it was mentioned briefly earlier. We are going to discuss it in more depth here. Historical rent is the amount for which a property has rented for each of the past several years.

In other words, it is not contract rent, but the rent paid the year before the current contract and for each of the several years before that. What do we call rent that was agreed to and paid three years ago? \_\_\_\_\_ (contract / market / historical)

### 1.13

You may ask, "How and why do we use historical rent information in appraising property by the income approach?" Well, it is always necessary to check out contract rent data for validity. Sometimes the current contract rent is not in line with what you think it ought to be, or with what comparable properties are renting for. The following situation will show how you can estimate the validity of contract rent by using historical rent information.

#### Situation:

Dale Jackson rented a small warehouse from Terry Vaughn three years ago at the prevailing market rate. The annual rent was \$40,000. Two years ago Dale Jackson rented the property for \$40,500. Last year the rent was \$41,000. This year Shawn King desperately needs an extra warehouse for a moving company and offers Terry Vaughn \$43,000 rent for the warehouse. Vaughn signs a lease this year with Shawn King for that amount.

All other things being equal, does the present contract rent of \$43,000 reflect the true rental value of the warehouse? \_\_\_\_\_ (yes / no)

### 1.14

Looking at the historical rent for the warehouse in our example, you see that rent increased at the rate of \$500 per year (three years ago — \$40,000; two years ago — \$40,500; last year — \$41,000). King has a lease for the current year which shows an increase of four times the standard historical rent increase, or \$2,000 increase in one year. This indicates that, in comparison with the true rental value, the current contract rent is:

- a. standard
- b. lower
- c. higher

### 1.15

To obtain contract rent information, we went to the lessee, lessor, and real estate agent for information. To find historical rent information, logic leads us to \_\_\_\_\_ (previous / current) lessees, lessors, agents, and appraisal reports on file in the assessor's office.

### 1.16

We have discussed two types of rent that are used in the income approach to value. The first deals with presently agreed-upon rent being paid and it is called \_\_\_\_\_. (historical / contract / market)

### 1.17

The second deals with rent on an annual basis which was agreed to and paid in the past. It is called \_\_\_\_\_. (historical / contract / market)

### 1.18

Using the two types of rental information and some simple logic, you can derive, or closely approximate, a third type of rent information. This type of rent is called market or economic rent. Market rent is the most probable rent a property would command in the open market.

Various economic factors are analyzed to estimate market rent, and you are probably familiar with all of them in one way or another. But let us take a look at some of the factors to be sure we are thinking along the same lines.

Suppose the country has been in a period of economic recession for a year and a half. Historical

rent data indicates a constant 10 percent increase over the preceding five years. If all other factors have remained constant, the current rent will probably show a \_\_\_\_\_ (higher / lower) rate of increase.

### 1.19

A large factory is being built close to a town. No new construction has begun on new housing facilities. Demand for housing is up because of the factory construction and new factory jobs. You would expect rent for dwelling space in that area to \_\_\_\_\_. (increase / decrease / remain the same)

### 1.20

Several warehouses have been built in anticipation of new business moving into the area. Until the new warehouse space is leased up and the market is in balance again, the owners of older existing warehouses must expect \_\_\_\_\_ (an increase / a decrease / no change) in income.

### 1.21

We can conclude that historical rent, contract rent, and various other factors must all be considered when establishing \_\_\_\_\_ (contract / market / historical) rent.

Information on comparative properties provide data for estimating market rent as well as other market data useful and needed for appraisal purposes. You can "dig out" this information from owners, tenants, real estate agents, and brokers in the area, or perhaps previous tax appraisals.

Now focus on how to develop and use comparative properties data in estimating market rent for the subject property (the property that is the subject of the income approach appraisal).

We are going to estimate the market rent for a subject property that is currently used as a retail clothing store. You will be asked to convert various types of information into standard information format, make some judgments, and assess whether the information is directly applicable, or partially applicable, or does not apply at all. First, read through the data presented. Then we will go back and work through the items we need to determine the economic market rent of the subject.

## DATA FOR ESTIMATING MARKET RENT FOR A SUBJECT PROPERTY

(All properties included below are in the same location.)

Subject Property	Use:	clothing store
	Size:	7,500 square feet (one floor)
	Contract rent:	\$48,750 per year
Property A	Use:	grocery store
	Size:	80' x 90' (one floor)
	Contract rent:	\$52,200 per year
Property B	Use:	grocery/dry goods
	Size:	80' x 80' (on each of two floors)
	Contract rent:	\$6,132 per month
Property C	Use:	drug store
	Size:	100' x 70' (one floor)
	Contract rent:	\$4,375 per month
Property D	Use:	drug store/grocery store
	Size:	120' x 150' (one floor)
	Contract rent:	\$99,000 per year

The first step is to convert the information presented into comparable units.

### 1.22

Since we need square footage information rather than dimensions, convert the data by multiplying the two dimensions. For example, if the size is 10' x 20' it equals \_\_\_\_\_ (100 / 200 / 2000) square feet.

### 1.23

Also, we want contract rent, so multiply monthly rent by the number of months in a year. If the rent is \$4,000 per month, the contract rent is \_\_\_\_\_. (\$24,000 / \$40,000 / \$48,000)

### 1.24

We also want to calculate (annual) contract rent per square foot. If the annual contract rent for 7,500 square feet is \$42,000, the annual contract rent per square foot is \_\_\_\_\_. (\$5.00 / \$5.60 / \$6.00)

### 1.25

A simple chart can be used to aid us in analysis. Please fill in this chart, using the data in the table (**DATA FOR ESTIMATING ECONOMIC RENT**) above.

	Use	Size-Square Feet	Number of Floors	Contract Rent	Rent/SF/Year
Subject					
Property A					
Property B					
Property C					
Property D					

### 1.26

The subject property we are working with is a retail store, utilizing 7,500 square feet of floor space on one floor, with a contract rent of \$48,750. We want to estimate the market rent of our subject. Which of the properties appear(s) similar enough to give you useful data? \_\_\_\_\_ (A / B / C / D)

As you gain experience in appraising, you will note other factors of similarity or dissimilarity for determining comparable properties, and refining your estimates. (Some other units of comparison have probably already occurred to you, like parking facilities, front footage, air conditioning, etc.)

### 1.27

Bracketing is a two-part technique used to help you arrive at a value for a subject using comparable properties' data. First, you exclude obvious misfits from consideration, and second, you assign plus or minus values to the remaining comparable properties, depending on how well they compare with your subject.

If your subject is a 1,000 square foot, wood-frame, one-story building, and you have information on a brick, three-story, 5,000 square foot building, you \_\_\_\_\_ (would / would not) choose it as a comparable property.

### 1.28

How does all this apply to market rent?

Check the rent of the comparable properties A and C. A rents for \$7.25/sq.ft./yr., and C rents for \$7.50/sq.ft./yr. The subject property rents for \$6.50/sq.ft./yr. This suggests that the market/

economic rent of the subject may be \_\_\_\_\_ (higher / lower) than the contract rent.

### 1.29

Here are the major factors to be considered:

Subject	\$6.50/sq.ft
Property A	\$7.25/sq.ft.
Property C	\$7.50/sq.ft

Since we do not have comprehensive information, we can approximate a market rent by bracketing. This technique is useful in quickly estimating approximate value.

We notice from the information that the greater the square foot area, the lower the rent per square foot. Property A has 200 square feet more than Property C, but it rents for \$\_\_\_\_\_ (\$0.20 / \$0.25 / \$0.30) less per square foot.

### 1.30

The subject property presently rents for \$6.50 per square foot and has a total area of 7,500 square feet. Using a bracketing technique, what should the subject's rent per square foot be? \_\_\_\_\_

### 1.31

What other types of information should we consider to give us a more valid appraisal of economic rent in an income approach to value?

- future potential business
- historical rents
- present economic factors
- previous tax appraisals on the property

## EXERCISE 1

To assure yourself of your knowledge to this point in the program, please take a few minutes to answer these questions as completely as possible.

1. You have been assigned a rental property to appraise. The property consists of four stores in a small shopping center complex. In order to appraise the property using the income approach to value, you need to establish the market rent for the property. List the data you need to establish the market rent and the sources you can use to obtain this data.

**Data**

**Sources**

2. Kim Talbot owns a four-unit apartment house; each apartment contains six rooms (including a living room, kitchen, bath, and three bedrooms). Each apartment is leased at present at \$65 per room per month. (Historical data is to be ignored.)

There are three other four-unit apartment houses in the market area of similar size and construction. Apartment house A contains 2-bedroom apartments with living room, kitchen, and bath, renting for \$70 per room per month. Apartment house B contains 3-bedroom apartments with living room, kitchen, and bath, renting for \$77.50 per room per month. Apartment house C also contains 3-bedroom apartments with living room, kitchen, and bath, renting for \$72.50 per room per month.

- a. What is the contract rent for Kim Talbot's apartment house?

\_\_\_\_\_

- b. What is the market rent Kim Talbot's apartment house?

\_\_\_\_\_

3. The rent that a subject property has commanded for various past periods of time is called \_\_\_\_\_.
4. Rent received by the owner for a property under a yearly rental agreement is called \_\_\_\_\_.
5. The income which a property should command on the open market at any given time is called \_\_\_\_\_.
6. A property has a contract rent of \$525 per month. Five similar properties in the area rent for \$510, \$530, \$600, \$520, and \$490 per month. The subject property rented for \$500 last year and \$490 the previous year. By bracketing, what monthly range would you estimate its economic rent to be? \_\_\_\_\_

### Estimating Potential Gross Income

Gross income is one of the major factors needed to estimate property value by the income approach. During this part of the course you are going to learn what kinds of items or factors make up gross income. You will also learn ways to determine the difference between income and expense items as listed on financial reports.

#### 1.32

Earlier you read that rent is the major portion of income for a property. And you have learned that when using the income approach to value, the appraiser must find out the contract rent and the historical rent in addition to other available factors to estimate the \_\_\_\_\_ (contract / historical / market) rent of the property.

All income, including rent, is considered in estimating gross income. Potential Gross income may be defined as a property's market rent at 100% occupancy plus earned income from services, if any. Effective gross income is equal to the potential gross income less an allowance for vacancy and collection losses.

#### 1.33

Please study the list below and, drawing from your experience, select the item that is probably not a component of income.

- |                               |                         |
|-------------------------------|-------------------------|
|                               | Component<br>of Income? |
| • electricity charged to user | (yes / no)              |
| • laundry room receipts       | (yes / no)              |
| • repairs to fixtures         | (yes / no)              |
| • parking fees                | (yes / no)              |
| • rent                        | (yes / no)              |

### 1.34

Try the same question from the other direction. Which item below is probably not a component of expense?

- |                            |                          |
|----------------------------|--------------------------|
|                            | Component<br>of Expense? |
| • supplies                 | (yes / no)               |
| • vending machine receipts | (yes / no)               |
| • janitorial services      | (yes / no)               |
| • maintenance and repairs  | (yes / no)               |
| • utilities                | (yes / no)               |

### 1.35

Potential gross income is \_\_\_\_\_ (contract / market / historical) rent at 100 percent occupancy plus earned income from services.

### 1.36

Gross income is made up of \_\_\_\_\_ and earned \_\_\_\_\_.

You are assigned a property to appraise. Gross income information on comparable properties is needed. You search through tax files and contact owners and real estate agents and obtain the following two income/expense statements. Please study them for income information.

<b>STATEMENT 1</b>		
<b>Bedford Apartments</b>		
<b>Income/Expense Statement</b>		
Rent	\$40,000	
Parking	<u>7,600</u>	
Total Income		\$47,600
Manager's Salary	\$3,200	
Janitor's Salary	2,200	
Supplies	450	
Utilities	3,440	
Taxes	<u>4,200</u>	
Total Expense		\$13,490

### STATEMENT 2

#### Major Apartment Homes

#### Income/Expense Statement

Lease Receipts	<u>\$55,000</u>	
Total Income		\$55,000
Salaries	\$4,400	
Repairs	3,575	
Supplies	1,650	
Utilities	3,560	
Taxes	6,620	
Insurance	<u>1,325</u>	
Total Expense		\$21,130

Some brief questions concerning these income/expense statements will ensure that you understand the points we have covered. (Note: Assume contract rent is equal to market rent when answering these questions.)

### 1.37

In Statement 1, is gross income equal to rent?  
\_\_\_\_\_ (yes / no)

### 1.38

In Statement 2, is gross income equal to rent?  
\_\_\_\_\_ (yes / no)

### 1.39

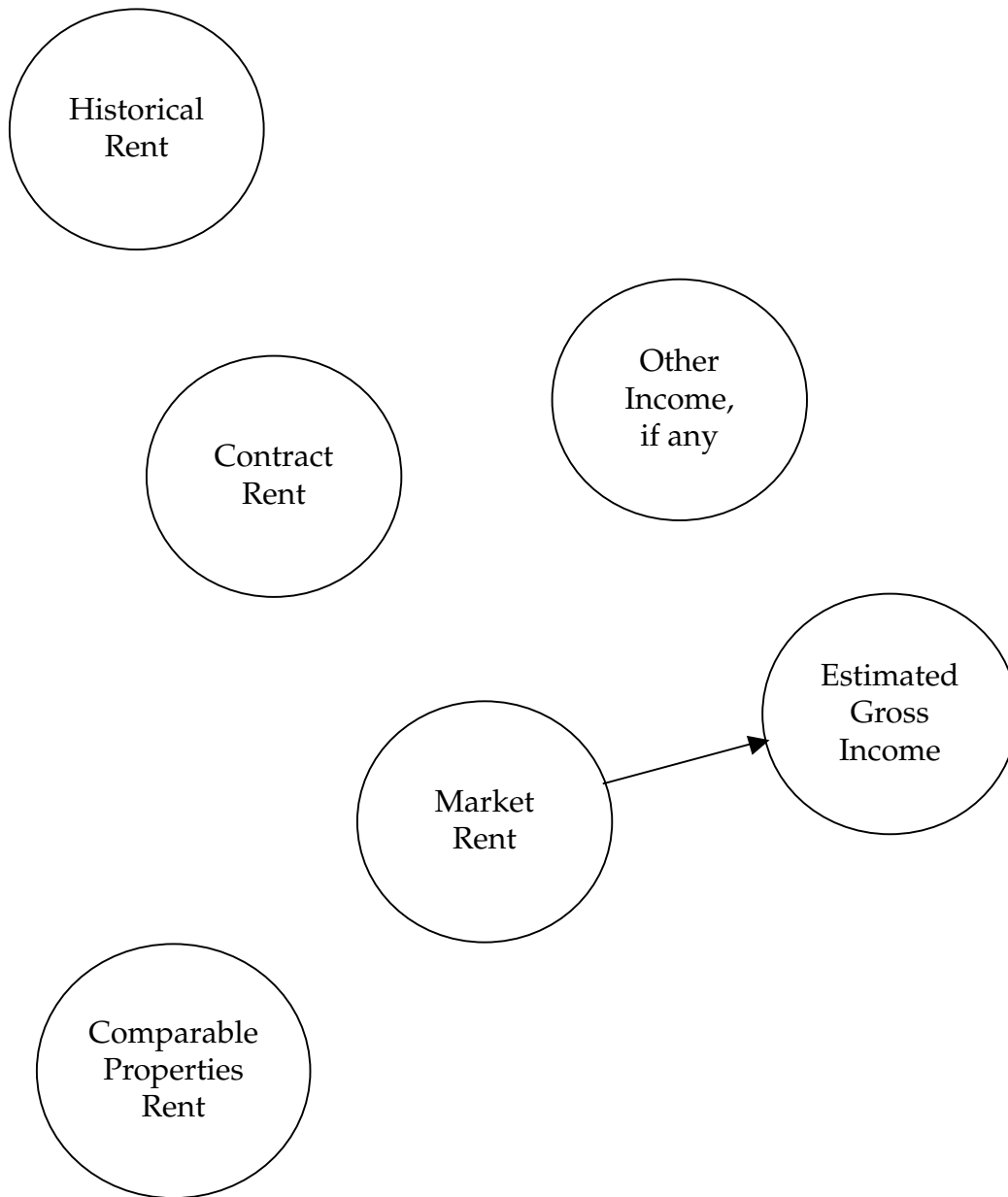
We could assume that rent and lease receipts in both statements are \_\_\_\_\_ (contract / market / historical) rent.

### 1.40

If we had not assumed that contract rent was equal to market rent above, could we have estimated the potential gross income for appraisal purposes? \_\_\_\_\_ (yes / no)

### 1.41

Now let's review what you have learned so far. Recalling the factors discussed in the two sections you have just read, connect the bubbles by arrows to show logical development of the information suggested by the labels in each bubble. (We have done the first one to set the pattern.)



## EXERCISE 2

Please complete the following exercises.

1. You have been given a property to appraise, and the only information available is the income/expense statement below. In the columns to the right, mark whether the item is an Income or an Expense item.

<b>Income/Expense Statement</b>		<b>Income</b>	<b>Expense</b>
Apartment rentals income	\$65,550	_____	_____
Electricity charges to tenants	2,660	_____	_____
Supplies	1,850	_____	_____
Janitorial services	3,620	_____	_____
Maintenance and repairs	2,500	_____	_____
Utilities	4,588	_____	_____
Insurance premiums	1,396	_____	_____
Taxes	7,580	_____	_____
Depreciation	6,500	_____	_____
Washer and dryer receipts	1,640	_____	_____

Listing the items used, compute the estimated gross income.

2. The best document for obtaining information concerning the sources of income for a property is a(n) \_\_\_\_\_. ( tax appraisal statement / income/expense statement / rental agreement )
  
3. Gross income is determined using the following two factors:  
 \_\_\_\_\_ plus \_\_\_\_\_ .
  
4. Rent, as stated in an income/expense statement, is equal to which of the following:
  - other income
  - market rent
  - contact rent
  - gross income

## Gross Income Multipliers

Gross income multipliers (GIM) give us one way of estimating value for income (rental) property. While this technique may be used in either the income approach or the sales comparison approach, for this course, we will be using it as one technique of the income approach.

In this section, you will learn what a gross income multiplier (GIM) is; why a GIM is used; where a GIM is used; and how to determine a GIM.

### 1.42

A gross income multiplier (GIM) is a measuring device. It is a tool used in valuing property by the income approach.

Suppose you are appraising a property, and you have estimated its gross income. You might use the GIM method to estimate the property's \_\_\_\_\_.

The GIM can be defined as:

*The gross income multiplier is the ratio of the selling price of a property to the gross income produced by the property.*

Ratios are simple ways to express relationships. Suppose you are meeting your friend for lunch. Your friend has to walk two blocks to the restaurant and you have to walk ten blocks. Another way of saying this is that for every block your friend walks, you have to walk five.

Here's what we did: to start out with, the ratio is:

2 blocks to 10 blocks

Dividing the smaller number into itself AND into the larger number gives us:

1 to 5

### 1.43

A GIM is a ratio just like the ratio of the number of blocks your friend walks to the number of blocks you walk. A GIM expresses the relationship of selling price of a property to \_\_\_\_\_.

### 1.44

It may be easier when working with larger numbers to express the ratio of gross income to selling price this way:

$$\text{gross income} \times \text{GIM} = \text{selling price (value)}$$

Suppose the subject property has a gross income of \$20,000, and it sold for \$120,000 a month ago. What is the GIM? \_\_\_\_\_

### 1.45

If the gross income rent had been \$30,000, and the GIM had been estimated (from analysis of similar properties) to be 9, what should the property sell for? \_\_\_\_\_

### 1.46

The gross income multiplier is established by analyzing data from comparable properties. It is important to note that **comparable properties must be similar in all aspects.**

If you have estimated the ratio of selling price to gross income of comparable properties, you can then apply the ratio to the \_\_\_\_\_ of the subject property to estimate its value.

### 1.47

In addition to being a primary method for estimating the value of properties, the gross income multiplier technique is a quick way to check the validity of property value estimated by using other methods. It is a useful tool, one that an appraiser needs to know how to use.

The formula for the GIM can be arranged in several correct ways. You studied one previously in this course. Is this formula correct? \_\_\_\_\_ (yes / no)

$$\text{gross income multiplier} = \text{sales price} \div \text{gross income}$$

### 1.48

The third, and final way to write the equation is:

$$\text{gross income} = \frac{\text{sales price}}{\text{gross income multiplier}}$$

Or,

$$\text{_____} \times \text{_____} = \text{_____}$$

### 1.49

Now we will work with the formula and some comparability analysis that you have already used in this section, to practice estimating property value.

To determine a gross income multiplier, two things must be known:

1. The sales price for an income-producing property, and
2. The \_\_\_\_\_ for the property (before expenses, taxes, or other items are deducted from it).

### 1.50

What is the gross income multiplier for each of the following properties? (Show your work.)

Property A: Sold two months ago for \$450,000.  
The annual gross income is \$90,000.  
The gross income multiplier is \_\_\_\_\_.

Property B: Sold six months ago for \$311,100.  
The annual gross income is \$37,500.  
The gross income multiplier is \_\_\_\_\_.

### 1.51

In order to use gross income multipliers to estimate the value of income-producing property, it is also necessary to obtain certain market data. Suppose that you have been assigned an income-producing property to appraise, namely, a four-unit apartment complex containing two-bedroom apartments, with a gross income of \$35,070/year.

In checking with a local real estate agent, you find that a similar property containing four two-bedroom apartments recently sold for \$235,000. The agent also has information showing an annual gross income for that property of \$33,570. Another property containing four two-bedroom apartments sold for \$210,000. Its gross income was \$30,000.

By using the sales data and the gross income data, you can establish a gross income multiplier of \_\_\_\_\_.

### 1.52

Using our GIM formula, but regrouping the words, we find:

$$\text{gross income} \times \text{GIM} = \underline{\hspace{2cm}}$$

### 1.53

Now, apply this formula to the previous example. The annual gross income for the property is \$35,070. You have established a gross income multiplier of 7. Therefore, an estimate of value for the property is \$\_\_\_\_\_.

### 1.54

Using a gross income multiplier of 5.7, what is the value of a property with an annual gross income of \$32,550? \_\_\_\_\_.

In the first example on gross income multipliers, the multiplier from only one similar property was used. Using only one similar property would not necessarily give an accurate gross income multiplier. When using a GIM method for estimating the value of a property, you should have sales and income data from at least four or more comparable properties.

You are assigned a property to appraise. You have concluded that the income approach to value is the most appropriate. You've found four comparable properties, determined their selling prices and gross income. You want to determine the best gross income multiplier to use to estimate the value of the subject property. Use the bracketing technique as follows:

1. Compute GIM for each comparable property using:

$$\frac{\text{Selling Price (SP)}}{\text{Gross Income (GI)}} = \text{GIM}$$

2. Remove any out-of-line (nonconforming) GIM's from consideration.
3. Assign plus or minus values to remaining GIM's based on factors that make the comparable properties better or worse than the subject, such as land to building ratio, size of the improvements, age, condition, etc.
4. Assign GIM to subject.

### 1.55

Now try one. The subject has a gross income of \$35,000 per year.

Comparable properties information is listed below, with a plus or minus valuation already assigned.

- A. + SP \$375,000 GI \$50,000
- B. - SP \$230,010 GI \$34,850
- C. - SP \$364,975 GI \$22,460
- D. + SP \$250,000 GI \$34,482

What are the GIM's for

- A. \_\_\_\_\_ B. \_\_\_\_\_ C. \_\_\_\_\_ D. \_\_\_\_\_?

**1.56**

Now, what is your estimate of the GIM and value for the subject property?

GIM \_\_\_\_\_ Value \_\_\_\_\_

**1.57**

Try another.

The subject has an annual gross income of \$58,000. Comparable properties information is listed below with plus or minus valuation assigned and the GIM of each.

- A. - SP \$540,000 GI \$54,000 GIM 10
- B. + SP \$600,000 GI \$50,000 GIM 12
- C. + SP \$450,000 GI \$25,000 GIM 18
- D. - SP \$261,900 GI \$27,000 GIM 9.7
- E. + SP \$356,400 GI \$71,280 GIM 5

What is the estimated GIM of the subject?

\_\_\_\_\_

**1.58**

Suppose you are asked to appraise a 7-year-old apartment building containing four 3-bedroom apartments. The property is brick, and in an excellent location, close to schools, shopping, and transportation. Rents for the apartment building you are to appraise include utilities. You need comparable properties data. Select the three most logical comparable properties from the following:

Sale No.	Comparable
1	Four 1-bedroom apartment building; 15-years-old; utilities included in rent; sold six months ago for \$145,800; annual gross income of \$21,600.

2	Four 3-bedroom wood frame apartment building; built six years ago; poor neighborhood; utilities included in rent; sold 18 months ago for \$145,800; annual gross income of \$20,800.
3	Four 3-bedroom wood frame apartment building; 7-years-old; low income neighborhood utilities included in rent; sold four months ago for \$115,500; annual gross income of \$11,800.
4	Four 3-bedroom brick apartment building; 18-years-old; good location; utilities not included in rent; sold six months ago for \$128,000; annual gross income of \$16,300.
5	Four 3-bedroom brick apartment building; 8-years-old; excellent location; utilities included in rent; sold eight months ago for \$145,800 annual gross income of \$22,852.
6	Four 3-bedroom brick apartment building; 8-years-old, convenient to schools, shopping, and transportation; utilities included in rent; sold two months ago for \$128,000; annual gross income of \$18,285.
7	Four 3-bedroom brick apartment building; 6-years-old, good neighborhood; utilities included in rent; sold six months ago for \$138,000; annual gross income of \$21,330.

Which three would you select as comparable properties? \_\_\_\_\_

**1.59**

The annual gross income for the subject apartment building is \$21,465. Now, use the data for the other comparable properties to determine the gross income multiplier.

The data is charted as follows:

	Sale Price	Gross Income	GIM
Sale 5	\$145,800	\$22,852	6.38
Sale 6	128,000	18,285	7.00
Sale 7	138,000	21,330	6.47

Determine the gross income multiplier based on the three comparable properties from above, and the value of the subject.

GIM \_\_\_\_\_ Value \_\_\_\_\_

### EXERCISE 3

Check your progress by completing the following exercises.

- Below are listed sale prices and gross incomes for three properties. Calculate the gross income multipliers for each of the properties:

	<b>Sale Price</b>	<b>Gross Income</b>	<b>GIM</b>
Property A	\$264,600	\$40,700	_____
Property B	166,800	23,170	_____
Property C	287,750	46,400	_____

- You are appraising a single-story store building. Its gross income is \$36,280. The building is 1,600 square feet. You have computed the GIM's of comparable buildings in the area.

Their data are as follows:

	<b>Size</b>	<b>GIM</b>
Store 1	1,700 sq. ft.	6.5
Store 2	1,500 sq. ft.	7.2
Store 3	1,200 sq. ft.	6.2

Use the bracketing technique to determine the approximate gross *income* multiplier and the approximate value of the building.

GIM \_\_\_\_\_ Value \_\_\_\_\_



# Lesson 1: Answers

## 1.1

Income approach

Because rent is the prime source of income from property

## 1.2

Rent

Income is what the owner gets, but rent is what the payment is called.

## 1.3

Historical rent . . . contract rent

## 1.4

Contract rent

## 1.5

12 . . . \$24.00/sq.ft.

That simple arithmetic is used often because when using the income approach for establishing property value, individual factors are computed on a yearly basis. But you will often get initial data on a monthly basis.

## 1.6

b. Annual figure

## 1.7

It is your choice and your feet.

We would suggest the agent first, lessor second, and lessee third, because the agent is in the town and probably has the information handy; the lessor is either in one place or the other but easier to catch up with than the lessee and may have property information close at hand.

## 1.8

Lessee . . . lessor

## 1.9

Income approach

## 1.10

Contract

## 1.11

Annual

## 1.12

Historical rent

## 1.13

No

Right, because King has made an agreement under unusual circumstances and has not sought a rent that a willing lessee would pay a willing lessor, in a competitive market. King is a willing lessee all right, but the lessor used an unusual and momentary supply and demand situation to derive a very high rent.

## 1.14

c. Higher

The historical rent indicates an unusual contract rent, so other factors have affected the validity of the contract rent.

## 1.15

Previous

## 1.16

Contract rent

## 1.17

Historical rent

## 1.18

Lower

## 1.19

Increase

Low supply and high demand causes rents to rise.

## 1.20

Decrease

Supply and demand again.

## 1.21

Market rent (Also called economic rent.)

## 1.22

200 ( $10' \times 20' = 200$  square feet)

Also remember to consider the number of floors used.

### 1.23

\$48,000 ( $\$4,000 \times 12 = \$48,000$ )

### 1.24

\$5.60/sq.ft./year

The contract rent divided by the number of square feet.

### 1.25

	Use	Size-Square Feet	Number of Floors	Contract Rent	Rent/SF/Year
Subject	Clothing Store	7,500	1	\$48,750	\$6.50
Property A	Grocery Store	7,200	1	\$52,200	\$7.25
Property B	Grocery/Dry Goods	12,800	2	\$73,600	\$5.75
Property C	Drug Store	7,000	1	\$52,500	\$7.50
Property D	Drug Store/Grocery	18,000	1	\$99,000	\$5.50

If the size of Property B tripped you, it is probably because you forgot the two floors. It is 80' x 80' for each of two floors.

### 1.26

Properties A and C

They are both roughly the same size as the subject, both on one floor, and the rents are close. In the case of A and C, though, both prices are higher. Properties B and D probably do not apply because of the large difference in size and rent and, in addition, B is on two floors. The type of business operation was not significant here because all were retail outlets of similar nature.

### 1.27

Would not

There is no meaningful way to compare the properties.

### 1.28

Higher

### 1.29

\$.25 ( $\$7.50 - \$7.25 = \$ .25$  per square foot)

### 1.30

Your answer should be in the range of \$6.50 to \$7.50 per square foot. Specifically, we arrived at \$6.95 per square foot.

We arrived at \$6.95 per square foot by assuming each square foot is equivalent to \$.001. We determined from observation that the larger the square foot of the building, the less per square foot the market rent is. The size difference between com-

parable A and C is 200 square feet. The rent difference is \$0.25. Dividing \$0.25 by 200 square feet equals \$0.001 per square foot rounded. Next, we find the size difference between comparable A and the subject which is 300 square feet. Multiplying \$0.001 per square foot by 300 square feet equals \$0.30. Because we have determined that the larger the size of the building, the lower the rent, we then subtract \$0.30 from the \$7.25 rent per square foot for comparable A, resulting in a market rent indication of \$6.95 per square foot for the subject. The annual market rent for the subject would then be 7,500 square feet x \$6.95 = \$52,125. The monthly rent would be  $\$52,125 \div 12 = \$4,344$  (rounded).

### 1.31

Future potential business, historical rents, present economic factors--and, perhaps, previous tax appraisals on the property.

## Answers to Exercise 1

1. Your answer should include at least the following:

Data	Sources
• Contract rent	• Lessor, lessee, agent
• Historical rent	• Lessor, agent (previous tax appraisal records)
• Current and historical use of the property	• Lessor, lessee, or agent of similar properties, tax appraisal records
• Comparative property rent	• Lessor, lessee, or agent of similar properties, tax appraisal records

2. a. Contract rent is \$65 per room/mo., or \$1,560 per room/yr., or a total of \$18,720 per yr. for all rooms  
 b. Market rent is \$75 per room/mo., or \$1,800 per room/yr., or a total of \$21,600 per yr. for all apts.

Your final answer should be \$21,600 ± \$100

3. Historical rent
4. Contract rent
5. Market or economic rent
6. Approximately \$525 per month

Explanation:		
Subject	\$525/month	\$6,300/year
Comp 1	\$510/month	\$6,120/year
Comp 2	\$530/month	\$6,360/year
Comp 3	\$600/month	\$7,200/year
Comp 4	\$520/month	\$6,240/year
Comp 5	\$490/month	\$5,880/year

By bracketing, we eliminate comparable properties 3 and 5 from consideration, leaving a range of monthly rents from \$510 to \$530. The contract rent is within the market rent range; therefore, it is considered to be equivalent to market rent.

### 1.32

Market

### 1.33

Electricity charged to user: ..... Yes  
 Owner is collecting (income) to cover his costs.

Laundry room receipts: ..... Yes  
 Income to the owner for a service provided.

Repairs to fixtures: ..... No  
 Can only be an expense.

Parking fees: ..... Yes  
 Suggest income for another service provided, however, it is rent on parking space.

Rent: ..... Yes  
 Obviously that is income.

### 1.34

Supplies: ..... Yes  
 Vending machine receipts: ..... No  
 Janitorial services: ..... Yes  
 Maintenance and repairs: ..... Yes  
 Utilities: ..... Yes

### 1.35

Market

If you said contract, your logic is all right, but for appraisal purposes, the contract rent may not give us reasonable information for valuation of the property. The contract rent could be very low or very high due to a variety of circumstances.

### 1.36

Market rent . . . income from services

### 1.37

No (Because there is income from a service.)

### 1.38

Yes (Because there are no other income items.)

### 1.39

Contract (Rent and lease receipts reflect actual collected rent based on a rental contract.)

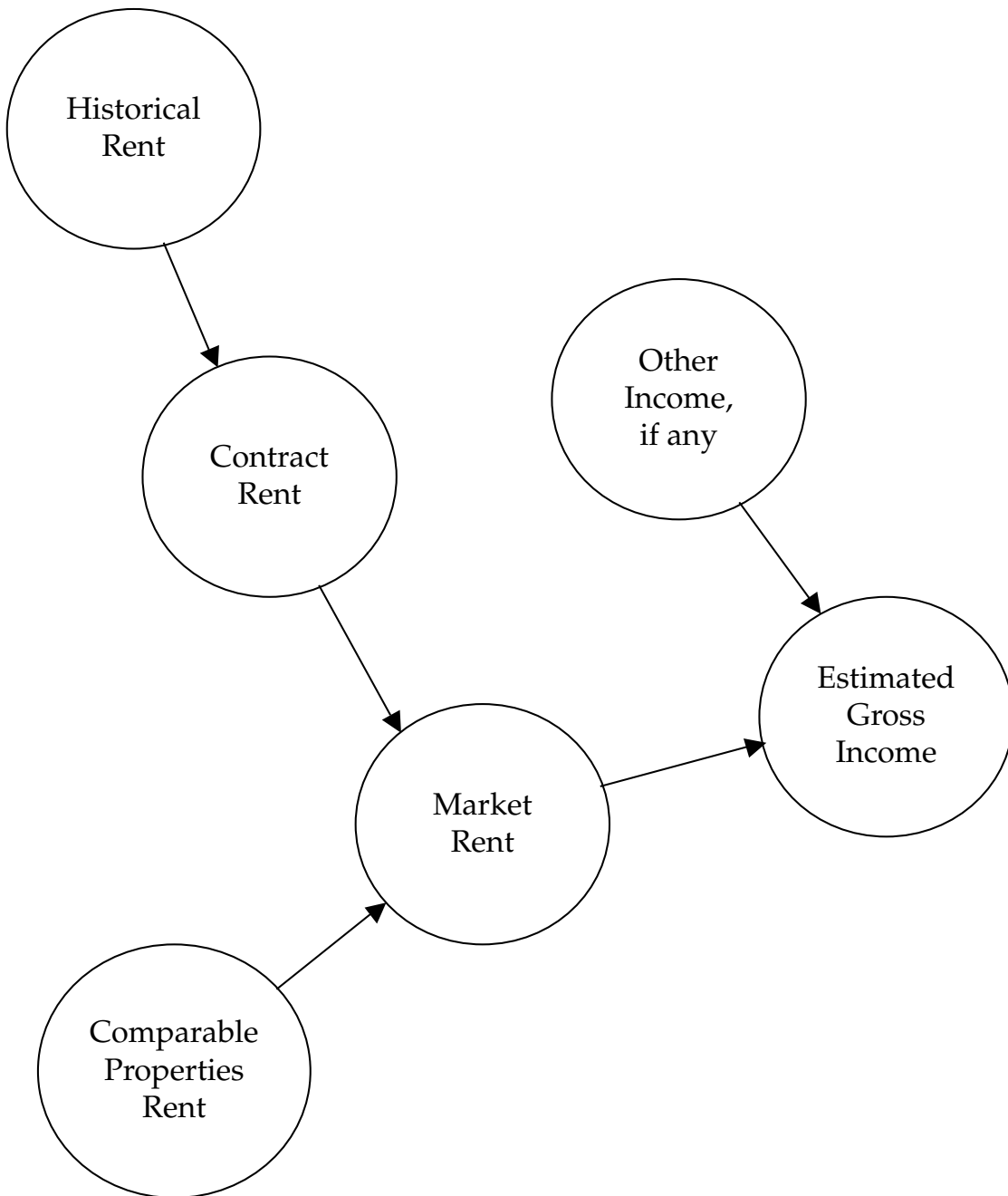
### 1.40

No

Because the definition is: Potential gross income = market rent at 100 percent occupancy plus earned income from services, and we do not know whether we have 100 percent occupancy or if the rent is equal to market rent. If we knew the economic rent figure, we would use that figure and not the figure on the statement.

### 1.41

This is what yours should look like.



## Answers to Exercise 2

1. Your answer should (1) list the following income items in any order:

Apartment rentals income	\$65,550
Electricity charges to tenants	2,660
Washer and dryer receipts	1,640
and (2) Total	<u>\$69,850</u>

All other listed items are expenses.

2. Income/Expense Statement  
3. Market rent plus all other income (your words)  
4. Contract rent

### 1.42

Market value

Or you might use another method, but let us use this one for now.

### 1.43

Gross income of the property

### 1.44

6

$\$20,000 \times \text{GIM} = \$120,000$ ; or  $\text{GIM} = \$120,000 \div \$20,000$ .

So:  $\text{GIM} = 6$

### 1.45

$\$270,000$  ( $\$30,000 \times 9 = X$ ;  $X = \$270,000$ )

### 1.46

Gross income

### 1.47

Yes

### 1.48

Gross income  $\times$  gross income multiplier = sales price

### 1.49

Gross income

### 1.50

Property A: 5

Your work looked something like this:

$$\frac{\$450,000}{\$90,000} = 5$$

or whichever equation you chose to use

Property B: 8.3

Your work looked something like this:

$$\frac{\$311,100}{\$37,500} = 8.3$$

or whichever equation you chose to use

### 1.51

7

Divide the selling price by the annual gross income.

Now that you have found the gross income multiplier for the comparable property to be 7, you can use it to estimate roughly the value of the subject property.

### 1.52

Value of property

### 1.53

$\$245,490$

### 1.54

$\$185,535$

The value would be  $\$32,550$  (gross income) multiplied by 5.7 (gross income multiplier) =  $\$185,535$ .

### 1.55

A. 7.5   B. 6.6   C. 16.25   D. 7.25

### 1.56

GIM: 6.9   Value:  $\$241,500$

If your answer is within the limits of 6.8 to 6.9 GIM, that is fine. The thinking we used:

- The GIM for C (16.25) was excluded since it is out of line with the other GIM's.
- Our plus and minus values led us to feel that the range should be between B and D.

### 1.57

11 ±

E and C are out-of-line. The range then is between 10 and 12.

### 1.58

5, 6, and 7

The property from Sale 1 contains four one-bedroom apartments. The subject property contains three-bedroom apartments. So this property is not comparable to the subject property.

The properties from Sales 2 and 3 are not similar to the subject property because of their construction and location.

The property from Sale 4 is comparable except for age and because the rent for the property does not include utilities. The rent for the subject property does include utilities. The services which are supplied in order to produce the rents should be similar.

The properties from Sales 5, 6, and 7 all compare with the subject property.

### 1.59

GIM 6.40, value \$137,376 or \$137,380

Your answer may vary as follows: GIM 6.38, value \$136,946, up to GIM 6.47, value \$138,878.

## Answers to Exercise 3

1. Property A gross income multiplier is 6.5.  
Property B gross income multiplier is 7.2.  
Property C gross income multiplier is 6.2.
2. \$248,518 or \$250,332 (If you used 6.85 or 6.9)

# Lesson 2: Effective Gross Income

## 2.1

As we have discussed in Lesson 1, potential gross income is a combination of \_\_\_\_\_ plus all other income.

## 2.2

Potential gross income is based on the fair market rent of a property at \_\_\_\_\_ percent occupancy, plus other income.

But it is reasonable to assume that many properties will not be fully rented all the time. During normal economic times, and especially during times of economic recession, many properties have vacancies.

## 2.3

Vacancies, as well as nonpayment of rents, can have a significant effect on income derived from a property. For example, the gross income of a certain apartment property, deriving all its income from rent, is \$200,000. Historically, the subject property has had 10 percent vacancies. The rate of vacancies this year is no different from last year. You would assume the real or effective gross income of this property to be \_\_\_\_\_.

Effective gross income is the potential gross rent portion of gross income reduced by normal vacancies and uncollectible rents, plus other service income.

## 2.4

If a commercial property has a yearly vacancy rate of 5 percent, its potential gross rent would be \_\_\_\_\_ (higher / lower) than its effective gross rent.

## 2.5

Now look at another situation. Dale Jones owns a 2-story office building. Rent is low because of the age and location of the building. New businesses rent these offices because they are seeking low rent overhead. Vacancies are rare in the office building. But, Dale has difficulty collect-

ing rent from the business ventures that fail. To determine the effective gross income for this property, you would \_\_\_\_\_ (increase / reduce) the potential gross rent by a factor for uncollected rent.

## 2.6

Credit losses (uncollected rents) and vacancies are the two factors used to adjust the potential gross rent portion of the gross income of a property and the result is \_\_\_\_\_ gross rent of the property.

## 2.7

To calculate the effective gross income for a property, you first estimate the potential market rent (as discussed in Lesson 1). Next you reduce that figure by the percentage of vacancies or credit losses or both, based on the property's historical data. If the market rent for a property is \$36,000 per year and the property historically has a combined loss due to vacancies and uncollectible rent of 2.5 percent, what is its effective gross rent? \_\_\_\_\_

The last step when there is non-rent-associated service income (income other than rent), is to add it to the effective gross rent to estimate the effective gross income.

To calculate the percentage of vacancy/credit loss, you subtract the income from collected rent from the potential gross rent. Then you calculate what percentage of the potential gross rent the difference is.

## 2.8

Suppose you have an income property to appraise and you estimated the potential market rent at \$40,000 per year. A yearly income/expense statement for the property indicates all of the income is from rent. You also determined that the contract rent and market rent to be approximately equal. The collected income from the statement is \$36,000. The percentage of vacancies/credit loss is \_\_\_\_\_.

## 2.9

Using the following income/expense statement, calculate the effective gross income of the property. The following conditions apply:

1. The statement is for the year just ended.
2. The market rents and the contract rents for the apartment units are about equal.
3. The apartment building has 10 identical apartment units and each rents for \$6,000 per year.
4. Vacancy and uncollectible rent are the same as the preceding consecutive three years.

### Income/Expense Statement

Rent collected	\$ 55,500	
Parking	<u>\$ 8,000</u>	
		\$ 63,500
Manager's salary	\$1,200	
Janitor's salary	600	
Supplies	350	
Utilities	2,400	
Taxes	6,750	
Mortgage payments	<u>9,500</u>	
		\$ 19,600

What is the potential rent for the apartment building? \_\_\_\_\_

## 2.10

Now, what is the gross income for the property above? \_\_\_\_\_

## 2.11

What is the vacancy/credit loss percentage?  
\_\_\_\_\_

## 2.12

What is effective gross income for this property?  
\_\_\_\_\_

## 2.13

Income from rent is affected by vacancies and by uncollectible rents. Service incomes are usually not affected because they are "pay-as-you-go" items. You will have to make judgments

concerning these types of items. For instance: if there is a 5 percent loss due to uncollectible rents and electrical and gas service are charged to the tenants, you would expect to have an equal loss for those services. Would you expect to have an equal loss from coin-operated laundry facilities?  
\_\_\_\_\_ (yes / no)

## 2.14

A ten-unit apartment property has 5 percent vacancy and 5 percent credit losses historically. Its projected income for the next year is as follows:

Rent (at 100% occupancy)	\$78,000
Laundry receipts	1,750
Parking fees	9,000

What is the effective gross income? (Assume rent is market rent.) \_\_\_\_\_.

Check your progress by completing the following exercise.

### EXERCISE

1. Below is a projected income/expense statement.

- The subject is a four-unit apartment property.
- The apartment units are vacant for four weeks out of 52 weeks each year.
- There has been a loss of rent (credit loss) of 5 percent for each of the past two years.

### Projected Income/Expense Statement

#### Income:

Income from rent (@ 100% occupancy)	\$32,400
Tenant electricity charges	2,792
Income from laundry facilities	1,150

#### Expenses:

Salaries	2,400
Repairs and maintenance	2,040
Utilities	3,200
Supplies	400
Miscellaneous	600

Calculate the effective gross income for the subject. \_\_\_\_\_

2. Potential gross income is market rent at 100 percent occupancy plus all other income from services. How does effective gross income differ from potential gross income?

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## Lesson 2: Answers

### 2.1

Market rent

### 2.2

100

### 2.3

\$180,000

10% lower than gross income—because of vacancies.

### 2.4

Higher

Effective gross potential gross is market rent less normal vacancies and uncollectible rents plus other service income

### 2.5

Reduce

The effect on Dale Jones' income is the same as if he had vacancies.

### 2.6

Effective

### 2.7

\$35,100

Potential gross rent less vacancies and credit losses

$\$36,000 \times 2.5\% = \$900$ , and

$\$36,000 - \$900 = \$35,100$

### 2.8

10%

$\$40,000 - \$36,000 = \$4,000$  vacancy or loss

$\$4,000 \div \$40,000 = .10$  or 10% vacancy or loss

If we divide the amount of loss by the potential income we can determine the percentage difference.

### 2.9

\$60,000 ( $\$6,000 \times 10$  units)

### 2.10

\$68,000 (Market rent plus service income)

### 2.11

7.5% ( $\$4,500 \div \$60,000 = .075$  or 7.5%)

### 2.12

\$63,500

Remember to add the service income (parking) to the effective gross income. Your calculations were something like this:

$7.5\% \times \$60,000$  or  $.075 \times \$60,000 = \$4,500$

And Subtracting the Vacancy/Credit Loss  
From the Potential Rent:

	\$60,000
	<u>4,500</u>
	\$55,500
Plus Service Income:	+ <u>8,000</u>
	\$63,500

### 2.13

No

They are pay-as-you-go, or separate from the normal rent charges.

### 2.14

\$80,950

\$78,000 minus 10% (or \$7,800) plus laundry and parking



## Lesson 3: Expenses

You have learned how to estimate the effective gross income for a property. In this lesson, we will deal with calculating the net income.

Net income is the effective gross income less the costs required to maintain the income flow. Expenses are handled in a variety of ways for accounting purposes; but for the purpose of estimating the value of income properties, you will be determining those expenses which are necessary to maintain the income flow of the subject property.

It is important to consider lease terms when estimating expenses. Leases are usually referred to as Net or Gross, although many are not completely one or another. With a Net Lease (also referred to as Triple Net), the tenant pays all taxes and operating expenses. The owner is not involved with property operations. In a Gross Lease, the landlord pays all operating expenses.

In the following lesson, you will be introduced to a Gross Lease situation. That is, the problems will all be presented using a Gross Lease expense structure.

### 3.1

If a property has an effective gross income of \$36,000, and the expenses necessary to maintain that income flow are \$22,000, what is the net income of the property? \_\_\_\_\_

Financial statements are prepared by accountants to help property owners manage their property and for income tax purposes. Information contained on these statements can be helpful to appraisers, but must be analyzed and usually adjusted before it can be used for appraisal purposes.

Sometimes you will have access to income/expense statements from properties, which put expenses into four different categories. The categories are listed below:

- *Fixed expenses*—these are the expenses incurred by a property which are continuous (each year). Usually these expenses do not vary widely from year to year. License and permit fees and

insurance premiums are usually in this category. Fixed expenses are operating expenses that usually do not vary with occupancy and have to be paid whether the property is occupied or vacant.

- *Variable expenses and repairs*—these are the expenses incurred for administration, utilities, payroll, maintenance, supplies, and services required for operating the property. Variable expenses are relative to the occupancy rate: as occupancy increases so does the variable expense increase.
- *Reserve for replacements*—this category includes amounts reserved for future replacement of boilers, roofs, stoves, and other short lived items. (They are usually not necessary costs of maintaining the income flow except in special cases which we will mention later.)
- *Other expenses*—this catchall category may be small by comparison to the other categories. However, if it is sizable, the items included should be analyzed carefully to determine whether to reallocate them to other categories and to determine whether the items are necessary to maintain the income flow. Non-functioning director's salaries and other items that do not maintain the income flow may appear in this category.

Real estate (property) taxes are a legitimate expense. For ad valorem tax purposes, however, property taxes should not be included as an operating expense. The property tax impact is accounted for by adding an effective tax rate component to the capitalization rate.

### 3.2

Mortgage interest, while an appropriate expense for income tax and accounting purposes, it is not an allowable expense for appraisal. Because most properties are purchased with debt and equity capital, the overall capitalization rate must satisfy the market return requirements of both investment purposes. Therefore, rather than allowing mortgage interest as an expense item, it is con-

sidered within the components which make up the capitalization rate.

Insurance is a fixed expense to the property and is necessary to maintain the income stream. Under what category would you expect to find electricity, gas, and cleaning supplies? \_\_\_\_\_  
(Fixed / Variable / Other / Reserves)

Are they necessary to maintain the income stream of the property? \_\_\_\_\_. (yes / no)

### 3.3

Insurance must be carried by commercial properties. In most cases, insurance premiums are paid on a three-year basis. Insurance premiums on an income property would be expected from year to year to \_\_\_\_\_.  
(remain constant / fluctuate).

### 3.4

On the basis of the information in the two questions above, what category of expenses do you think insurance premiums would appear under?  
\_\_\_\_\_

### 3.5

Here is a list of expenses. Put an F in front of the Fixed expenses and an V in front of the Variable expenses. Please leave all other expenses, if there are any, blank.

- \_\_\_ janitor's salary
- \_\_\_ insurance (3-year policy)
- \_\_\_ repairs
- \_\_\_ water and sewer
- \_\_\_ building depreciation
- \_\_\_ principal and interest on mortgage
- \_\_\_ property taxes
- \_\_\_ gas
- \_\_\_ electricity
- \_\_\_ supplies

### 3.6

When calculating net income, we are concerned with all expenses that are necessary to maintain the income flow of the property. Take a closer look at the Reserves for replacement and Oth-

er expenses categories. They will require some judgments on your part on whether to include them or not and at what level.

Building maintenance and repairs are properly included as Variable expenses. But now, consider this case. The owner of a property has just installed a new roof costing \$15,000. The original roof lasted for 20 years. He has allocated \$750 per year for the past 20 years in anticipation of this replacement cost which is necessary to the income flow of the property. Should you include the \$750 replacement expense on his statement as an expense in computing net income? \_\_\_\_\_  
\_\_\_\_ (yes / no)

### 3.7

If the owner of an apartment building redecorates each unit before a new tenant moves in, the expense would be classified as a(n) \_\_\_\_\_ expense.

### 3.8

Now look at the Other expenses category. Items that may appear here are legal and accounting fees, income taxes, corporation franchise taxes, and director's salaries.

Legal and accounting fees at an amount that seems reasonable for the operation of the property are logical administrative expenses of the property. Salaries of directors who also manage the property in some way are necessary expenses contributing to the income flow, if in line with salaries at similar income properties.

Are income taxes or corporation franchise fees necessary to the income flow of a property?  
\_\_\_\_\_

### 3.9

Now, let's work on calculating the Fixed and Variable expenses from the following income/expense statement excerpt. The next few problems are based on this information.

Actual rents received (past year)	\$92,000
Expenses (past year)	
Interest on mortgage	6,284

Property Taxes	7,500
Janitor's salary	3,200
Insurance (3-year policy)	2,700
Water	2,250
Electricity	2,700
New roof (15-year guarantee)	2,800
Supplies and sundries	750
Owner's salary	<u>3,600</u>
	\$31,784

From the excerpt above, what is the total of the variable expenses? \_\_\_\_\_

### 3.10

As we said in Problem 3.4, insurance premiums are usually paid on a 3-year basis. Therefore, you would have to divide the 3-year premium by \_\_\_\_\_ to get the yearly or annual insurance cost.

### 3.11

In the statement excerpt above, what is the total of the fixed expenses? \_\_\_\_\_

### 3.12

In an apartment building with regular turnover, if rooms were redecorated after each tenant moved out, would you consider redecoration a variable expense or a replacement expense?  
\_\_\_\_\_

### 3.13

Now put the information you have been working with in Lessons 2 and 3 to use.

Effective gross income is potential gross rent less \_\_\_\_\_ and \_\_\_\_\_.

### 3.14

Effective gross income minus all expenses necessary to maintain income flow equals \_\_\_\_\_ income.

### 3.15

Suppose your subject property has a potential gross rent of \$70,000, and a 5 percent vacancy factor is noted. There is no other source of

income. What is the effective gross income?  
\_\_\_\_\_

### 3.16

The fixed expenses for the above subject are \$12,200, and the variable expenses are \$31,600. There are no other expenses required to maintain income flow. What is the net income?  
\_\_\_\_\_

### 3.17

Now, solve this problem to practice your skills. You will need to find effective gross income, fixed expenses, variable expenses, and net income. Here is the information for the subject.

You are appraising a 23-year-old apartment building. The statement for the past year shows actual expenditures and receipts. The building contains 15 units that rent for \$350 per month, 15 for \$425 per month, and 10 for \$500 per month. These rents conform to market rents for comparable properties. Vacancy rate is 10 percent.

#### Income/Expense Statement

Rents received (past year)	\$179,550
Expenses (past year)	
Interest on mortgage	15,778
Insurance (3-year policy)	13,500
Property Taxes	30,000
Janitor's salary	17,000
Water	9,000
Electricity	6,000
New roof (20-year guarantee)	18,000
Redecorating	3,500
New equipment furnished	
Repairs	14,000
Supplies	3,000
Landscape maintenance	8,600
Owner's salary	35,000
Corporation franchise tax	660

A. What is the potential gross income?  
\_\_\_\_\_

B. What is the effective gross income?  
\_\_\_\_\_

C. What is the total of fixed and variable expenses?  
\_\_\_\_\_

D. What is the total of replacement expenses?  
\_\_\_\_\_

E. What is the net income? \_\_\_\_\_

### EXERCISE

Check your progress by completing the following exercises.

1. Place an X in front of the types of expenses below that would be classified as variable expenses.

- \_\_\_ cleaning
- \_\_\_ management expense
- \_\_\_ electricity
- \_\_\_ mortgage interest
- \_\_\_ water
- \_\_\_ property taxes
- \_\_\_ gas
- \_\_\_ repairs
- \_\_\_ supplies
- \_\_\_ insurance

2. Below is a list of expenses for a rental property. Please compute the variable expenses for the property.

#### Expenses

Salary (janitor)	\$ 2,400
Repairs	4,900
Property Taxes	4,500
Heating	2,100
Electricity	1,200
Insurance (3-year policy)	1,750
Water	2,800
Principal and interest on mortgage	9,500
Building depreciation	20,000
Supplies	600

3. Below is an income/expense statement furnished to you by the owner for a property you are to appraise. Allowing a 4 percent vacancy and loss of rent factor, compute the net income for the property.

#### Income/Expense Statement

Gross Income	\$85,200
Salary (janitor)	3,200
Utilities	4,260
Repairs and maintenance	5,110
Insurance (one year)	2,130
Redecorating	1,700
Legal and accounting fees	650
Supplies	720
Miscellaneous	2,550
License and permit fees	7,500
Owner's salary	5,960

## Lesson 3: Answers

### 3.1

\$14,000

Effective gross income less expenses necessary to maintain the income flow, equals net income.

### 3.2

Variable expenses...yes

Utilities and supplies are found under variable expenses, and they are expenses necessary to the income flow of the property.

### 3.3

Remain constant

The premiums on insurance coverage vary little from year to year.

### 3.4

Fixed expenses

The premiums remain relatively constant and are a continuing requirement.

### 3.5

janitor's salary

insurance (3-year policy)

repairs

water and sewer

building depreciation

principal and interest on mortgage

property taxes

gas

electricity

supplies

License and permit fees and insurance are fixed expenses. Salaries, repairs, supplies, and utilities are all variable expenses, and are necessary expenses to maintain the income flow of the property. The expense associated with building depreciation is addressed as a "recapture rate" which is a concept that will be introduced in Les-

son 4 on capitalization rates. Mortgage interest and principal are Other expenses, and they are not necessary to maintain the income flow of the property.

### 3.6

Yes

Reserves for replacement of stoves, refrigerators, boilers, etc., if substantiated and reasonable in terms of cost and duration, are certainly to be included.

Note: Building depreciation is not normally considered as an operating expense, rather we treat it as one of the components (recapture) of the capitalization rate. You will learn how to do this in Lesson 4.

### 3.7

Variable expense

Since redecoration is normal, and does not replace anything, it is a regular variable expense.

### 3.8

No

While they may be listed or carried on an income/expense statement, you need to exclude this type of item as you would exclude excessive salaries to a relative for management of the property, or to a non-active director.

### 3.9

\$12,500

You included janitor's salary, water, electricity, supplies and sundries, and the owner's salary. As you recognized, the owner's salary is a reasonable administrative expense. If it had exceeded 5 percent to 7 percent of income, you would consider reducing it to within the normal range for management.

### 3.10

3

**3.11**

\$900

1/3 of the 3 year insurance policy. Remember that property taxes are considered in the capitalization rate.

**3.12**

Variable expense

It does not replace anything. It is a normal, ongoing expense of doing business.

**3.13**

Vacancies . . . uncollectible rents/credit losses

**3.14**

Net

**3.15**

\$66,500

**3.16**

\$22,700

**3.17****Income**

15 units at \$350 per month

15 x 350 x 12

\$63,000

15 units at \$425 per month

15 x 425 x 12

\$76,500

10 units at \$500 per month

10 x 500 x 12

\$60,000

**A. Potential Gross Income**

**\$199,500**

10% vacancy fact

-19,950

**B. Effective Gross Income**

**\$179,550**

**\$179,550**

**Expenses**

Fixed

Insurance 1/3 x \$13,500

\$ 4,500

Variable

Janitor's salary

\$ 17,000

Water

9,000

Electricity

6,000

Redecorating

3,500

Repairs

14,000

Supplies

3,000

Landscape Maintenance

8,600

Owner's salary (management)

35,000

\$ 96,100

**C. Total Fixed and Variable Expenses**

**\$ 100,600**

**D. Replacement Expenses**

Roof (20-yr. guarantee @ \$18,000)

\$ 900

Total Replacement Expenses

\$ 900

Total Expenses

\$ 101,500

**E. Net Income**

**\$ 78,050**

## Answers to Exercise

- You should have checked all items except mortgage interest, property taxes, and insurance.
- \$14,000. You should have computed the variable expenses as follows:

### Expenses

Salary (janitor)	\$ 2,400	
Repairs	4,900	
Heating	2,100	
Electricity	1,200	
Water	2,800	
Supplies	600	
Total variable Expense		\$14,000

- Net income - \$55,512. You should have computed the net income along these general lines:

### Income

Gross Income	\$85,200	
Allowance for vacancy and rent loss (4%)	3,408	
Effective gross income	\$81,792	\$81,792

### Expenses (Fixed)

Insurance	\$ 2,130	
	\$ 2,130	\$ 2,130

### Expenses (Variable)

Salary (Janitor)	\$ 3,200	
Utilities	4,260	
Repairs and Maintenance	5,110	
Redecorating	1,700	
Legal and accounting fees	650	
Supplies	720	
Miscellaneous	2,550	
Owner's salary	5,960	
	\$24,150	\$24,150

Total Fixed and Variable		\$26,280
<b>Net Income</b>		<b>\$55,512</b>



## Lesson 4: Capitalization Rates

We will begin this lesson by discussing, in a generalized way, what a capitalization rate is. Later in the lesson you will learn how to accurately determine the capitalization rate in order to find the value of an income producing property.

### 4.1

The capitalization rate (or cap rate) is the ratio (or relationship) of net income to the value of the property (expressed as a percentage). If the value of the property were \$100,000 and the net income were \$10,000 yearly, the capitalization rate would be \_\_\_\_\_.

### 4.2

Income property is bought for investment purposes; that is, the investor buys the property because they expect to receive income from their investment. So the question is, "How much income will my investment produce?" They are interested in the net income relative to the cost (or value). And the relationship of net income to value is called the \_\_\_\_\_.

### 4.3

Sandy Jones purchased an income property for \$300,000 from which Sandy expects an annual 15 percent income return. Sandy must have determined that the annual net income was \$ \_\_\_\_\_.

### 4.4

You have been working with the following concept: capitalization rate equals net income divided by value.

Using R for capitalization rate, I for net income, and V for value, write a formula that expresses the relationship of these three factors.

\_\_\_\_\_ = \_\_\_\_\_.

### 4.5

Perhaps an easy way to keep this relationship in mind is to use this diagram:

$$\frac{I}{R \ V}$$

It suggests the following interrelationships:

$$I = R \times V$$

$$R = I / V$$

$$V = I / R$$

You can solve the equation for any of its factors if the other two factors are known. Capitalization rate is the ratio between \_\_\_\_\_ and \_\_\_\_\_.

### 4.6

If the net income is \$40,000 and the value is \$600,000, what is the cap rate? \_\_\_\_\_%.

### 4.7

You know Kelly Peck's property generates a net income of \$12,000 and that a fair rate of return (cap rate) on the type of income property Kelly owns is 12 percent. What would you compute the value as? \$ \_\_\_\_\_

### 4.8

Now that you have learned the basic concept of income capitalization, we will examine the details.

When we were discussing the general concept of a capitalization rate, you were given two of the three factors. When you are appraising a property, you will have to calculate accurately two of the three factors.

In the last lesson you reduced effective gross income by operating expenses and by fixed expenses to find \_\_\_\_\_.

#### 4.9

Now we will work on the methods of determining the capitalization rate, the second factor we need, so that we can estimate property value.

You have an appraisal to make on an income property. You have determined its annual net income to be \$28,000. By screening the market data, you find a comparable property with a net income of \$20,000 which recently sold for \$240,000. What is the cap rate of the comparable property? (Use the general cap rate formula.)

\_\_\_\_\_

#### 4.10

If you have determined that the comparable property is an accurate measure of your subject, you can simply use the comparable cap rate to estimate the value of the subject property. Net income for the subject is \$28,000 and the comparable cap rate is 8.33 percent. What is the value of the subject? \_\_\_\_\_

#### 4.11

In the problem you just completed, you used market data from which you extracted a suitable capitalization rate. The cap rate used to solve the problem was the rate determined for a \_\_\_\_\_ property.

#### 4.12

We have examined a formula used to determine a general capitalization rate, and a method to estimating the value of a subject by using market data from comparable properties. Now you will learn what components capitalization rates consist of and how to compute them.

If you put \$1,000 in the savings bank, and it pays 5 percent interest, you will receive \$50 at the end of the year. You have received a return \_\_\_\_\_ (of / on) your investment.

#### 4.13

When you borrow money to buy a new car, your time payments are partly interest and partly repayment of the loaned amount. The lender is receiving a \_\_\_\_\_ on their investment as well as a return \_\_\_\_\_ their investment.

#### 4.14

An individual or corporation investing in real property expects to receive a **return on** the investment (interest) as well as a **return of** the investment (principal). The return on investment portion is considered \_\_\_\_\_ (principal / income).

#### 4.15

Income property has two major components: land and buildings. Land has a timeless value, which remains even if the buildings are torn down or burn to the ground. Buildings, on the other hand, only last for a certain period of time, and therefore only produce income for a certain period of time. The period of time during which a building can produce profitable income is the economic life of the building. Depreciation and market changes eventually render buildings of no economic value. The period of time that a building can produce profitable income is called the \_\_\_\_\_ life of the building.

#### 4.16

Except in special cases, such as farm land, the economic life of an income property is determined by the economic life of the \_\_\_\_\_ (s).

#### 4.17

An income property can produce a return on the investment and a return of the investment during a specified period of time. When making investment decisions, the investor must know how long the buildings will be useful. Another way of saying this is that the investor must know the \_\_\_\_\_ of the building(s).

#### 4.18

Here is a simple case. Terry Klein purchases an office building for \$300,000. The building has an expected economic life of 20 years. Terry expects to receive 5 percent or \$15,000 yearly income from the property during its economic life. He also expects to have the investment repaid over that period of time. The net income of the property must have been at least \_\_\_\_\_.

#### 4.19

In the above case, with a net income of \$30,000 and the market value at \$300,000, what is the cap rate? \_\_\_\_\_

#### 4.20

The cap rate in our example is made up of recapture (return of investment) plus interest (return on investment). The recapture rate is \_\_\_\_\_% and the interest rate is \_\_\_\_\_%.

#### 4.21

What then, are two of the factors involved in determining a capitalization rate?

\_\_\_\_\_ and \_\_\_\_\_.

#### 4.22

Because of the non-wasting nature of land, it is often invested in on a straight interest basis. The interest is the rate of income.

Since buildings have an economic life, the appraiser, using the income approach to value, must establish the economic life of the building to determine the recapture rate that is applicable. The recapture of the value of land can be accounted for whenever the property is sold. The recapture of the value of a building must be accomplished during the \_\_\_\_\_ of the building.

#### 4.23

If the value of an income-producing building were \$500,000 and its economic life is estimated at 25 years, the amount of recapture would be \$\_\_\_\_\_ per year.

A method for calculating the remaining economic life of a building follows. It requires information on sale price of the subject property (or comparable properties) and the prevailing interest rates for income property investments.

#### 4.24

You are estimating the economic life of a subject. You know the property sold for \$400,000. By checking with bankers and real estate management companies, you determine that the 8 percent interest (return on investment) is normal for this type of income property. Net income from

the property is \$48,000 annually, all from rent. Organize the information like this:

Annual net income	\$48,000
Sale price of property	\$400,000
Prevailing interest rate	_____ 8%
Total amount of interest	— <u>32,000</u>
Yearly recapture of investment	\$16,000

Using market data, you determine the value of the land (non-wasting portion of the property) to be \$110,000. What is the value of the portion of this property subject to recapture consideration?

\_\_\_\_\_

#### 4.25

Approximately how many years must the property earn income to recapture \$290,000, if it can recapture \$16,000 per year? \_\_\_\_\_

#### 4.26

To determine the yearly rate of recapture, you would divide the percentage of total recapture (100 percent recapture) by 18 years. The recapture rate in this case is \_\_\_\_\_.

#### 4.27

When would the land value be recaptured by the investor? \_\_\_\_\_

#### 4.28

You are to estimate the economic life of a subject. The subject property sold for \$385,000 with a net income of \$53,700. Your research shows interest rates on this type of property to be at 9½ percent. The land value was determined to be \$58,000. What is the economic life of the property?

\_\_\_\_\_

The interest rate (return on investment) plus the recapture rate (return of investment) plus property taxes (that is, the rate of taxation applicable to the real property), are all included in the overall capitalization rate.

THE Effective interest  
 SUM rate = Overall  
 OF + Recapture rate capitalization  
 + Effective tax rates rate  
 rate

We will now discuss each component of the overall capitalization rate separately.

### Effective Interest Rates

For purposes of this discussion concerning the income approach to value, we will be using the "Band of Investment Method" to determine the total interest rate for a property. You need to be aware that there are other methods of capitalization. The "Band of Investment Method" is based on the fact that purchase funds are made up of financing plus equity.

#### 4.29

If you purchase a car by means of a loan, the money you pay as a down payment is \_\_\_\_\_ (borrowed / equity) money.

#### 4.30

The monthly payments you make pay off interest plus \_\_\_\_\_ (borrowed / equity) money.

#### 4.31

Sometimes, when property is purchased, there is more than one loan (in addition to the buyer's equity) needed to make up the total purchase price. These loans on property are called mortgages. That portion of the purchase price not covered by mortgages is called \_\_\_\_\_. (borrowed / equity)

#### 4.32

If 50 percent of the purchase price is covered by a first mortgage and 30 percent of the price is covered by a second mortgage, what percent of the total purchase price must be equity? \_\_\_\_\_ (10% / 20% / 30%)

#### 4.33

In the case above, if the first mortgage was made with an interest rate of 8 percent, and the mortgage is only half of the purchase price, what is

the effective interest rate on the total purchase price? \_\_\_\_\_ (4% / 6% / 8%)

#### 4.34

If you have a second mortgage covering 25 percent of the purchase price of a property, and the interest rate on the mortgage is 9 percent, what is the effective interest on the total price? \_\_\_\_\_ (2.25% / 4% / 9%)

#### 4.35

Now, look at a typical case. A property is financed from the following sources:

- First mortgage covers 50% of the price and is at 7% interest.
- Second mortgage covers 20% of the price and is at 10% interest.
- The purchaser puts in the remaining 30% of the price and wants to get 9% return on investment.

First, figure the effective interest to total price. Below is the information to work with. Fill in the three blanks.

Money Source	% of Purchase Price	x	Rate of Interest	=	Effective Interest to Total Price
1st mortgage	50%	x	7%	=	_____
2nd mortgage	20%	x	10%	=	_____
Equity	30%	x	9%	=	_____

#### 4.36

Now you have calculated the effective interest for each amount used to purchase the total property. What is the total effective interest? \_\_\_\_\_ (Use the information you computed in above.)

#### 4.37

Try one for yourself.

The Parkers purchased a property using personal funds for the 35 percent down payment. They want 10 percent return on their investment (a reasonable rate for the type of property). The Parkers go to the bank for a mortgage to cover the remainder of the

purchase price. The bank loans them 55 percent of the total price at the current rate of 8 percent. They get a second mortgage for the remaining 10 percent of the price. The rate is 13 percent and market data indicates that this is a competitive rate for a secondary mortgage. What is the effective interest rate on the property? \_\_\_\_\_

Use the following to help you with your calculations:

Money Source	% of Purchase Price	x	Rate of Interest	=	Effective Interest to Total Price
		x		=	
		x		=	
		x		=	

### Recapture Rate

#### 4.38

We have already discussed this topic, but let's review it briefly. You are appraising an income property that was just purchased for \$600,000, and you have market data suggesting that the value of the land is \$200,000. The total interest rate on the property is 9.5 percent and the net income is \$67,000. Compute the recapture rate. \_\_\_\_\_ (2% / 2.5% / 3%)

### Effective Tax Rate

The effective tax rate is a rate expressing a relationship between its real market value and its current tax bill expressed as a ratio. As previously discussed in Lesson 3, the property taxes are not included as an expense item when appraising property for ad valorem purposes. Rather, they are included as a component of the capitalization rate. Note: the effective tax rate is NOT the actual (nominal) tax rate when the assessment level of property is less than 100 percent of market value.

In Oregon, since the passage of Measure 50, most properties are assessed at a level less than 100 percent of real market value. The average level of assessment by major property class by county

is represented by the Changed Property Ratio (CPR) for the county within which the property is located.

To calculate an effective tax rate, divide the actual, or nominal, tax rate by 1,000, then multiply that figure by the CPR (assessment level) for the subject's property class.

Example: To calculate an effective tax rate if:

Nominal Tax Rate: \$15 per \$1,000 of Assessed Value

Assessment level (CPR) for commercial property is 80%

$\$15 \div 1,000 = \$0.015$  x Nominal Tax Rate expressed as a percentage

$\$0.015 \times .80$  Assessment Level Ratio = .012 Effective Tax Rate

#### 4.39

The effective tax rate is the percentage of taxation that a property is assessed calculated on the Real Market Value rather than the Assessed Value. Suppose you had property assessed at \$32 per thousand dollars worth of valuation and an assessment level of .80. What is the effective tax rate? \_\_\_\_\_ (8.256 / 0.32 / 0.0256)

#### 4.40

When you compute effective interest rates, effective tax rates, and recapture rates, it is important to be very accurate. Mistakes in arithmetic and/or mistakes in gathering complete and accurate data can make you look foolish. Following is an example showing why.

$$\frac{I}{R V}$$

Using the general formula  $\frac{I}{R V}$  and a fixed net income of \$30,000, if we use a 7 percent rate, the value is \$ \_\_\_\_\_

#### 4.41

What if we use a rate of 8 percent by mistake? \_\_\_\_\_

#### 4.42

And the difference caused by the error? \_\_\_\_\_

#### 4.43

We have been discussing the three components that together make up the overall capitalization rate.

Please name the three components (any order).

\_\_\_\_\_.

\_\_\_\_\_.

\_\_\_\_\_.

Use what you have learned in these lessons with the information provided to answer the following questions:

You have been assigned to appraise a property using the income approach to value.

You have researched the problem and have come up with the following information:

1. 40% first mortgage at 7% interest.
2. 30% second mortgage at 9.5% interest.
3. The owner wants a 9% return on his investment.
4. You have determined that the remaining economic life of the building is 20 years.
5. Taxes are \$30.80 per M (\$1,000) and the assessment level for commercial property is 75%.

Now work out the answers to the following four problems. (Check your answers as you proceed.)

#### 4.44

What is the effective interest rate? \_\_\_\_\_

#### 4.45

What is the recapture rate? \_\_\_\_\_

#### 4.46

What is the effective tax rate? \_\_\_\_\_

#### 4.47

What is the capitalization rate for this building?

\_\_\_\_\_

Note: The capitalization rate for land would not include the 5 percent recapture rate.

In Lesson 5, you will use the cap rate to determine the value of income property.

#### EXERCISE

Check your progress by completing the following exercises.

1. The recent sale price for a property was \$380,000. You have computed the net income for the property to be \$45,000. What is the overall capitalization rate? \_\_\_\_\_
2. You are appraising a property which has a net income of \$39,950. The capitalization rate is determined to be 12.5 percent and the effective tax rate is 1.2 percent. What do you calculate the value of the property to be?  
\_\_\_\_\_
3. You are asked to appraise a warehouse building. The property recently sold for \$500,000. The value of the land is estimated to be \$120,000. Net income for the property is \$58,500. The interest rate for this type of property is estimated to be 8.4 percent. What is the estimated remaining economic life of the building? \_\_\_\_\_
4. Your assignment is to appraise a subject property with a net income of \$85,000 per year. The property recently sold for \$850,000. The land is estimated to be worth \$200,000. Interest rate on land and buildings is estimated to be 7.5 percent. What is the recapture rate for the building? \_\_\_\_\_
5. The market value of a property is estimated to be \$350,000. The nominal tax rate is \$28.00 per \$1,000 of assessed value. The assessment level is 60 percent for commercial property. What is the effective tax rate for the property? \_\_\_\_\_
6. What is the total interest rate on a property which recently sold for \$250,000, with a 75 percent mortgage at 8.5 percent? The buyer requires a 9.5 percent rate of return on his investment. \_\_\_\_\_

7. Property XYZ recently sold for \$540,000. It carries a 50 percent first mortgage at 8.0 percent and a 20 percent second mortgage at 10.5 percent. The buyer requires an 8.5 percent rate of return on equity. The property is estimated to have a remaining economic life of 20 years. The local taxes are \$25 per \$1,000 and the assessment level is 70 percent.

What is the capitalization rate to be used in appraising the building portion of the subject property? \_\_\_\_\_



## Lesson 4: Answers

### 4.1

10%

Simply the net income (\$10,000) divided by the value (\$100,000). The ratio of net income to value is 10%.

### 4.2

Capitalization rate

### 4.3

\$45,000

You multiplied the capitalization rate by the total value and found the annual net income.

### 4.4

$R = I / V$  (Cap rate = Net Income / Value)

### 4.5

Net income and value

### 4.6

6.7%

$\$40,000 \div \$600,000 = 0.067$  or 6.7%

### 4.7

\$100,000 ( $\$12,000 \div 12\% = \text{value}$ )

### 4.8

Net income

Net income is one factor to determine the value of a property.

### 4.9

8.33% ( $R = I/V$  or  $\$20,000 \div \$240,000 = .0833$  or 8.33%)

### 4.10

\$336,000 (rounded)

Divide the cap rate (8.33%) into the net income (\$28,000), because value =  $I/R$  from the formula.

$\$28,000 \div 0.0833 = \$336,135$  (\$336,000 rounded)

### 4.11

Comparable

Typically, you would prefer to have several comparable properties to evaluate and from which determine an appropriate cap rate using the market data method.

### 4.12

On

The 5% interest is a return on the \$1,000. If you had received some or all of the original \$1,000 back, it would be a return of investment.

### 4.13

Return . . . of

The investor is receiving income from the money as well as getting their money back.

### 4.14

Income

Principal is the return of investment.

### 4.15

Economic

That is the time during which an investor can expect to receive rent from the property.

### 4.16

Building(s)

Usually people do not rent space in worn-out buildings and, therefore, the property does not produce income.

### 4.17

Economic life

### 4.18

\$30,000 per year

\$15,000 return on investment plus \$15,000 ( $\$300,000 \div 20$ ) return of investment

#### 4.19

10% ( $I/V = R$  or  $\$30,000/\$300,000 = 10$  percent)

#### 4.20

5% . . . 5%

The 5% interest rate plus the 5% recapture rate total 10%, which is the same as the 10% cap rate you just computed.

#### 4.21

Interest rate . . . recapture rate

The return on investment and the return of investment.

#### 4.22

Economic life

#### 4.23

\$20,000 (1/25th of \$500,000)

But we need more than the assumption of a 25 year economic life to defend a case.

#### 4.24

\$290,000 (\$400,000 - \$110,000, or sale price minus value of land)

#### 4.25

18 years

Dividing \$16,000 into \$290,000 equals 18.13 years which is rounded to 18 years.

#### 4.26

5.5% (100% divided by 18 years equals 5.5% per year)

#### 4.27

When the property is sold

It is a non-wasting commodity, so the value can be recaptured at any time without loss.

#### 4.28

19.09 years

Annual net income	\$53,700
Sale price of property	\$385,000
Prevailing interest rate	<u>9 1/2%</u>
Total amount of interest	<u>- 36,575</u>
Yearly recapture of investment	\$17,125

Property value (\$385,000) less land value (\$58,000) = \$327,000. Value subject to recapture (\$327,000) divided by yearly recapture of investment (\$17,125) equals 19.09 years.

#### 4.29

Equity

#### 4.30

Borrowed

#### 4.31

Equity

#### 4.32

20% (The total is always 100%.)

#### 4.33

4%

50% of the total price is covered by the first mortgage. That is half of the price. If the mortgage covered the total price of the property, the interest on the property would have been 8%. Since the mortgage covers only half, we know that the effective interest rate to the total price is half of 8% or 4%.

#### 4.34

2.25%

1/4 of 9% ( $25\% \times 9\%$  or  $.25 \times .09 = .0225$ )

#### 4.35

1st mortgage 3.5%, 2nd mortgage 2.0%, Equity 2.7%

#### 4.36

8.2% ( $3.5\% + 2.0\% + 2.7\% = 8.2\%$ )

### 4.37

9.2%

	% of Price		Rate %	Effective Interest
Equity	35%	10%	(.35 x .10 = .035)	3.5%
1st mortgage	55%	8%	.55 x .08 = .044	4.4%
2nd mortgage	10%	13%	(.10 x .13 = .013)	<u>1.3%</u>
	Effective Total Interest			9.2%

### 4.38

2.5%

Annual net income		\$67,000
Sale price	\$600,000	
Interest rate	<u>9 1/2%</u>	
Yearly recapture of investment		<u>= 57,000</u>
Yearly recapture of investment		\$10,000

Value of wasting property— \$400,000

Remaining years of economic life—40 (\$400,000 ÷ \$10,000)

RECAPTURE RATE—100% ÷ 40 = 2.5%

### 4.39

0.0256 or 2.6%

$\$32 \div \$1,000 = .032 \times .80 = 0.0256$

Note: To find the percent, divide the total into the part. The answer is a decimal. Move the decimal point two places to the right and that number is a percentage notation.

### 4.40

\$428,571

$\$30,000 \div 0.07 = \$428,571$

### 4.41

\$375,000

$\$30,000 \div 0.08 = \$375,000$

### 4.42

\$53,571

As the property values and income amounts get large, the variations caused by small, seemingly insignificant variations in rates can be very significant.

You can see where this can be a significant problem.

### 4.43

Effective interest rate

Recapture rate

Effective tax rate

### 4.44

8.35%

1st mortgage 40% at 7% 2.8%

2nd mortgage 30% at 9.5% 2.85%

Equity 30% at 9% 2.7%

Effective Total Interest 8.35%

### 4.45

5% 100% (total recapture rate)

20 (number of years to total recapture)

Recapture Rate = 5%

### 4.46

2.31%  $\$30.80 \div \$1,000 = .0308 \times .75 = .0231 \times 100 = 2.31\%$

Effective Tax Rate = 2.31%

### 4.47

15.66%

Effective interest rate 8.35%

Recapture rate 5%

Effective tax rate 2.31%

Capitalization Rate 15.66%

## ANSWERS TO EXERCISE

1. 11.8%

$$\text{Capitalization rate} = \text{Income (net)} \div \text{Value} = \$45,000 \div \$380,000 = 11.8\%$$

2. \$291,606

$$\text{Income (net)} \div \text{capitalization rate} + \text{effective tax rate} = \text{Value}$$

$$\$39,950 \div 0.125 + 0.012 = 0.137 = \$291,606$$

3. 23 years

Net income		\$58,500
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Selling price	\$500,000	
---------------	-----------	--

Interest rate (.084)

Interest in dollars		42,000
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Recapture in dollars		16,500
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$$\text{Recapture period demonstrated} = \$16,500 \div \$380,000 = 0.0434$$

$$1 \div 0.0434 = 23.03 \text{ or } 23 \text{ years}$$

4. 3.27% Recapture rate

Net income		\$85,000
------------	--	----------

Selling price	\$850,000	
---------------	-----------	--

Interest rate (.075)

Interest in dollars		\$63,750
---------------------	--	----------

Recapture in dollars		\$21,250
----------------------	--	----------

$$\text{Recapture period} = \$21,250 \div \$650,000 = 0.03269 \times 100 = 3.27\%$$

Recapture rate = 3.27% per year or

$$\text{Remaining economic life} = 1 \div 0.03269 = 30.6 \text{ years}$$

5. 1.68% Effective tax rate

$$\$28 \div 1,000 = \$0.028 \text{ per dollars of assessed value}$$

$$\$0.028 \text{ nominal rate} \times .60 \text{ assessment level} = 0.0168 \text{ effective tax rate or}$$

\$16.80 per thousand dollars of market value

6. 8.75%

$$\text{Mortgage } 75\% \times 8.5\% = 6.375$$

$$\text{Equity } 25\% \times 9.5\% = 2.375\%$$

$$\text{Total Interest Rate } 8.75\%$$

Money Source	% of Purchase Price	x	Rate of Interest	=	Effective Interest to Total Price
Mortgage	75%	x	8.5%	=	6.375%
Equity	25%	x	9.5%	=	2.375%
Total Interest Rate				=	8.75%

7. 15.45%

First mortgage	50% at 8.0%	=	4.0%
Second mortgage	20% at 10.5%	=	2.1%
Equity	30% at 8.5%	=	2.6%
Total interest rate		=	8.7%
Recapture rate	1 ÷ 20	=	5.0%
Effective tax rate	\$25 ÷ 1,000 x .70	=	1.75%
Building capitalization rate		=	15.45%



# Lesson 5: Techniques for Capitalization of Income

## 5.1

In the last lesson, you learned how to develop a capitalization rate when estimating the value of a property using the income approach to value.

As you recall from the last lesson, you did not include the value of the land when you computed recapture rate. That was because land is a \_\_\_\_\_ (wasting / non-wasting) asset.

## 5.2

When establishing the value of income property, it is usually necessary to value land separately from buildings. Using the capitalization rate, if you have estimated the amount of income that directly applies to the building, then logically the remainder, or residual income must apply to the \_\_\_\_\_ (land / building / property).

## 5.3

Conversely, if you have used the capitalization rate and computed the income attributable to the land, then the \_\_\_\_\_ (residual / total) income is attributable to the building.

There are a number of different income capitalization methods. The one we are concerned with here is the residual capitalization technique that separates the property into two components: a known and unknown value. Net income attributed to the known value component is subtracted from the overall net income to arrive at an income and value for the unknown. There are three primary residual techniques used in ad valorem valuation: land, building and property.

## 5.4

If you use the Building Residual technique to value a property, the residual income must apply to the \_\_\_\_\_ (land / building / property).

## 5.5

If you use the Land Residual technique, the residual applies to the \_\_\_\_\_ (land / building / property) portion of the property.

## 5.6

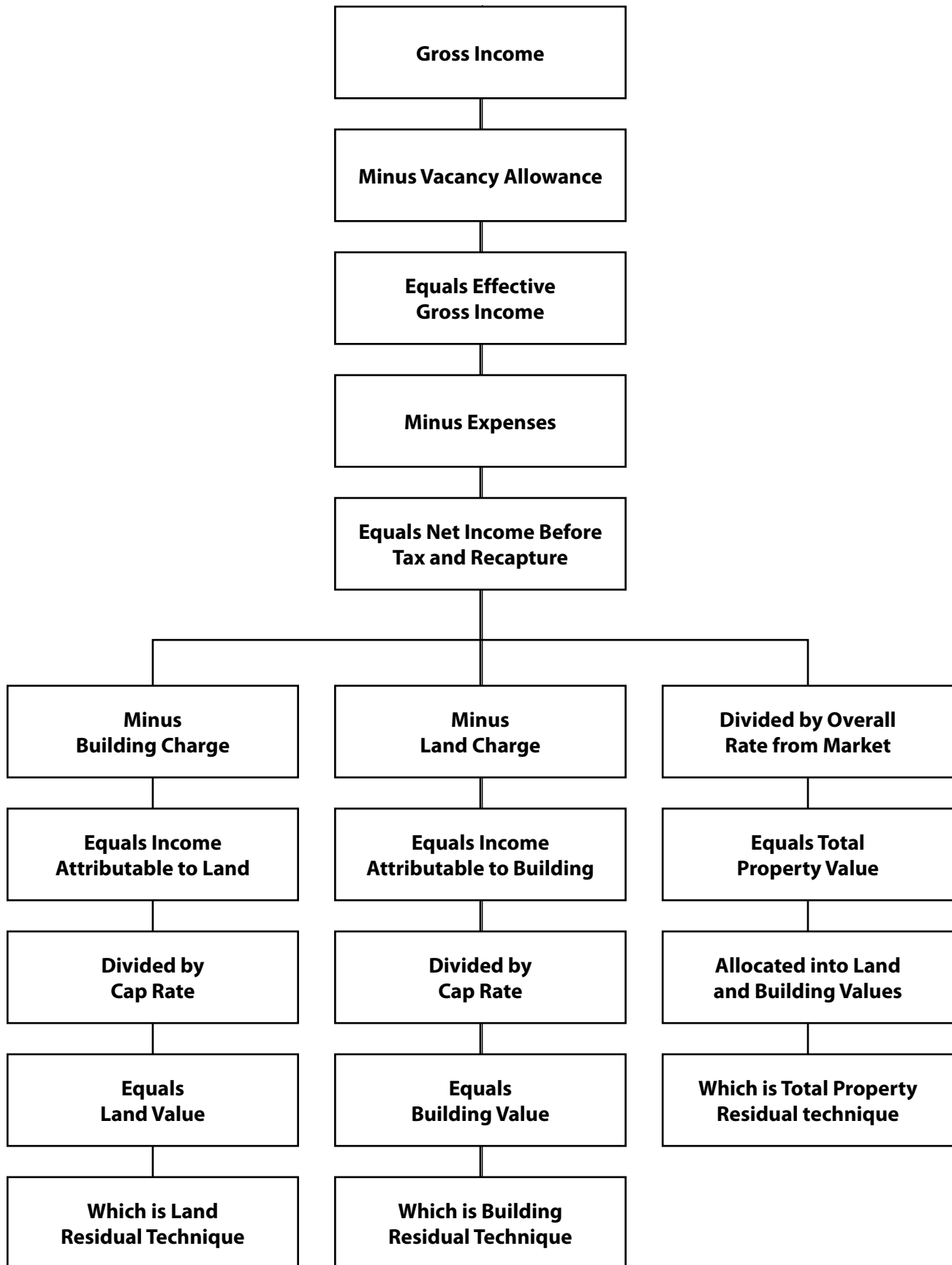
Now, assume that we are unable to determine separate information for land and building. But we have income information and capitalization rate information for the total property. To conform to other technique names, this is called the Property Residual technique.

The three techniques for estimating the value of income property are:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

We will be discussing the Building Residual technique first, then the process for the Land Residual technique. The Property Residual technique will not be discussed, but it will be useful for you to keep the concept in mind. Now study the following chart:

# Residual Techniques



## 5.7

In order to use the Building Residual technique, you must know the value of the land. The Building Residual technique is used when land values are stable and easily estimated by sales and market data. It is also used when the amount of depreciation is difficult to accurately determine because of age.

Work through this example:

The net income for a commercial property is \$37,000. The value of the land portion is estimated by market data to be \$50,000. The appropriate interest rate for land is 7% and the effective tax rate is 3.5%.

First, figure the capitalization rate for the land portion of the property and write it here.

## 5.8

Second, how much money is required to cover the investment costs for the land?

## 5.9

We may consider that \$5,250 of the income of the property is directly attributable to the land. Now, what is the residual income attributable to the building? \_\_\_\_\_

The \$31,750 is the amount of income attributable to the building and is called building income.

Now we will condense the information you have developed. (This pattern is useful in working up information for the Building Residual technique.)

Total net income	\$37,000
Capitalization rate – land (10.5%)	
Interest and tax on land value (\$50,000 x 10.5%)	<u>5,250</u>
Net income residual to building	\$31,750

## 5.10

Next calculate the value of the building. The capitalization rate on the building is 15.5%. What is the value of the building?

## 5.11

To complete the problem, what is the value of the property? \_\_\_\_\_

## 5.12

Finally, we can pull the information together for clarity:

Total net income	\$37,000
Capitalization rate – land (10.5%)	
Interest and tax on land value (\$50,000 x 10.5%)	<u>5,250</u>
Net income residual to building	\$31,750
Capitalization rate - building (15.5%)	
Building value (\$31,750 ÷ 15.5%)	\$204,839
Land value	<u>50,000</u>
Total property value	\$254,839

If you were to use the Land Residual technique, you would begin by first calculating the building portion of net income and then estimating the land value by capitalization of the residual income.

Since we are primarily interested here in the Building Residual technique, let us use the following information and the Building Residual technique to estimate the property value through capitalization of income.

## 5.13

The subject property has an annual net income of \$42,000. By analysis of comparable properties, you have estimated the land value to be \$106,000. The capitalization rate for the land is 8.5% and for the building it is 10.5%.

Estimate (1) the net income residual to the building and (2) the value of the property.

1. Net income residual to building \_\_\_\_\_.
2. Value of property \_\_\_\_\_.

## 5.14

The subject property is an apartment complex with an annual net income of \$38,000. After the analysis of comparable properties, you have estimated the land value to be \$85,000. The capital-

ization rate for the land is 9% and for the building it is 11%.

Determine (1) the net income residual to the building and (2) the value of the property (round off your answer to the nearest \$50.)

1. Net income residual to building \_\_\_\_\_.
2. Value of property \_\_\_\_\_.

### 5.15

Following is a Land Residual problem. You will immediately recognize the similarity of this technique with the Building Residual technique.

The net income for a commercial property is \$60,000. The value of the building has been estimated to be \$400,000. The appropriate interest rate for the building is 7%, the effective tax rate is 1.5%, and the reasonable recapture rate is 4%.

First, we calculate the capitalization rate for the building portion of the property. What is this capitalization rate? \_\_\_\_\_%.

### 5.16

Second, how much income is required to cover the investment cost of the building? \_\_\_\_\_.

### 5.17

What is the residual income that is attributable to the land? \_\_\_\_\_.  
What is the value of the land? \_\_\_\_\_.

## EXERCISE

Check your progress by doing the following problems.

1. Property ABC has a net income of \$32,500. The value of the land is estimated to be \$38,000. The capitalization rate for the land is 9.5%. What is the net income residual to the building? \_\_\_\_\_.

2. You are to appraise a property which has a net income of \$48,700. The estimated land value is \$62,000. The capitalization rate for the land is 8.5% and for the building 11.5%. What is the value of the building? \_\_\_\_\_.  
Of the total property? \_\_\_\_\_.

3. The net income of a commercial property is \$38,500. Analysis of the subject property has revealed the building to be worth \$234,000. The appropriate interest rate for the building is 8.5%, the effective tax rate is 1.5% and the reasonable recapture rate is 4%.

Determine (1) the net income residual to the land (2) the value of the property.

- a. Net income residual to land \_\_\_\_\_
- b. Value of property \_\_\_\_\_
- c. What residual technique is demonstrated in this problem?

4. You are given a complex of mini-warehouses with a net income of \$82,000 to appraise. The land value was estimated to be \$122,000. The appropriate interest rate for this type property is 7.5%, the effective tax rate is 1.5%, with reasonable recapture rate of 2.5%.

- a. What is the value of the building?  
\_\_\_\_\_
- b. What is the value of the total property?  
\_\_\_\_\_

## Lesson 5: Answers

### 5.1

Non-wasting

Buildings depreciate while land tends to remain constant in value.

### 5.2

Land

If the building has earned some specific portion of the income of a property, the residual income must have been earned by the land.

### 5.3

Residual

Part of the income of a property is earned because of the land, and part is earned by the building. In premises which are rented furnished, part of the income is attributable to the furnishings.

### 5.4

Building

### 5.5

Land

### 5.6

Building Residual technique, Land Residual technique, Property Residual technique. (Any order.)

### 5.7

10.5%

Effective interest rate plus effective tax rate = capitalization rate for land;

$$7\% + 3.5\% = 10.5\%$$

### 5.8

\$5,250

$\$50,000 \times 10.5\% = \$5,250$ . This is frequently referred to as the land charge.

### 5.9

\$31,750

$\$37,000 - \$5,250 = \$31,750$ . Net income minus income attributable to land equals residual income attributed to the building.

### 5.10

\$204,839

$\text{Income} \div \text{Rate} = \text{Value}$  or  $\$31,750 \div 15.5\% = \$204,839$

### 5.11

\$254,839

$\$204,839 + \$50,000 = \$254,839$

### 5.13

1. \$32,990

2. \$420,190

Total net income	\$42,000
Capitalization rate – land (8.5%)	
Capitalization rate x land value (\$106,000)	<u>9,010</u>
1. Net income residual to building	\$32,990
Capitalization rate - building (10.5%)	
Value of building ( $\$32,990 \div .105$ )	\$314,190
Value of land (from above)	<u>106,000</u>
2. Total property value	\$420,190

### 5.14

1. \$30,350

2. \$360,909

Total net income	\$38,000
Capitalization rate – land (9%)	0.09
Capitalization rate x land value (0.09 x \$85,000)	<u>7,650</u>
<b>1. Net income residual to building</b>	<b>\$30,350</b>
Capitalization rate - building (11%)	0.11
Value of building (\$30,350 ÷ 0.11)	\$275,909
Value of land (from above)	<u>85,000</u>
<b>2. Total property value</b>	<b>\$360,909</b>
Rounded off	\$360,900

### 5.15

12.5% (7% + 1.5% + 4%)

### 5.16

\$50,000

\$400,000 x 0.125 (This is frequently referred to as the building charge.)

### 5.17

\$10,000 . . . \$117,650

\$60,000 minus \$50,000, or net income of the property minus the income attributed to the building. The \$10,000 is the amount of income attributable to the land, and is called the land charge. The land value is the land income divided by the land rate, or \$10,000 ÷ 0.085 = \$117,647 or 117,650.

## ANSWERS TO EXERCISE

1. \$28,890

Total net income	\$32,500
Capitalization rate – land (9.5%)	0.095
Interest and tax on land value ((\$38,000 x 0.095)	<u>3,610</u>
Net income residual to building	\$28,890

2. Building value \$377,652

Total property value \$439,650

Total net income	\$48,700
Capitalization rate – land (8.5%)	0.085
Interest and tax on land value (0.085 x \$62,000)	<u>5,270</u>
Net income residual to building	\$43,430
Capitalization rate - building (11.5%)	0.115
Building value (\$43,430 ÷ 0.115)	\$377,652
Land value	<u>62,000</u>
Total property value	\$439,652
	or \$439,650

3. a. \$ 5,740 Net income residual to land

b. \$291,400 Value of the property

c. Land residual technique

Total net income	\$38,500
Value of building	\$234,000
Capitalization rate—building (0.085 + 0.04 + 0.015) = 14%	0.14
Net income to building \$234,000 x 0.14	\$32,760
Net income residual to land	\$5,740
Capitalization rate—land (0.085 + 0.015) = 10%	0.10
Value of land (\$5,740 ÷ 0.10)	\$57,400
Value of property	\$291,400

4. a. \$617,565 Building value

b. \$739,565 Total property value

Total net income	\$82,000
Capitalization rate – land (.075 + 0.015 = 9%)	0.09
Income to land (0.09 x \$122,000)	<u>\$10,980</u>
Net income residual to building	\$71,020
Capitalization rate - building (0.075 + 0.015 + 0.025 = 0.115) = 11.5%	0.115
<b>Building value</b> (\$71,020 ÷ 0.115)	<b>\$617,565</b>
Land value	<u>\$122,000</u>
<b>Total property value</b>	<b>\$739,565</b>
Rounded	\$739,560