



STATE OF MAINE  
MAINE REVENUE SERVICES

**PT 101**

# **Introduction to Property Tax Assessment**

Revised February 2026

The Department of Administrative and Financial Services does not discriminate on the basis of disability in admission to, access to, or operation of its programs, services, or activities. This material can be made available in alternate formats by contacting 7-1-1 (V/TTY).

PHONE: (207) 624-5600 V/TTY: (207) 7-1-1 FAX: (207) 287-6396 EMAIL: [prop.tax@maine.gov](mailto:prop.tax@maine.gov)

[www.maine.gov/revenue/propertytax](http://www.maine.gov/revenue/propertytax)



# TABLE OF CONTENTS

## INTRODUCTION

Purposes of the Course.....	i
Student Goals .....	i
Basic Principles .....	i
Taxation .....	iii
The Municipality – An Overview .....	iv

## Chapter 1 - PROPERTY AND PROPERTY RIGHTS

Real Property .....	1
Personal Property .....	1
Ownership of Property.....	2
Estates in Land .....	4
Deeds and Deed Descriptions.....	6
Summary.....	8
Chapter 1 Class Quiz .....	9

## Chapter 2 - THE MATHEMATICS OF ASSESSMENT

Basic Math .....	11
Fractions .....	11
Decimals .....	14
Percentages .....	16
Area.....	16
Units of Measure .....	18
Class Problems .....	20
Answers to Class Problems .....	22
Chapter 2 Class Quiz .....	23

## Chapter 3 - THE VALUE OF PROPERTY

The Nature of Property Value.....	27
Appraisal .....	28
Assessment.....	29
Market Value .....	29
The Four Great Forces (PEGS) .....	30
Economic Principles of Valuation .....	31
Highest and Best Use.....	33
Three Approaches to Valuation.....	34
The Sales comparison approach .....	34
The Cost Approach.....	34
The Income Approach .....	38
Valuation of Land .....	40
Current Land Use Classifications .....	41
Tree Growth Tax Law Program .....	42

Farmland Tax Law Program .....	42
Open Space Tax Law Program .....	43
Working Waterfront Land Program .....	44
Withdrawal and Transfer .....	45
Other Current Use Affected Programs.....	52
Valuation Resources .....	52
Summary .....	53
The Valuation Process .....	54
Answers to Class Problems .....	55
Chapter 3 Class Quiz .....	60

**Chapter 4 - PERSONAL PROPERTY**

Personal Property Schedule.....	64
Situs Issues .....	64
Value .....	64
Personal Property Tax Relief Programs .....	66
Answer to Class Problem .....	67
Chapter 4 Class Quiz .....	68

**Chapter 5 - THE ASSESSOR'S PROCESS**

Discovery .....	70
Records in the Assessor's Office .....	70
Building Inspection .....	71
Tax Maps .....	72
Parcel Identification.....	72
Valuing Buildings and Other Improvements .....	72
Valuing Land .....	73
Sales Analysis .....	75
Exemptions .....	76
Municipal Valuation .....	78
Abatements and Appeals .....	79
Summary .....	81
Answers to Class Problems .....	82
Chapter 5 Class Quiz .....	83

**Chapter 6 - MAPPING PROCUDURES**

Compass Points .....	85
Property Location .....	86
Magnetic North.....	87
Theory and Construction.....	88
Measurement Tools .....	90
Map Scales .....	91
Chapter 6 Class Quiz .....	93

**Chapter 7 - SALES COMPARISON APPROACH**

The Subject Property .....	101
----------------------------	-----

Adjustments to Sale Price .....	102
Summary .....	105
Answer to Class Problem .....	106
Chapter 7 Class Quiz .....	108
<b>Chapter 8 - THE ASSESSOR'S YEAR</b>	
Documents Used by the Assessor .....	114
Training of Assessors .....	115
Examinations.....	115
Certification and Certification Renewal .....	116
Summary.....	116
<b>Chapter 9 - PUBLIC RELATIONS</b>	
General Considerations.....	117
Elements of Public Relations.....	118
Traits of the Assessor.....	119
Summary.....	121
<b>Answers to Class Quizzes .....</b>	<b>122</b>



# INTRODUCTION

## Purposes of the Course

1. Provide an overview of the assessing profession; and
2. Instruct students in the basic elements of assessment practice.

## Student Goals

1. Learn the basic elements of the assessment profession.
2. Gain sufficient knowledge to continue in more detailed subjects of assessment practice.
3. Learn basic information concerning property taxation that will assist in a study of property tax law.

## Basic Principles

The Maine Constitution is the framework that covers all state law. The Maine Revised Statutes – and specifically Title 36 (Taxation) – are a separate body of laws that augment constitutional law, and establishes the technical aspects of property taxation in Maine.

1. The Maine Constitution. Four provisions of the Maine Constitution impact the general administration of property taxes.
  - a. Article I, section 22 reads: “No tax or duty shall be imposed without the consent of the people or of their representatives in the Legislature.”
  - b. Article IX, section 9 reads: “The Legislature shall never, in any manner, suspend or surrender the power of taxation.”

Taken together, Article I, section 22 and Article IX, section 9 mean that the Legislature is given the sole power of taxation. The Legislature passes laws that become our tax statutes. Municipalities do not have the authority to develop local tax laws, including exemptions, or to amend state tax laws.

## Introduction

- c. Article IX, section 8 reads, in relevant part: “All taxes upon real and personal estate, assessed by authority of this State, shall be apportioned and assessed equally according to the just value thereof.”

This paragraph is interpreted to mean that all taxation must be fair. The Maine Supreme Judicial Court (“Law Court”) has ruled that just value is equal to market value. Municipalities must assess property taxes according to the just value of property. The phrase “according to” does not mean that all property must be valued at market value, but that all property must be valued at the same ratio to market value. For example, if one property is assessed at 75% of market value, all property in that municipality must also be assessed at 75% of market value.

Article IX, section 8 of the Constitution also allows the Legislature to:

- (1) impose a tax on intangible property (which is not currently done);
  - (2) value certain land at its current, rather than highest and best, use (see Current Land Use Classifications in Chapter 3);
  - (3) enact laws regarding the assessment of tax on property by school districts (currently, school budgets are incorporated into municipal budgets);
  - (4) exempt property tax on watercraft, if an excise tax is imposed (which it has done); and
  - (5) reduce taxes on historic or scenic property (which it has not done).
- d. Article IX, section 7 reads: “While the public expenses shall be assessed on estates, a general valuation shall be taken at least once in 10 years.”

Although this section requires a “general valuation” at least once in ten years, it works in conjunction with article IX, section 8 above (property must be assessed equally according to just value). The result is a general requirement for municipalities to make an effort, at least every ten years, to review property values with the goal of maintaining equity within the municipality. This requirement may or may not lead to a formal revaluation of all property in the municipality. A general valuation is not the equivalent of a professional revaluation.

2. Statutory requirements. There are two statutory provisions that generally direct the how-and-when of property taxation in Maine.

## Introduction

- a. Title 36, Maine Revised Statutes, section 502 (36 M.R.S. § 502) states, in relevant part: “All real estate within the State, all personal property of residents of the State and all personal property within the State of persons not residents of the State is subject to taxation on the first day of each April as provided; and the status of all taxpayers and of such taxable property must be fixed as of that date.”

This section of law means that all property in Maine is valued as of April 1. If a building does not exist in a municipality on April 1, it is not taxed there for that year. If an existing building is destroyed on April 2, that building is taxable for the whole year.

- b. 36 M.R.S. § 701-A states, in relevant part: “In the assessment of property, assessors in determining just value are to define this term in a manner that recognizes only that value arising from presently possible land use alternatives to which the particular parcel of land being valued may be put.”

This section means that valuation of a single property is limited by the currently allowable uses of that property. For example, if land is zoned as residential, the assessor cannot value that land as if it could be used for an office building.

## Taxation

Tax is defined as a compulsory contribution imposed by law for the support of government without regard for individual benefit. There are three basic types of tax.

1. Tax on the creation of wealth: Income taxes, capital gains taxes.
2. Tax on the exchange of wealth: Sales taxes, some excise taxes, inheritance and estate taxes.
3. Taxes on the possession of wealth: Property taxes in their many forms, personal property, real property, some excise taxes.

Of the three types, property tax is by far the oldest. It is also the primary source of revenue for municipalities. Property tax is unique in that it is the only tax that is predetermined. This means that a municipality decides on a budget for the year and then the property tax rate is adjusted to generate the predetermined budget amount. For income tax and sales tax, the rate is established and the revenue generated from those taxes fluctuates based on how much taxpayers earn or spend.

## Introduction

The purpose of taxation is to fund the efforts of government at its many levels in meeting public needs. The power to tax allows municipalities to fairly distribute public expenditures among the population.

### The Municipality – An Overview

1. Governments can be made up of:
  - a. Select board or city council;
  - b. Town manager; and
  - c. Town meeting.
2. Municipal officials essential to property taxation:
  - a. Municipal officers;
  - b. Tax collector; and
  - c. Municipal assessor.
3. The minimum qualifications for all municipal officials, including municipal assessors, are:
  - a. An official must be at least 18 years old;
  - b. An official must be a citizen of the United States;
  - c. An official must be a resident of the State of Maine;
  - d. An official must be legally elected (or appointed) and sworn in; and
  - e. An assessor, if also a member of the select board, must be a resident of the municipality.
4. Town meeting.
  - a. Town meetings are held at various times throughout the year depending on the calendar or fiscal year adopted by a municipality. Many are held in February or March to give ample time for any budgetary adjustments before taxes are committed (most municipalities commit taxes between July and October). The town meeting determines the municipal financial needs

## Introduction

in advance of tax commitment, when the assessors declare property values and the tax collector prepares and sends tax bills for that year.

- b. The town meeting is also the time when a municipality chooses the assessor who will provide the valuation services for the town. Options include:
    - (1) Appoint the selectmen to act as assessors;
    - (2) Elect a separate Board of Assessors;
    - (3) Appoint a professional assessor; and/or
    - (4) Appoint an assessor or assessor's agent to act with the elected Board of Assessors.
5. City elections.
- a. Assessors are chosen on the second Monday in March for one year unless the city charter states otherwise.
  - b. The city council may provide for a single assessor with powers the same as in towns and appointed for a term not exceeding five years.

The municipal assessor is an administrative officer, chosen by the municipality, but under the general supervision and control of the State Tax Assessor in the performance of the municipal assessor's duties.

The assessor is responsible for establishing the value of all property for "ad valorem" purposes. Ad valorem is a legal term meaning according to value. An ad valorem tax is one that is based on the value of an item. Property tax is one of the main examples of an ad valorem tax.



# CHAPTER 1

## PROPERTY AND PROPERTY RIGHTS

The property tax in Maine applied to two categories of property, real property and personal property.

### Real Property

Real property is the bundle (or group) of rights connected with the ownership of real estate (see Ownership of Property below). Real estate is the physical land and everything permanently attached to it. In practice, however, people tend to use the terms “real estate” and “real property” interchangeably. There are two categories of real estate:

1. Land. Land means the surface of the earth with everything under and over its boundaries to the center of the earth as well as the sky over it. Land is characterized by its immobility, indestructibility, uniqueness, and scarcity. While land itself is permanent, land value may change as land is modified and its use changes.
2. Improvements. Improvements are buildings, such as homes, and other structures, including paving, fencing, fixtures, and landscaping affixed to, and becoming part of, the real estate. Most improvements are considered real estate, but some are personal property (see Personal Property below).

### Personal Property

Personal property means an interest in moveable tangible items not permanently affixed to, or part of, real estate. Personal property is also sometimes known as “personalty.” The distinction between personal property and real estate, though intuitive, may become unclear when personal property is attached to or inextricably related to real estate. For instance, trees in a forest are part of real estate; but when the trees are cut down, they become personal property.

Maine law distinguishes between personal property owned by a business and personal property owned by an individual. Generally, business personal property is taxable, but may be eligible for an exemption under the Business Equipment Tax Exemption (“BETE”) program. Individual personal property is also generally taxable, with exemptions for household furniture, clothing, and items valued at less than

## Chapter 1 – Property and Property Rights

\$1,000. There are other personal property exemptions in Maine law, for both individuals and businesses, under 36 M.R.S. § 655.

### **Fixtures**

Fixtures are items of personal property that have been attached to land or other real estate and become part of that real estate. To determine whether personal property is a fixture, you must determine the manner of attachment and the adaptation of the item to the property. For example, if there is a pile of bricks on a landowner's property, those bricks are considered personal property. If, however, those bricks are stacked to form a wall, that wall becomes a fixture and is considered an improvement. A fixture is considered a permanent part of the property and ordinarily stays with the property when it is sold.

A trade fixture is a type of fixture that a commercial tenant attaches to leased land. A trade fixture differs from an ordinary fixture in that the commercial tenant may remove a trade fixture at the end of a lease, as long as the fixture is necessary for the tenant's business and removal will not cause irreparable damage to the property.

## **Ownership of Property**

Title (i.e., ownership) to real estate, except for mobile homes on leased land, is generally established by a recorded deed. Title to personal property is established by a bill of sale. There are six basic rights associated with full title of property (otherwise known as ownership of property in "fee simple"). These rights are what is known as the "bundle of rights." Any of these rights or any part of them may be transferred separately. When a right is transferred to another person, this creates an encumbrance on the overall ownership of the property. The six rights are:

1. The right to sell;
2. The right to lease or rent;
3. The right to use;
4. The right to give away; and
5. The right to enter or leave;
6. The right to refuse to execute any of these rights.

**Example:** A property owner owns that property in fee simple. The property owner may choose to sell or transfer the right to cut trees on that land, transfer the mineral

## Chapter 1 – Property and Property Rights

rights below the yard, lease a part of that land to another person, or offer an easement for the public to walk across part of the land. Each of these would be considered an encumbrance on the property.

While the six rights listed above together describe a fee simple ownership, the rights by themselves are not absolute because government restrictions apply, and private restrictions of other property owners may exist.

Government Restrictions. Property is subject to certain government limitations on the bundle of rights. The following governmental powers limit property owners' bundle of rights.

1. The power of taxation. Federal, state, and municipal governments have varying authority to impose property taxes, excise taxes, sales taxes, and income taxes.
2. Police power. Municipal governments may apply restrictions on zoning, building, and lot size for property within a municipality.
3. The power of eminent domain. The State and other authorized institutions have the power to take private property for public use, provided the owner is fairly compensated.
4. The power of escheat. The State may claim title to property when a property owner dies and there is no will or heirs.

Private Restrictions. Certain private restrictions may limit ownership rights:

1. Rights of co-owners of property. For property owned by more than one individual, one owner cannot sell the property without the permission of the other owners.
2. Covenants and restrictions in the chain of title. A covenant is a promise or stipulation by a person that a property be used or not used in a certain way. Covenants are typically included in a deed. For example, someone could sell a parcel of land adjacent to their house with a covenant requiring that the purchaser never build a structure on the parcel.
3. Mortgages. Instruments pledging real estate as a guarantee for the repayment of a loan. For mortgaged real estate, the mortgagor is the borrower and the mortgagee is the bank or other lending institution.
4. Easements and rights-of-way. Easements and rights-of-way are rights given to others on your property. For example, a property may have an easement that allows a neighbor to cross over the yard to access a shared beach.

## Chapter 1 – Property and Property Rights

5. Liens and judgments. A lien is a legal right of a creditor in a property. For example, if a mortgagor stops making mortgage payments, the mortgagee (e.g., a bank) will file a lien to claim the property.

A judgment is the determination by a court regarding another's right in a property. For example, a court may determine that a property owner, whose property has no direct access to a road, has a right to access their property by foot or vehicle via an easement on their neighbor's land.

6. Leases. A lease is a contract where a property owner conveys the right of occupancy to another person.
7. Emblements. Emblements are crops that a tenant has a right to remove or harvest, even after their tenancy. If the tenant dies before harvesting, the tenant's heirs are entitled to the crops.
8. Restrictions. Restrictions are elements that limit your use of the property, such as the private restriction that there be no structure allowed on your property that blocks your neighbor's water view. This item, along with easements and rights-of-way, are known as attachments to property, or appurtenances.

### Estates in Land

An "estate" in land refers to an ownership interest in a specific parcel of land. An estate is categorized by the kind, quality, and duration of certain associated rights. The two categories of estates are freehold estates and leasehold estates.

Freehold estate. A freehold estate is one in which a person owns both property and the land on which it sits, with no time limit to the ownership. The four types of freehold estates are:

1. Fee simple estate. A fee simple estate is an interest in land possessed by an individual and inheritable by that individual's heirs without any end or limit. A fee simple estate is the greatest possible degree of ownership. It is the broadest interest that a person may have in real estate. Subject to legal restrictions placed on property by a municipality, it includes ownership free and clear of all encumbrances (i.e. claims or liabilities), including easements, rights of way, and liens. It is the ownership of all legal rights. With certain statutory exceptions, fee simple estate (less the value of any encumbrances that will affect value) is the only estate that the assessor values. The assessor values personal property as being free and clear of all encumbrances

## Chapter 1 – Property and Property Rights

2. Fee tail estate. A fee tail estate is an interest possessed by a person and inheritable by the original owner's specifically named heirs, or some class of such heirs, until the death of the last heir. The heirs do not hold the right to transfer the property once inherited. On death of the heir in possession, the property transfers to the next heir according to the original deed. This estate generally violates the rule against unending control of property (perpetuities) and has been abolished by most states, including Maine. See 33 M.R.S. § 111.
3. Life estate. A life estate is a fee simple estate for the life of a specified person. An assessor may be required to value a life estate if required by law or if the remaining interest is owned by an exempt entity. A life estate commonly occurs when a property owner transfers their home to relatives but retains retain the right to occupy the home until death, at which point that right transfers to the relatives.
4. Contingent estate. A contingent estate is a title that exists based on an event occurring or not occurring. For example, an individual transferring ownership of their property with the condition that if the transferee ever misses a payment, ownership will revert back.

Leased fee estate. This is the ownership interest possessed by a lessor (landlord) who conveys the rights to use and occupy the property to a lessee (tenant).

Leasehold estate. This is the ownership interest possessed by a lessee (tenant) who acquires the rights to use and occupy real property through a lease. The four types of leasehold estates are:

1. Tenancy for years. In this estate, the right to possess the property has a set beginning and end and the terms of the tenancy are included in a lease. The lease is renewable only at the will of the landlord and effectively terminates at the end of the tenancy.
2. Periodic tenancy. This estate also requires a lease and a fixed period of tenancy. When the lease runs out, however, unless the landlord or the tenant acts to terminate the lease, renewal is automatic for another like period of time.
3. Tenancy at will. In this estate, a tenancy may be terminated at any time by either the landlord or the tenant. Termination must allow the tenant sufficient time to vacate the property. The term "at any time" has been interpreted by the courts to mean a reasonable time, usually the same as the periodic payment of rent. For example, if a tenant makes monthly payments, a one-month notice must be given to terminate the lease. This estate is accompanied by a document that is less than a lease that covers the rules of the tenancy.

## Chapter 1 – Property and Property Rights

4. Tenancy at sufferance. Not considered an estate, tenancy at sufferance occurs when a tenant stays beyond the period of legal tenancy without the consent of the landlord. In this case the landlord is entitled to evict the tenant and recover possession of the property. If, during this period, the landlord receives and accepts rent, the tenancy changes to tenancy at will.

Forms of ownership. In addition to the estate, which refers to the kind, quality, and duration of ownership, property can be contextualized by the form of ownership. There are three common forms of ownership.

1. Joint tenancy. Joint tenancy occurs when property is held by two or more people such that one person is awarded the entire interest in the property upon the death of the other. When only one owner remains, the ownership becomes a tenancy in severalty (see below).
2. Tenancy in common. Tenancy in common occurs when property is held by two or more people, each of whom has an undivided interest that, upon the death of a tenant, passes to the tenant's heirs rather than the surviving owners or tenants.
3. Tenancy in severalty. Ownership interest by one person.

### **Deeds, Deed Descriptions, and the Real Estate Transfer Tax**

The document used to transfer title to real property from one party to another is called a deed. A deed describes the property, lays out the form of ownership, and describes any easements or other conditions that place a limitation on the full bundle of rights. There are two common types of deeds:

1. Warranty deed. A warranty deed transfers a described parcel of land and any improvements thereon from one person to another. The transferor warrants, i.e., promises, the transferee that title to the property is clear of any competing claims of ownership.
2. Quitclaim deed. A quitclaim deed transfers a claim – including an interest in, right, or title to property – that the transferor may have in a described property. If the transferor has no claim in the described property, then the transferee receives nothing. A quitclaim deed may, but is not required to, carry a warranty (i.e., a promise) that the transferor is committed to defend the title against any defects arising through the transferor only.

## Chapter 1 – Property and Property Rights

Elements of a deed. In order to legally transfer property, a deed must include the following:

1. Identification of the grantor and grantee. In some states this also requires the residence addresses of both grantor and grantee.
2. Consideration. This means a description of the items exchanged for the property, usually a monetary consideration. In Maine the terms, “for valuable consideration” or “as a gift” are normally used in this description.
3. Words of conveyance. This is a statement of the grant of real property to the grantee and identifies the quantity of the estate being granted. (for example, fee simple or life estate).
4. Land description. There are several ways to identify the physical description of a parcel of land. They are:
  - a. Metes and bounds. This system, the most common method of land description in Maine, is a description of the property boundaries using distances and angles from landmarks and adjacent property. This type of description, originally used in Britain, should enclose the parcel.
  - b. Rectangular survey system. This system, also known as the Public Land Survey System, creates a grid of 36 square mile blocks, called townships, that are divided into one square mile sections containing 640 acres each. This is the most popular method of land measurement outside of the east coast.
  - c. Lot and block survey system. This system assigns lot numbers to subdivided areas, called plats, and began to be widely used in the 19<sup>th</sup> century with the growth of cities.
  - d. Rectangular coordinates. The rectangular coordinate system is based on an x- and y-axis grid, with quadrants and a gridded measurement.
  - e. Special areas. (Often used in commercial or industrial development areas.)
  - f. Map and lot. This system divides a municipality into specific areas, called maps, that contain individual parcels, called lots. Each map and lot are assigned specific identifiers; these can be made up of numbers and/or letters, depending on the assessing practices of the jurisdiction.
5. Signature of the grantor. This should be the same name or names as on the previous transfer to the grantor. The signature should be notarized.

## Chapter 1 – Property and Property Rights

6. Delivery and acceptance. The preparation and signing of a deed does not pass title until the document is delivered and accepted by the grantee. This is known as “delivery of seizin.”

### The Real Estate Transfer Tax

The real estate transfer tax is assessed on buyers and sellers of real estate for the privilege of recording deeds and similar documents. The tax is administered by each county’s Registry of Deeds.

The tax is \$2.20 per \$500 of the value of the property. The value of the property is generally the price for which it was purchased, except in the case where the property was transferred for nominal consideration or without consideration, in which case the tax is assessed on market value – equal to the assessed value of the property divided by the certified ratio of the municipality where the property is located. When the value of the property being transferred exceeds \$1,000,000, an additional tax of \$3.80 per \$500 is imposed on the transfer. The tax is assessed equally between the buyer and the seller.

The transfer of property in Maine is accompanied by a declaration of value, in which the buyer and seller state the purchase price. This form is submitted with the appropriate tax to the registry when presenting a deed for recording. The registry will record the transfer and approve the filing before forwarding the form to the Property Tax Division. The Property Tax Division enters the details of each form into a statewide database and makes copies available to each town’s assessor.

Assessors often use the Real Estate Transfer Tax Declaration (“RETTD”), which must be filed for all non-exempt transfers of property, to identify sales that have occurred in their municipality, the prices paid by purchasers, the dates of sale, and other information important to the accurate assessment of taxes.

## Summary

All property falls under one of two categories, real property and personal property. Real property consists of a bundle of rights to real estate (i.e., land and improvements). The owner of that bundle may use those rights in any way that is legal. The transfer of those rights is a process of granting title to all or a part of the bundle of rights. Ownership of property consists of different rights and the transfer of some or all of those rights is done through a deed. The Real Estate Transfer Tax is imposed on all non-exempt transfers of property.

## Chapter 1 – Property and Property Rights

### Chapter 1 Class Quiz

1. Real estate includes all the following except:
  - A. Land
  - B. A free-standing brick wall
  - C. An attached garage
  - D. A portable air conditioner
  
2. An adequate legal description in a deed is a description of the:
  - A. Real estate including all fixtures
  - B. Improvements including all fixtures
  - C. Rights associated with ownership
  - D. Boundaries of the property
  
3. Ownership of real estate includes:
  - A. Rights to use the surface, subsurface and the air over it
  - B. Rights to lease the land or improvements
  - C. Trees growing on the land
  - D. All the above
  
4. The right of a landowner and that landowner's heirs to occupy a parcel of real estate forever is called:
  - A. A qualified estate
  - B. A life estate
  - C. An estate in fee simple
  - D. An indeterminate estate
  
5. By what authority may municipalities pass laws restricting landowners in certain uses of their land?
  - A. Manifest destiny
  - B. The law of nuisance
  - C. Police power
  - D. Governmental fiat
  
6. Escheat is the power of government to take your property without giving you fair consideration. T F
  
7. A warranty deed guarantees that the appliances in the home work at the time of the transfer. T F

## Chapter 1 – Property and Property Rights

8. An estate in severalty is an estate owned by one person. T F
9. A leasehold estate at sufferance does not allow the landlord to evict the tenant until the lease is terminated. T F
10. A warranty deed guarantees that the grantor will defend the deed against all title defects of any person in the chain of title. T F

**Answers on page 123**

# CHAPTER 2

## THE MATHEMATICS OF ASSESSMENT

Assessment administration requires knowledge of math. All approaches to value involve the use of mathematical calculations. This chapter covers calculations helpful for an assessor to know.

### Basic Math

Basic math includes multiplication, division, fractions, decimals, and percentages. This section provides only a brief overview of basic math. Of course, with calculators, this section is not essential for assessing duties. Knowledge of the underlying process for calculator functions, however, can add to your abilities to detect potential errors and explain calculations to taxpayers.

### Fractions

A fraction is another way to express the division of two numbers; or, in other words, a fraction tells us how many equal parts some thing or things have been divided into, and with how many of these parts we are concerned. The number on top of a fraction is the numerator and the number on the bottom is the denominator.

**Example.** The fraction  $2/5$  is another way to express  $2 \div 5$ . The fraction  $2/5$  tells us that a thing has been divided into 5 equal parts and that we are concerned with 2 of those parts.

#### Types of fractions

1. Proper fraction. A fraction where the numerator is smaller than the denominator. For example,  $2/5$ .
2. Improper fraction. A fraction where the numerator is equal to or larger than the denominator. For example,  $5/2$ .
3. Mixed number. A whole number and a fraction. For example,  $2 \frac{2}{5}$ .

The numerator and the denominator of a fraction may both be multiplied or divided by the same number without changing the value of the original fraction.

## Chapter 2 – The Mathematics of Assessment

**Example.** The fraction  $\frac{2}{5}$  is equal to  $\frac{4}{10}$ . Both the numerator and denominator were multiplied by 2.

### Addition and subtraction of fractions

Only fractions with the same (common) denominator may be added or subtracted. To add fractions with the same denominator, add the numerators and place the sum over the original denominator. For example,  $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$ . To subtract fractions with the same denominator, subtract the numerators and place the difference over the original denominator. For example,  $\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$ .

To add fractions with different denominators, you must adjust one or both fractions to create a common denominator.

The easiest way to create a common denominator is to multiply the denominators of two fractions by one another. For example, the common denominator of  $\frac{2}{5}$  and  $\frac{1}{2}$  is 10 – or  $5 \times 2$ . To make sure a fraction with a common denominator is still the same as the original fraction, you must multiply both the numerator and the denominator by the same number.

For example, to give  $\frac{2}{5}$  a common denominator of 10, multiply both the numerator and the denominator by 2, to get  $\frac{4}{10}$ . To give  $\frac{1}{2}$  a common denominator of 10, multiply both the numerator and the denominator by 5, to get  $\frac{5}{10}$ .

Now that both  $\frac{4}{10}$  and  $\frac{5}{10}$  have a common denominator, they can be added or subtracted. For example,  $\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$ .

### Multiplication of fractions

To multiply fractions, multiply the numerator by the numerator and the denominator by the denominator.

**Example:**  $\frac{2}{5} \times \frac{3}{4} = \frac{(2 \times 3)}{(5 \times 4)} = \frac{6}{20}$  reduced to lowest terms =  $\frac{3}{10}$ .

You should always reduce fractions to their lowest terms. To do this, find a number that is divisible into both the numerator and the denominator and divide both by that number.

In the example above, divide both 6 and 20 by 2, to get  $\frac{3}{10}$ . This fraction cannot be reduced any further, because 3 and 10 cannot be divided by the same whole number.

To multiply whole or mixed numbers, change the number to an improper fraction and proceed as in the case of multiplication of fractions.

## Chapter 2 – The Mathematics of Assessment

**Example:**  $2 \frac{1}{2} \times 2 = (4/2 + 1/2) \times 2/1 = 5/2 \times 2/1 = (5 \times 2)/(2 \times 1)$  or  $10/2$  reduced to lowest terms = 5.

### Division of fractions

To divide fractions, invert the divisor (the “divided by” number) and follow the process for multiplication of fractions.

**Example:**  $1/2$  divided by  $3/4$ . First, invert the divisor ( $3/4$  inverts to  $4/3$ ). Then, multiply  $1/2 \times 4/3 = (1 \times 4)/(2 \times 3) = 4/6$  or reduced to lowest terms =  $2/3$ .

### **Shortcuts: rules of divisibility**

All numbers are divisible by 1.

If the last digit of a number is even or 0, the number is divisible by 2.

**Example:** 214, 4 is an even number, therefore, 214 is divisible by 2.

If the sum of the digits of a number is divisible by 3, the number is divisible by 3.

**Example:** 324,  $3 + 2 + 4 = 9$ . 9 is divisible by 3, therefore, 324 is divisible by 3.

If the last digit of a number is 4 and the other digits are divisible by 4, the number is divisible by 4.

**Example:** 244, the last digit is 4 and 24 is divisible by 4, therefore, 244 is divisible by 4.

If the last digit of a number is 5 or 0, the number is divisible by 5.

**Example:** 105, the last digit is 5, therefore, 105 is divisible by 5.

Some numbers may be divisible by more than one number so check each to see if the rules apply.

## Decimals

Decimals are a mathematical expression of a part based on multiples of ten. The decimal point marks the transition between whole numbers to the left and tenths, hundredths, thousandths, etc. to the right. All fractions can be expressed as a decimal.

**Example:** The fraction  $7/10$  ( $7 \div 10$ ) can be expressed as the decimal 0.7. The fraction  $7/100$  ( $7 \div 100$ ) may be written as decimal 0.07.

### Addition of decimals

When adding decimals, align the decimal points. Zeros may be added before and after the number without changing the value of a number.

For example, the number .50 may be expressed as 0.500 without changing the value of that number.

**Example.** Add the following numbers:

$$\begin{array}{r} 32.825 = 32.825 \\ 1.175 = 01.175 \\ 3.90 = 03.900 \\ \underline{.1 = 00.100} \\ 38.000 = 38.000 \end{array}$$

### Multiplication of decimals

To multiply decimal numbers, remove the decimal points and multiply them as whole numbers. After multiplying the numbers without the decimal points, count the total number of decimal places found in the two original numbers and place the decimal point in the product at the same number of places from the right. If the product contains fewer digits than the total number of decimal places in the original numbers, add zeros to the left of the product.

**Example:**

$$\begin{array}{l} 24.65 \times 8 \\ \text{Multiply } 2465 \times 8 = 19720 \end{array}$$

There are two numbers to the right of the decimal place in the original numbers, so enter a decimal point two places from the right of the product – or 197.20

## Chapter 2 – The Mathematics of Assessment

### Example:

$$7.625 \times 4.25$$

$$\text{Multiply } 7625 \times 425 = 3240625$$

There are five total numbers to the right of the decimal original numbers, so enter a decimal point five places from the right of the product – or 32.40625

### Division of decimals

When dividing two decimals, the number being divided is referred to as the “dividend” and the number that the dividend is divided by is referred to as the “divisor.” If the divisor is a decimal, move the decimal point as many places to the right as is necessary to make it a whole number. Then move the decimal point the same number of places to the right in the dividend. Proceed as in any long division calculation, placing the decimal point in the answer directly above the decimal point in the dividend.

### Example: Divide 980 by 12.35

$$980/12.35$$

$$98000/1235 = 79.352$$

$$\begin{array}{r} \underline{\phantom{1235} 79.352} \\ 1235 \overline{) 98000} \\ \underline{8645} \phantom{00} \\ 11550 \\ \underline{11115} \phantom{0} \\ 4350 \\ \underline{3705} \phantom{0} \\ 6450 \\ \underline{6175} \phantom{0} \\ 2750 \\ \underline{2470} \phantom{0} \end{array}$$

You should always go to one extra decimal place with the division calculation, to determine whether to round up or down. In this example, the extra decimal is 2, meaning we round down to 79.35. If the additional place had been 5 or higher, we would round up to 79.36.

To change a fraction to a decimal, divide the numerator by the denominator and place the decimal point according to the rules for the division of decimals. To change a decimal to a fraction, count the places to the right of the decimal point in the decimal number. Using a denominator of 1 followed by as many zeros as there were places to

## Chapter 2 – The Mathematics of Assessment

the right of the decimal point and placing the original decimal number without the decimal point as the numerator, it now becomes a fraction. This fraction should then be reduced to lowest terms.

**Example:**  $7.5 = 75/10 = 7 \frac{5}{10} = 7 \frac{1}{2}$

### Percentages

To find the percent of a number, first change the percent to a decimal. Then multiply the decimal by the number.

**Example:**

What is 15% of 12,500?

First, change 15% to a decimal (0.15), then remove the decimal point (15).

Multiply

$$\begin{array}{r} 15 \\ \underline{12500} \\ 187,500 \end{array}$$

There are two decimal places in the original numbers, so enter a decimal point two places from the right of the product,

Answer: 1,875

The two key words in percentage problems are

**is**, which means equal, and  
**of**, which means multiply.

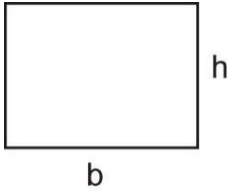
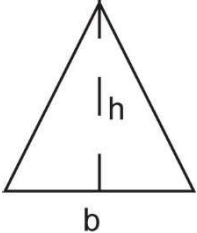
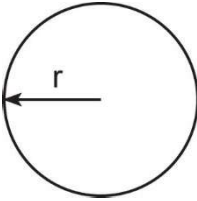
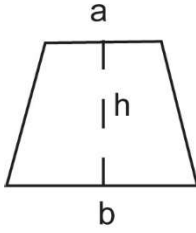
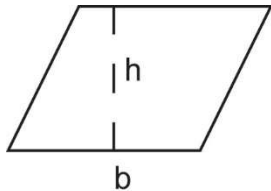
**Example:**

What **is** 30% **of** 120?  
? = 30% **X** 120?  
.30 X 120 = 36

### Area

The following are formulas that are used for calculating the area of geometric figures encountered by assessors in evaluating properties.

## Chapter 2 – The Mathematics of Assessment

Name	Shape	Area Computation
Rectangle		Length (base) multiplied by width (height): <b><math>b \times h</math></b>
Triangle		$\frac{1}{2}$ of the base multiplied by the height: <b><math>(b \times h) \times \frac{1}{2}</math> or <math>(b \times h)/2</math></b>
Circle		Pi ( $\pi$ , 3.14) times the radius squared: <b><math>\pi r^2</math></b>
Trapezoid		Average of sides a and b multiplied by the height: <b><math>((a + b)/2) \times h</math></b>
Parallelogram		Base multiplied vertical height: <b><math>b \times h</math></b>

## Units of Measure

When working with units of measure, all measures must be converted to the same unit before any mathematical computations can be made.

A mill is equal to one thousandth of a dollar (\$0.001), or one tenth of a cent (0.1¢). Property tax rates are most often reported in mills. One mill is the amount of tax on \$1,000 of property value. For example, if the tax on a \$100,000 home is \$2,000, the tax rate is 0.02 (\$2,000/\$100,000). To convert from the tax rate to the mill rate, move the decimal to the right three places. Therefore, a tax rate of 0.02 is equal to a mill rate of 20.

Area can be in square inches, square feet, or some other measurement.

Volume is equal to length times width times height, and can be expressed in cubic feet, cubic yards, or some other measurement.

Linear Measure. The assessor must be familiar with the following linear measurements and be able to convert linear measurements from one unit to any of the others readily.

One foot	=	12 inches
One yard	=	3 feet
	=	36 inches
One rod	=	16.5 feet
	=	5.0292 meters
One chain	=	66 feet
	=	100.084 links
	=	20.1168 meters
	=	4 rods
One meter	=	39.3701 inches
	=	3.2808 feet
	=	1.0936 yards
One kilometer	=	3,280.8399 feet
	=	1,093.6133 yards
	=	1,000 meters
	=	0.6214 miles
One mile	=	5,280 feet
	=	1,760 yards
	=	320 rods
	=	80 chains
	=	1.6093 kilometers

## Chapter 2 – The Mathematics of Assessment

Area Measure. The assessor must be familiar with the following area measures and be able to convert area measures from one unit to the others.

One square foot	=	144 square inches
One square yard	=	9 square feet
One square rod	=	272.25 square feet
One square chain	=	16 square rods
One square meter	=	10,000 square centimeters
	=	10.7639 square feet
	=	1.1960 square yards
One acre	=	43,560 square feet
	=	4,840 square yards
	=	160 square rods
One hectare	=	2.4711 acres
	=	107,639.1042 square feet
	=	11,959.9005 square yards
One sq kilometer	=	0.3861 square miles
	=	247.1054 acres
	=	1,000,000 square meters
One square mile	=	640 acres
	=	2.5900 square kilometers

Volume Measure. The measures of volume most commonly used by assessors are those expressed in cubic inches, cubic feet, cubic yards, and cords.

One cubic foot	=	1,728 cubic inches
One cubic yard	=	27 cubic feet
One cord	=	128 cubic feet (4' high x 4' wide x 8' long)

The ability to convert from one measurement to another is a useful skill for assessors.

**Example:** Convert 65,340 square feet to the equivalent number of acres.

From the chart above, 1 acre = 43,560 square feet.

To determine the number of acres in this parcel, divide 65,340 square feet by the number of square feet in one acre:  $65,340 \text{ sq ft} / 43,560 \text{ sq ft per ac} = 1.5 \text{ acres}$ .

## Chapter 2 – The Mathematics of Assessment

### Class Problems

An assessor's job requires the application of math skills. The following are a few math problems using items commonly encountered by assessors.

#### Class Problem 2.1

To calculate the municipal property tax rate in mills (mill rate), the assessor must divide the municipal budget by the total taxable value of property in the municipality, then convert the answer to mills. If the budget for the town of McMannville is \$5,000,000 and the taxable value of all property in town is \$250,000,000, what is the mill rate?

#### Class Problem 2.2

To cover unexpected costs, the law allows a municipality to collect an excess amount of tax revenue. This excess is called the "overlay." If the municipal officials of McMannville elected to collect an overlay equal to 5% of the municipal budget from Problem 2.1, how much is the overlay? How much will McMannville collect overall? What is the recalculated mill rate using this new total amount and the property value from Problem 2.1?

## Chapter 2 – The Mathematics of Assessment

### Class Problem 2.3

A property owner owns a camp in McMannville. The assessed value of the camp is \$100,000. Using the mill rate from Problem 2.2, what is the tax amount? If McMannville charges 5% annual interest on overdue taxes and the taxpayer is 12 months late in paying their bill, how much interest will be added to the tax? How much is the total amount due?

## Chapter 2 – The Mathematics of Assessment

### Answers to Class Problems

#### Class Problem 2.1

To calculate the municipal property tax rate in mills (mill rate), the assessor must divide the municipal budget by the total taxable value of property in the municipality, then convert the answer to mills. If the budget for the town of McMannville is \$5,000,000 and the taxable value of all property in town is \$250,000,000, what is the mill rate?

$$\text{Tax rate} = \text{Budget}/\text{taxable value} = \$5,000,000/\$250,000,000 = 0.020$$

$$\text{Mill rate} = \text{Tax rate} \times 1,000 = 0.020 \times 1,000 = 20 \text{ mills}$$

#### Class Problem 2.2

To cover unexpected costs, the law allows a municipality to collect an excess amount of tax revenue. This excess is called the “overlay.” If the municipal officials of McMannville elected to collect an overlay equal to 5% of the municipal budget from Problem 2.1, how much is the overlay? How much will McMannville collect overall? What is the recalculated mill rate using this new total amount and the property value from Problem 2.1?

$$\text{Overlay} = \text{Budget} \times \text{overlay \%} = \$5,000,000 \times 0.05 = \$250,000$$

$$\text{Total collection} = \text{Budget} + \text{overlay} = \$5,000,000 + \$250,000 = \$5,250,000$$

$$\text{Mill rate} = (\$5,250,000/\$250,000,000) \times 1,000 = 0.021 \times 1,000 = 21 \text{ mills}$$

#### Class Problem 2.3

A property owner owns a camp in McMannville. The assessed value of the camp is \$100,000. Using the mill rate from Problem 2.2, what is the tax amount? If McMannville charges 5% annual interest on overdue taxes and the taxpayer is 12 months late in paying their bill, how much interest will be added to the tax? How much is the total amount due?

$$\text{Tax} = \text{Camp value} \times \text{tax rate} = \$100,000 \times 0.021 = \$2,100$$

$$\text{Interest} = \text{Tax due} \times \text{annual interest} \times \text{months overdue}/12 \text{ months per year} = \$2,100 \times 0.05 \times 12/12 = \$105$$

$$\text{Total due} = \text{Tax} + \text{interest} = \$2,100 + \$105 = \$2,205$$

Chapter 2 Class Quiz

Fractions

You may use your calculator, but show the process to get to the answer.

1. Arrange the following, largest to smallest:

a.  $\frac{3}{4}$  \_\_\_\_\_ b.  $\frac{5}{8}$  \_\_\_\_\_ c.  $\frac{25}{32}$  \_\_\_\_\_ d.  $\frac{13}{16}$  \_\_\_\_\_

2. Add or subtract each of the following and reduce each to its simplest form:

a.  $\frac{1}{2} + \frac{5}{8} =$  \_\_\_\_\_ b.  $\frac{3}{4} + \frac{3}{8} =$  \_\_\_\_\_

c.  $\frac{5}{8} - \frac{3}{16} =$  \_\_\_\_\_ d.  $\frac{15}{16} - \frac{3}{4} =$  \_\_\_\_\_

3. For each of the following, state whether divisible by 2, 3, 4, or 5. A number may be divisible by more than one.

a. 615 \_\_\_\_\_ b. 42 \_\_\_\_\_ c. 243 \_\_\_\_\_ d. 71 \_\_\_\_\_

4. Multiply each of the following and reduce to its simplest form:

a.  $\frac{3}{8} \times \frac{5}{4} =$  \_\_\_\_\_ b.  $\frac{1}{2} \times \frac{7}{16} =$  \_\_\_\_\_

c.  $3 \frac{1}{2} \times 4 \frac{1}{2} =$  \_\_\_\_\_ d.  $3 \times 3 \frac{1}{2} =$  \_\_\_\_\_

5. Divide each of the following and reduce to its simplest form:

a.  $3 \frac{1}{2} \div 2 =$  \_\_\_\_\_ b.  $\frac{1}{2} \div \frac{3}{5} =$  \_\_\_\_\_

c.  $3 \div \frac{3}{8} =$  \_\_\_\_\_ d.  $\frac{3}{8} \div \frac{1}{2} =$  \_\_\_\_\_

e.  $\frac{5}{8} \div \frac{3}{8} =$  \_\_\_\_\_

## Chapter 2 – The Mathematics of Assessment

### Decimals

1. Write one hundred twenty-five thousandths as a decimal: \_\_\_\_\_
2. Add:  $1.375 + 0.625 + 12.125$ : \_\_\_\_\_
3. Multiply:  $0.625 \times 12.5$ : \_\_\_\_\_
4. Divide:  $0.375 \div 0.05$ : \_\_\_\_\_
5. State  $\frac{5}{8}$  as a decimal: \_\_\_\_\_
6. State 0.375 as a fraction reduced to its simplest form: \_\_\_\_\_
7. State 1.25 as a percentage: \_\_\_\_\_
8. State 52.5% as a decimal: \_\_\_\_\_
9. State 37.5% as a fraction reduced to its simplest form: \_\_\_\_\_
10. State  $\frac{5}{8}$  as percent: \_\_\_\_\_

### Percentages

1. What is 22.5% of 20,000? \_\_\_\_\_
2. What is 5% of 24,000? \_\_\_\_\_
3. What is 10% of 175? \_\_\_\_\_

## Chapter 2 – The Mathematics of Assessment

4. What is 25% of 100? \_\_\_\_\_

### Units of Measure

1. How many mills are there in  $72\frac{1}{2}$  cents? \_\_\_\_\_

2. \$0.035 = \_\_\_\_\_ mills.

3. How many cubic yards of fill will it take to fill a hole  $7\frac{1}{2}$  feet deep, 2 yards long and 36 inches wide?

\_\_\_\_\_

4. Forty square rods is what part of an acre? \_\_\_\_\_

5.  $94\frac{1}{2}$  cubic feet = \_\_\_\_\_ cubic yards.

6. A parking lot was computed to have 650 square yards of area. In the area parking lots are assessed at 25¢ per square foot for asphaltting. What would the value be?

\_\_\_\_\_

7. 9 square yards = \_\_\_\_\_ square feet.

8. 108,900 square feet = \_\_\_\_\_ acres.

9. 3 rods = \_\_\_\_\_ feet.

10. 1,760 yards = \_\_\_\_\_ rods.

## Chapter 2 – The Mathematics of Assessment

### Assessor Problems

1. Compute the following areas:
  - a. A building 24 feet wide and 40 feet long.
  - b. A porch 12 feet wide and 14 feet long.
  - c. A garage 24 feet wide and 24 feet long.
  - d. A square parcel of land 12 rods each side. Express your answer in square feet.
  - e. A triangular parcel of land with a base of 16 feet and a height of 12 feet.
  - f. A rectangular parcel of land 120 feet wide and 180 feet deep.

**Answers on page 125**

# CHAPTER 3

## THE VALUE OF PROPERTY

### The Nature of Property Value

The market value of property rights is based on several economic principles and forces that act on the marketplace. Different estimates of property value are possible, depending on the purpose of the valuation process. An appraiser may value a single property as of July 1 for the purpose of obtaining a bank loan, an insurance policy, or other goal; however, a municipal assessor must value all the properties in a municipality as of April 1 to develop equalized value for equitable distribution of property taxes. The price paid for a property, which may be the result of special circumstances, is not necessarily market value.

Value is defined as the relationship between an object desired and a potential purchaser. It is the ability of a commodity to command another commodity (usually money) in exchange. For purposes of real estate appraisal, value may be described as the present worth of future benefits arising from the ownership of real property.

A distinction must be made between value in use and value in exchange. A property may have one value in use and a significantly different value in exchange.

Value in use embodies the objective premise that value is within the object itself. This value is the basis for the cost approach.

Value in exchange is a subjective concept that value is within the mind of a person. This value is the basis of the sales comparison approach.

Sales determine market value. For property to have value, it must have utility, scarcity, and desirability. These three basic principles determine, create, and destroy value.

Utility is the capacity of goods to excite desire for possession. Utility should not be confused with usefulness. Utility is a subjective concept, in the mind of a person; usefulness is an objective concept, inherent in the property.

Scarcity exists when there is a limited supply of an item. The air we breathe has utility, but it is not valuable, primarily because the supply is virtually unlimited. Land, however, has a finite supply. This scarcity of land creates value. The value of a scarce item changes with fluctuations in supply and demand. If the demand outweighs the supply, the value of the goods will increase. Conversely, if the supply

## Chapter 3 – The Value of Property

is greater than the demand, the value of the goods will decrease. Value will remain constant when supply and demand are balanced.

Desirability is equivalent to demand. Desirability must be backed by purchasing power.

A comparison of the terms “cost” and “price” is useful in a discussion of value.

Cost is defined as the sacrifice made in the acquisition of property. It may be incurred in either the purchase of an existing property or the construction of a new property.

Price is defined as the amount of money given or expected in exchange for property. Cost and price may or may not be the same.

Price is generally defined in terms of money while cost is expressed as a sacrifice. A sacrifice may be in terms of money, labor, time, or some other item of value.

### Appraisal

An appraisal is an opinion of value; it is an estimate, based on information gathered and analyzed by an appraiser.

The appraisal process is a method of collecting, analyzing, and processing data into a value estimate for an individual property. Each appraisal will have a purpose that defines the value to be found. An appraiser may be seeking market value, insurance value, or value for other purposes.

1. Market value is the value that a property has in the marketplace. Generally, this is the price at which a property would sell and is prepared for purposes such as obtaining a bank loan that will use the property as collateral.
2. Insurance value is the value of property for insurance purposes, usually the replacement value if the property is destroyed.
3. Other purposes include the value of property for such purposes as the estate tax, refinancing a loan, or investment.

An appraisal can be made for any date, but assessments must be based on the value as of April 1.

## Chapter 3 – The Value of Property

### Assessment

Assessment, or mass appraisal, is a process by which all of the taxable property in a municipality is valued as of the same date (April 1 in Maine). In this process, each property must be equitably valued in such a way that each individual property bears its fair share of the expenses of the municipality. Assessed value must be fair in relation to the assessed value of other property in the municipality. Assessment and appraisal are similar methods for arriving at estimates of value. They differ only in purpose.

Whether determining the value of a property by appraisal or assessment, the values obtained will be determined by the following elements:

1. Economic climate (principles of value);
2. Sales history; and
3. Topography and land use.

This text will focus on the valuation of property through assessment, which is the function of a municipal property tax assessor.

### Market Value

The term “just value” is used to define the value sought by assessment. Just value has been interpreted by Maine courts as the equivalent of market value.

The definition of market value as adopted by the International Association of Assessing Officers (IAAO) is as follows:

*The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgably and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:*

- A. *Buyer and seller are typically motivated;*
- B. *Both parties are well informed or well advised and acting in what they consider their best interests;*
- C. *A reasonable time is allowed for exposure to the open market*

## Chapter 3 – The Value of Property

- D. *Payment is made in terms of cash in U.S. dollars;*
- E. *And the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.*

### **The Four Great Forces (“PEGS”)**

There are four great forces that affect property value. Collectively, these forces – **physical, economic, governmental, and social** – are referred to as PEGS. These outside (extrinsic) forces also create and destroy value. For example, when a municipality purchases an abandoned field and turns it into a park, the value of property in the surrounding neighborhood increase. Likewise, when a large company closes its facility in a small town, the property values in that town decrease.

1. Physical Forces:
  - a. Topography, lot shape, soil conditions
  - b. Proximity to parks, stores, employment, schools, churches, transportation
2. Economic Forces:
  - a. Income trends
  - b. Lending policies and interest rates
  - c. Construction costs
  - d. Housing prices and rental rates
  - e. Availability of vacant land
3. Governmental Forces:
  - a. Zoning
  - b. Building codes
  - c. Municipal services
4. Social Forces:

## Chapter 3 – The Value of Property

- a. Population trends, age distribution
- b. Family size
- c. Education trends
- d. Crime rates

### Economic Principles of Valuation

The following principles look at the effect of the four great forces on value. An assessor will often not recognize that they are using these principles, but these principles are always present in the work of a knowledgeable and experienced assessor.

1. Principle of Anticipation. Market value is the present worth of all anticipated future benefits derived from a property. Those benefits must be either income or amenities. Anticipated future benefits are difficult to determine because of the principle of change.
2. Principle of Balance. Maximum market value is reached when the four agents of production (land, labor, capital, and management) attain a state of equilibrium. In a neighborhood, it means that there are adequate complementary uses, such as stores and residents to shop at those stores.
  - a. Land includes not only land, but air, water, light, and heat.
  - b. Labor includes the input to produce and sell an item, including wages, material, and financing.
  - c. Capital is the cost of financing, the return of investment, and the return on investment. Return of investment means the repayment of a loan or an expenditure. Return on investment means profit.
  - d. Management is the improvement in the allocation of resources.
3. Principle of Change. Market value is never constant, because the four forces (physical, economic, government, and social) are always at work to change the property.

### Chapter 3 – The Value of Property

4. Principle of Competition. Competition is created when the potential for profit, or the existence of new amenities, attracts new sellers and buyers to a market. An excess of one type of property will tend to decrease the value of other properties.
5. Principle of Conformity. Maximum market value is achieved when there is reasonable similarity among the improvements in a neighborhood, and when the residents have similar ages, incomes, education, attitudes, etc.
6. Principle of Consistent Use. The property must be valued with a single use for the entire property. It is improper to value a property on the basis of one use for the land and another use, or uses, for the improvements. For example, if a house is valued as residential property, the driveway should not be valued according to its worth as commercial property.
7. Principle of Contribution. The value of one component of a property depends on its contribution to the whole.

**Example:** A residential homeowner spends \$20,000 to erect a garage. The market value of the property with a garage is only increased by \$15,000. In this case, \$15,000 is the value contribution of the garage.

8. Principle of Diminishing Returns. Additional investment in a property will increase the return up to a certain point and then, beyond this point, the return on additional capital decreases. For example, adding a second bathroom to a two bedroom house may increase the value by \$10,000, while adding a third bathroom may only increase the overall value by \$5,000.
9. Principle of Progression and Regression. The value of lower priced properties may be increased by proximity to better properties of the same type. Likewise, a better-quality property will decrease in value by proximity to lower quality properties in the same area.
10. Principle of Substitution. The market value of a property tends to be set by the cost of acquiring an equally desirable and valuable substitute property. This is the principle that underlies the three approaches to value (cost, market, and income).
11. Principle of Supply and Demand. The value of a property increases with increased demand and decreases with increased supply. Conversely, the value of a property decreases with decreased demand, such as with a recession and increases with a limitation on supply by, for example, a building moratorium.

## Chapter 3 – The Value of Property

12. Principle of Surplus Productivity: This principle says that land value equals estimated income less the cost of labor, management, and capital. This is related to the income approach to value.

### Highest and Best Use

Almost all property is subject to competing uses. Rural land is subject to the competition between farming and residential subdivision. Urban land is subject to many competing uses, including rental, residential, and commercial. When estimating market value, the assessor must determine which of the competing uses is the highest and best.

**Example:** An urban parcel of land may be sought after by various developers as the site for a store, a gas station, an apartment building, an office building, or an industrial plant.

Highest and best use is the legally allowable use that will generate the highest return to the property over time. When the main purpose of an appraisal is to estimate market value, the highest and best use analysis recognizes the most profitable, competitive use of the property. This is a market driven concept. To determine highest and best use, the assessor must look at the following four criteria:

1. Physically possible and probable. A quarter-acre lot is unlikely to be the location for a large retailer.
2. Legally permissible. What are the zoning restrictions for this parcel?
3. Financially feasible. If the cost to construct a certain business in that location is more than the anticipated income, it is not financially feasible.
4. Most productive. Income generated for a business versus available amenities for an individual.

### Three Approaches to Valuation

There are three approaches to valuation of property: 1) the sales comparison approach (also called the “market” approach); 2) the cost approach; and 3) the income approach. An assessor must at least consider each of these three methods before assigning a value to a property. For residential property, an assessor generally uses the cost approach to estimate value and then checks that value using the sales comparison approach. Since residential property doesn’t ordinarily generate income, the income approach is usually not applicable in this case.

## Chapter 3 – The Value of Property

### **The Sales Comparison Approach**

An assessor must use the principle of substitution to determine the most probable market value of any property. This means that recently sold, comparable properties must be rated beside the subject to be valued, and the average adjusted sale price of those comparable properties will tend to be the value of the subject. Differences between the subject property (the property being valued) and each comparable property must be considered, and the comparable property adjusted accordingly. Adjustments are never made to the subject property.

Because sale price is normally a good indicator of current market value, comparing a subject property with other similar properties that have sold (the sales comparison approach) is often the most accurate way of estimating value. If there aren't many recent sales to compare a subject property to, the sales comparison approach may not be the best valuation method to use.

The sales comparison approach is otherwise referred to as the “market” approach. In this text, we will use the term sales comparison approach. The sales comparison approach is covered in more detail in Chapter 7.

### **The Cost Approach**

General. The cost approach to valuation requires an assessor to determine replacement cost, minus the depreciation appropriate to the property of a given building. Note that the cost approach can only be used to determine the value of *buildings*.

While it cannot be used to determine the value of land, the cost approach is useful because, once the value of the building is known, it can be used in conjunction with the sales comparison approach to determine the value of land. See Valuation of Land, below. In the same vein, an assessor can determine the total value of a property by adding the replacement cost new less depreciation of a building and the known value of land. The cost approach, in conjunction with the sales comparison approach, is therefore one that assessors commonly use in assessment.

Replacement cost. The cost approach is based on replacement cost, as opposed to reproduction cost. Reproduction cost is the cost to exactly reproduce the existing property, using all the same material and construction methods. Replacement cost is the cost to replace a property with a similar property, using current material and construction standards. For example, an older house may have been built with framing studs spaced 24” apart. Current construction standards may dictate that

## Chapter 3 – The Value of Property

studs be placed 16” apart. Reproduction cost would base the estimate on 24” studs, while replacement cost would use the current 16” spacing convention.

To develop an estimate of value based on cost, an assessor needs information about all the materials and systems used in the structure. To do this efficiently, the assessor may use manuals available from the State of Maine (Assessment Manual) or from major companies like Marshall and Swift.

Once the information is gathered, the assessor places it into several schedules for ten elements of the improvements. These elements are, commonly: (1) foundation; (2) basement; (3) framing; (4) roof; (5) interior; (6) exterior; (7) floors; (8) heating; (9) plumbing; and (10) electrical. Each schedule will contain a quality grade, assigned by the assessor, that helps determine the cost new of that element based on its quality of construction in the subject property. The new cost of all ten elements is the replacement value of the property. To calculate the market value of a property, depreciation is subtracted from the replacement value.

Depreciation. Depreciation is key to property tax assessments. For purposes of assessing, depreciation is the loss of value in a structure and is generally expressed as a percentage of replacement cost. Do not confuse the assessment of depreciation for purposes of the property tax with depreciation for purposes of the income tax (the latter of which is simply a way to spread out the purchase price of an asset over several years). When an assessor refers to depreciation for purposes of the property tax, they mean the loss in value that a physical asset (e.g., a building) generally experiences over time.

The depreciated value of an asset is determined subtracting the value of the asset's depreciation from the value of the asset as if it were new. In other terms:

$$\text{Replacement Cost New (RCN)} - \text{Depreciation (D)} = \text{Value (V)}$$

This formula is occasionally referred to as RCNLD, or replacement cost new less depreciation. The assessed value of property will typically be lowered each year as a result of depreciation. While the value of land, like other property, fluctuates over time due to outside influences, these changes are not caused by depreciation. Land is not subject to depreciation.

Depreciation can be expressed as either a percentage of the value of the replacement cost of the property, or as a fixed dollar value. For instance, the depreciation of a \$100,000 building can be expressed as \$10,000 or 10% of the replacement cost. To convert depreciation expressed as a dollar value to depreciation expressed as a percentage, divide the dollar value of the depreciation by the replacement cost new of the property. For example, \$10,000 in depreciated value for a property with a total value of \$200,000 equals 5% depreciation. To convert depreciation expressed as a

## Chapter 3 – The Value of Property

percentage to depreciation expressed as a dollar value, multiply the percentage of depreciation by the replacement cost new of the property. For example, 5% depreciation of a \$200,000 property equals \$10,000 in depreciated value.

There are three basic kinds of depreciation:

1. Physical deterioration. Wear-and-tear of property through use, the action of nature, or through neglect.

**Example.** Carpets that have worn thin after years of use, or wallpaper that has faded from sun exposure have both experienced physical depreciation.

Some physical depreciation is curable, some is incurable. Physical depreciation is incurable when the cost to cure the depreciation is higher than the value that the repair would bring to the property.

2. Functional obsolescence. Outmoded or outdated equipment or design. Functional obsolescence may also result when property has a super-adequate structural element (i.e., over-improved such that the improvement costs more to add than the increase in value it provides). Some functional obsolescence is curable and some incurable.

**Example.** A four-bedroom house with only one bathroom may be functionally obsolescent, since most four-bedroom houses have two bathrooms.

**Example.** A 600-square-foot master bedroom with a walk-in closet in a neighborhood where master bedrooms are traditionally 250 square feet is a super-adequacy.

The difference between curable and incurable functional obsolescence is whether the cost to fix the obsolescence is less than the added value (curable) or more than the added value (incurable). For example, the cost of adding a second bathroom to a four-bedroom house is \$10,000. If the increase in value due to the second bathroom is more than \$10,000, that represents a curable functional obsolescence.

**Example.** A 100-year-old house has framing beams spaced wider than current convention. Since this outdated design cannot be corrected without tearing down and reconstructing the house, which would be more expensive than the value of the house, this is considered incurable functional obsolescence.

## Chapter 3 – The Value of Property

3. External obsolescence. The loss of value due to external forces or events.

**Example.** A popular neighborhood becomes undesirable due to air or noise pollution.

*Each type of depreciation is calculated separately and applied in the following order: physical, functional, then external.* The physical deterioration is calculated based on, and is subtracted from, the replacement cost of the property. The functional obsolescence is calculated on the replacement cost less physical deterioration, and the external obsolescence is calculated on the replacement cost less physical deterioration and less functional obsolescence. These items must be calculated separately in this order, otherwise depreciation will be calculated incorrectly.

**Example:** The subject property is a 30-year-old home in a neighborhood of single-family residences, some multifamily properties, and recent commercial development. The estimated cost to replace this building new is \$175,000.

The owners have kept the property in good physical condition, resulting in a physical deterioration estimate of 10%. The replacement cost minus physical deterioration is then:

Replacement cost	\$175,000
Less: physical deterioration	<u>(\$17,500)</u> [\$175,000 x 10%]
	\$157,500

Functionally, the kitchen is older style, and the number of electrical outlets throughout the home is insufficient for modern life. The rooms are somewhat small, and access into the home is directly into the living area. This translates to a 15% functional obsolescence, which is applied to the above remaining value.

Cost less physical deterioration	\$157,500
Less: functional obsolescence	<u>(\$23,625)</u> [\$157,500 x 15%]
	\$133,875

External obsolescence is high for this property, since there is multifamily use of some homes in the area and commercial development has entered the neighborhood. The assessor anticipates that this area will become fully commercial within a few years. External obsolescence is estimated to be 35%, which is applied to the remaining value.

Cost less physical deterioration and functional obsolescence	\$133,875
Less: external obsolescence	<u>(\$46,856)</u> [\$133,875 x 35%]

## Chapter 3 – The Value of Property

\$ 87,019

Typically, as commercial activity enters a neighborhood, the value of land increases. Commercial uses are more concentrated and generally put upward pressure on land prices. Property that is changing from residential to commercial use will usually be valued at the current value for commercial property minus the cost to renovate or bulldoze the existing residential improvements.

### **Class Problem 3.1:**

The replacement cost of a property to be assessed is \$180,000. Physical deterioration is estimated to be 20%, functional obsolescence is 20% and external obsolescence is 10%. Calculate the assessed value of the property.

### **The Income Approach**

The income approach to valuation requires the assessor to calculate a value for property based on an estimate of future income generated by the property. The land may or may not be necessary (as a parking lot, for example) to that production of income.

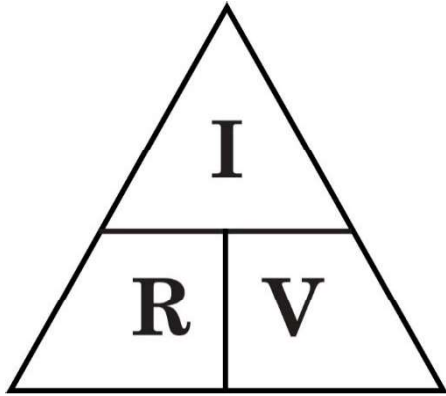
The primary equation for the income approach is:

$$\text{Income (I)} = \text{Rate (R)} \times \text{Value (V)}$$

where income (I) equals the estimated income generated by the property; rate (R) equals the capitalization rate, or the rate of return for income producing property; and value (V) equals the current market value of the property.

This equation is often called “IRV.”

## Chapter 3 – The Value of Property



The “IRV” equation can be visually represented by the triangle to the left. To determine the equation for any one of the three components, cover the element you want to calculate. If the remaining components are above one another, then divide them to determine the missing component. If the remaining components are next to one another, multiply them to determine the missing component.

For example, to determine value (V), cover the “V” in the diagram. The remaining components are income (I) above rate (R). Since income is *above* rate, divide the income by the rate to determine the value. In other words, value equals income divided by rate ( $I/R = V=I/R$ ). To determine income (I) cover the “I” in the diagram. The remaining components are rate (R) next to value (V). Since rate is *next* to value, multiply the rate and the value to determine the income. In other words, income equals rate times value ( $I=R \times V$ ).

The traditional algebraic approach also works. For example, to solve for value, divide both sides of the IRV equation ( $I = R \times V$ ) by R, resulting in income divided by rate equals value ( $I/R = V$ ). Transposing the sides results in value equals income divided by rate ( $V = I/R$ ).

Depending on the variable you want to calculate, the solution for each component is:

Income  $I = R \times V$   
Value  $V = I / R$   
Rate  $R = I / V$

**Example.** You are considering buying an apartment building, but you need to know how much the property is worth. Through an analysis of rental history for this building, you estimate you can earn income of \$80,000 in the following year. You have also determined that you need a rate of return at least equal to 10% of your investment. What is the estimated value for this property?

Applying the  $I = R \times V$  equation, you can see that you have a value for income (I) and for rate (R), so you need to calculate value (V).

$$V = I/R = \$80,000/0.10 = \$800,000 = \text{estimated value for the property}$$

The income approach to valuation is covered more thoroughly in Course PT103 – Valuation of Real Estate.

## Chapter 3 – The Value of Property

### Class Problem 3.2:

You are interested in purchasing an apartment building that is being offered for sale and you want to know if it is priced appropriately. Your required rate of return is 18% and you estimate you can earn income from this property of \$60,000 next year. What is the value of this property?

### Valuation of Land

Land, because it is permanent and indestructible, is almost always valued using the sales comparison approach. Where there are few sales, it is possible to value land by subtracting the value of buildings or other improvements from the overall value of the property.

**Example.** The subject property was sold on the open market via an arm's length transaction for \$200,000. The RCNLD of the building affixed to the property is \$150,000. To determine the value of the land, subtract the RCNLD from the sale price.

Sales price of property	\$200,000
RCNLD of building	<u>(\$150,000)</u>
Value attributable to land	\$50,000

### Class Problem 3.3:

A property is sold on the open market for \$390,000. The replacement cost new, less depreciation (RCNLD) of the building affixed to the property is \$140,000. Determine the value attributable to the land.

## Chapter 3 – The Value of Property

Once the land value in an area is established, an assessor will calculate the value of each parcel of land in that area. The most common approach to land valuation is the square foot method, except in rural areas, where the acre generally is used. In each of these methods, a value is placed on the standard area of measurement (square foot, acre, or other). That unit value is then applied to each parcel by multiplying the unit value by the number of units in the parcel. For example, if a value of \$1,000 per acre is established, a two-acre lot in that area is valued at \$2,000 ( $\$1,000/\text{acre} \times 2 \text{ acres}$ ).

### **Class Problem 3.4:**

A 3.5-acre property is sold on the open market for \$250,000. The replacement cost new, less depreciation (RCNLD) of the building affixed to the property is \$180,000. Determine the value attributable to the land on a per-acre basis.

Valuation of land is covered in more depth in Course PT103 – Valuation of Real Estate.

The four basic types of land are residential, agricultural, commercial, and industrial.

### **Current Land Use Classifications**

Property is generally assessed according to its highest and best use. However, the Maine Constitution authorizes certain classifications of property to be assessed according to their current use, rather than their highest and best use. This current use valuation generally lowers the assessed value of property.

The Maine Constitution article IX, section 8(2) states:

*The Legislature shall have the power to provide for the assessment of the following types of real estate wherever situated in accordance with a valuation based upon the current use thereof and in accordance with such conditions as the Legislature may enact:*

*A. Farms and agricultural lands, timberlands and woodlands;*

## Chapter 3 – The Value of Property

*B. Open space lands which are used for recreation or the enjoyment of scenic natural beauty;*

*C. Lands used for game management or wildlife sanctuaries; and*

*D. Waterfront land that is used for or that supports commercial fishing activities.*

The Legislature has implemented four statutory current use programs based on this section : the Tree Growth Tax Law program, the Farmland Tax Law program, the Open Space Tax Law program, and the Working Waterfront Land program.

**Tree Growth Tax Law Program** (See Bulletin No. 19 – Maine Tree Growth Tax Law). 36 M.R.S. §§ 571 – 584-A.

Under the Tree Growth Tax Law program, forested land at least ten acres in size that is maintained for commercial harvesting is valued by the State Tax Assessor in conjunction with the Bureau of Forestry based on its productivity value rather than on its market value.

Each year the land values are set for acreage of softwood, mixed wood, and hardwood in each county, and are usually lower than the values for undeveloped land in any municipality.

A taxpayer may be approved for this classification when the taxpayer has a forest management plan prepared by a licensed forester and has provided the completed application to the assessor. Withdrawal from the Tree Growth program results in a penalty equal to the greater of a percentage of the market value of the land less the value of the land in the Tree Growth program. the difference between the taxes paid and the taxes that would have been owed during the prior five years if the land was not enrolled in the program, plus interest (see Withdrawal and Transfer).

An application must be filed on or before April 1 for the year in which classification is first requested, complete with proof that a forest management plan has been prepared and a map showing all the forest types and lands not classified. The forest management plan may be reviewed by the assessor but must be returned to the landowner.

**Farmland Tax Law Program** (See Bulletin No. 20 – Farmland Tax Law). 36 M.R.S. §§ 1101 – 1121.

## Chapter 3 – The Value of Property

To qualify for this program, a parcel of land must contain at least five contiguous acres. Application may be made for more than one parcel of property if one of the parcels contains five acres.

The land must produce an income of at least \$2,000 per year in one of the two or three of the five years previous to application. For example, if a landowner submits an application in March 2025, the land must have produced at least \$2,000 in farming income in either of calendar years 2024 or 2023. If neither of those years saw \$2,000 of income, the parcel must have produced at least \$2,000 of income in each of the years 2020, 2021, and 2022.

The land must be used for farming, agricultural, or horticultural use, but may include forest land and wasteland within the five-acre farm unit.

Provisional classification is also available for two years to persons who are generally starting up a farm. At the end of the two years, the farm must be producing the \$2,000 per year minimum income or must be withdrawn from the program.

**Open Space Tax Law Program** (See Bulletin No. 21 – Open Space Tax Law) 36 M.R.S. §§ 1101 – 1121.

Open space land is defined as any area of land, the preservation or restriction of the use of which provides a public benefit in any of the following areas:

1. Conserving scenic resources;
2. Enhancing public recreation opportunities;
3. Promoting game management; or
4. Preserving wildlife and wildlife habitat.

When applying, a taxpayer must choose the classification of open space tax reduction requested along with the proof required for any permanent conservation protection. If an assessor has difficulty determining the market value of open space land, the assessor may use an alternate valuation method where each classification is associated with a percentage discount from market value. The different classifications are:

1. Ordinary open space. For land that is preserved by the owner to provide a public benefit, a 20% reduction is applied.

## Chapter 3 – The Value of Property

2. Permanently protected open space. This requires a permanent conservation easement and reduces valuation by an additional 30% over the ordinary 20% open space reduction, for a total reduction of 50%.
3. Forever wild open space. Land in this classification must remain unaltered and is eligible for an additional 20% reduction in value over the 50% permanently protected open space reduction, for a total reduction of 70%.
4. Public access open space. Land open to the public by reasonable access and the owner of which agrees to take no steps to discourage or prohibit daytime public use. The owner may permit hunting, camping, and other recreational uses and may impose temporary restrictions to protect wildlife and endangered species. Land in this classification is eligible for an additional 25% reduction over the ordinary 20% open space reduction. If land also qualifies for forever wild and/or permanently protected status, a reduction of up to 95% is available.
5. Managed forest open space. This is land that would otherwise qualify for classification in the Tree Growth Tax Law program. Land in this classification is eligible for an additional 10% reduction over the open space reduction otherwise allowed. Land cannot be both forever wild and managed forest, as these are contradictory uses. If land also qualifies for permanently protected and/or public access status, a reduction of up to 85% is available, but the value of managed forest open space land may not be reduced to a value lower than similar land in the Tree Growth Tax Law program.

**Working Waterfront Land Program** (See Bulletin No. 36 – Working Waterfront Current Use Program). 36 M.R.S. §§ 1131 – 1140-C.

Working waterfront land means a parcel or portion of a parcel of land abutting tidal waters or located in the intertidal zone (located between the high and low water marks), the use of which is more than 50% related to providing access to or in support of commercial fishing (including commercial aquaculture) activities.

Working waterfront land used *predominantly* (more than 90%) as working waterfront is eligible for a 30% reduction from just value. Working waterfront land used *primarily* (more than 50%) as working waterfront is eligible for a 20% reduction from just value. Working waterfront land that is permanently protected from a change in use through deeded restriction is eligible for the applicable use reduction plus an additional 30% reduction. Working waterfront land that is subject to a legally binding right-of-way or easement that permits access to intertidal land for commercial fishing activities is eligible for the applicable use reduction plus an additional reduction of 10%.

## Chapter 3 – The Value of Property

### Withdrawal and Transfer

When land in one of the current use programs no longer qualifies for that program, regardless of cause, the land must either be withdrawn from that program or transferred to another current use program for which the land qualifies. For example, if the owner of ten acres of land in the Tree Growth Tax Law program decides to use one acre of the land to build a house, the entire parcel no longer qualifies for the Tree Growth Tax Law program since the parcel no longer contains at least ten forested acres. The owner of the land may either withdraw the entire ten acres from the program or withdraw the one-acre house lot and transfer the remaining nine acres to another current use program, where a ten-acre minimum is not applicable.

**Penalty for withdrawal from the Farmland program.** The penalty for withdrawal from the Farmland program is equal to the difference between the tax that would have been due over the previous five years if the land had been assessed at its just value on the date of withdrawal, less the tax actually paid for those years (interest. Interest is applied to that difference as if the differences were underpayments.

Interest is applied to the penalty as if it were an underpayment. For example, the portion of the penalty that is based on the difference in just value tax and tax paid from five years before the withdrawal would have five years of interest applied to it. The portion of the penalty that is based on the difference from four years ago would have four years of interest applied to it, and so on.

If a municipality's certified ratio is less than or greater than 100%, the will be property's just value is calculated by dividing the assessed value by the municipality's certified ratio. If the property has been in the Farmland program for less than five years, and hasn't been transferred from another current use program within the ten years of the date of withdrawal, the penalty is based on the number of years the property was in the Farmland program.

If the property being withdrawn was transferred from another current use program to the Farmland program within ten years of the date of withdrawal, the penalty as calculated under the other current use program must be applied (see Penalty for withdrawal from the Tree Growth Tax law, Open Space, or Working Waterfront programs below).

For more information, see the Current Use Assessments section of PT102 – Maine Property Tax Law, Chapter 6.

**Example.** Cassie owns ten acres of farmland in the town of Roseland. Cassie enrolled that land in the Farmland program for the 2024 tax year (beginning

### Chapter 3 – The Value of Property

April 1, 2024). Cassie withdraws the land from the program on April 1, 2025. The April 1, 2025 assessed value of undeveloped land in the municipality is \$3,000/acre. The assessed value of land in the Farmland program in that area is \$500/acre. Roseland charges interest at 5% per year for unpaid taxes. The Farmland value and interest rate have not changed from last year. Roseland's mill rate is 16 mills, which is the same as last year. Property in Roseland is assessed at 100% of current market value. Calculate the withdrawal penalty.

First, calculate the tax difference between what would have been assessed in 2024, based on just value on date of withdrawal and the tax that was paid.

1. Determine the 2025 just value as undeveloped land. (Value per acre × number of acres).

$$\$3,000 \text{ per acre} \times 10 \text{ acres} = \$30,000 \text{ total just value.}$$

2. Determine the tax that would have been owed if taxes had been assessed on the just value of the property. (Just value × mill rate.)

$$\$30,000 \text{ total just value} \times 16 \text{ mills } (0.016) = \$480.00 \text{ just value tax.}$$

3. Determine the current use value of the property for 2024. (Current use value per acre × number of acres.)

$$\$500 \text{ per acre} \times 10 \text{ acres} = \$5,000 \text{ total current use value.}$$

4. Determine the tax that was assessed on the basis of the current use value. (Current use value × mill rate.)

$$\$5,000 \text{ total current use value} \times 16 \text{ mills } (0.016) = \$80.00 \text{ current use tax}$$

5. Determine the difference between the taxes that would have been owed, and the taxes actually paid. (Just value tax – Current use tax.)

$$\$480.00 \text{ just value tax} - \$80.00 \text{ current use tax} = \$400.00 \text{ difference}$$

6. Calculate the interest on the difference. (Difference × interest rate.)

$$\$400.00 \text{ difference} \times 5\% (0.05) \text{ interest rate} = \$20.00 \text{ interest}$$

7. Add the amounts from steps 6 and 7. (Difference + interest.)

$$\$400.00 \text{ difference} + \$20.00 \text{ interest} = \$420.00 \text{ penalty}$$

## Chapter 3 – The Value of Property

### Class Problem 3.5

Rachael owns 20 acres of farmland in Stetson that has been enrolled in the Farmland program for one year. Rachael withdraws the land from the program on April 1, 2025. The April 1, 2025 assessed value of undeveloped land in the municipality is \$2,000/acre. The assessed value of land in the Farmland program in that area is \$1,000/acre. Stetson charges interest at 4% per year for unpaid taxes. The Farmland value and interest rate have not changed from 2024. Stetson's mill rate is 18 mills, the same as last year. Property in Stetson is assessed at 100% of current market value. Calculate Rachael's withdrawal penalty.

**Example.** Peter owns 25 acres of farmland in the town of Sullivan that have been enrolled in the Farmland program for five years. Peter withdraws the land from the program on April 1, 2025 for development purposes. The April 1, 2025 assessed value of undeveloped land in the municipality is \$2,000/acre. The assessed value of land in the Farmland program in that area is \$600/acre. Sullivan charges interest at 5% per year for unpaid taxes. The Farmland value and interest rate have not changed in more than five years. Sullivan's mill rate has been 15 mills for the past five years and is the same this year. Property in Sullivan is assessed at 100% of current market value. Calculate the withdrawal penalty.

First, calculate the annual tax difference between what would have been assessed, based on just (market) value on date of withdrawal and the tax that was paid.

1. Determine the 2025 just value as undeveloped land. (Value per acre  $\times$  number of acres).

$$\$2,000 \text{ per acre} \times 25 \text{ acres} = \$50,000 \text{ total just value.}$$

2. Determine the tax that would have been owed if taxes had been assessed on the just value of the property. (Just value  $\times$  mill rate.)

$$\$50,000 \text{ total just value} \times 15 \text{ mills } (0.015) = \$750.00 \text{ tax.}$$

### Chapter 3 – The Value of Property

3. Determine the current use value of the property for the five years that the property was enrolled in the program. (Current use value per acre × number of acres.)

$$\$600 \text{ per acre} \times 25 \text{ acres} = \$15,000 \text{ total current use value.}$$

4. Determine the tax that was assessed on the basis of the current use value. (Current use value × mill rate.)

$$\$15,000 \text{ total current use value} \times 15 \text{ mills } (0.015) = \$225.00$$

5. Determine the difference between the taxes that would have been owed, and the taxes actually paid for each of the five years the property was enrolled in the program. (Just value tax – Current use tax.)

$$a. \ \$750.00 \text{ just value tax} - \$225.00 \text{ current use tax} = \$525.00 \text{ difference}$$

6. Draw a grid with five rows and six columns: (A) year, (B) previous row total, (C) tax difference, (D) sum ((B) + (C)), (E) interest, and (F) total. Fill in the information you know.

A Year	B Previous row total	C Tax difference	D Sum (B + C)	E Interest (D x rate)	F Total (D + E)
2020	\$	\$ 525.00	\$	\$	\$
2021		525.00			
2022		525.00			
2023		525.00			
2024		525.00			

7. Fill in the rest of the cells by working through the table from top to bottom, left to right. In year one, determine the interest owed on the tax difference. Enter the total in column (F). In year two, add the tax difference to the prior year's total, determine the interest owed, and enter the total in column (F). Repeat until the table is complete.

A Year	B Previous row total	C Tax difference	D Sum (B + C)	E Interest (D x 5%)	F Total (D + E)
2020	\$ 0.00	\$ 525.00	\$ 525.00	\$ 26.25	\$ 551.25
2021	551.25	525.00	1,076.25	53.81	1,130.06
2022	1,130.06	525.00	1,655.08	82.75	1,737.83
2023	1,737.83	525.00	2,262.83	113.14	2,375.97
2024	2,375.97	525.00	2,900.97	145.05	<b>\$3,046.02</b>

### Chapter 3 – The Value of Property

The last row in column F is the total Farmland penalty

**Class Problem 3.6**

Justin owns 10 acres of farmland in Durginland that has been enrolled in the Farmland program for 35 years. Justin withdraws the land from the program on April 1, 2025. The April 1, 2025 assessed value of undeveloped land in the municipality is \$2,000/acre. The assessed value of land in the Farmland program in that area is \$1,000/acre. Durginland charges interest at 4% per year for unpaid taxes. The Farmland value and interest rate have not changed in the past five years. Durginland’s mill rate is currently 18 mills and has been the same for the past five years. Property in Durginland is assessed at 100% of current market value. Calculate Justin’s withdrawal penalty.

A Year	B Previous row total	C Tax difference	D Sum (B + C)	E Interest (D x rate)	F Total (D + E)
2020	\$	\$	\$	\$	\$
2021					
2022					
2023					
2024					

## Chapter 3 – The Value of Property

**Penalty for withdrawal from the Tree Growth Tax law, Open Space, or Working Waterfront programs.** The penalty for withdrawal from a current use program other than the Farmland program is equal to the greater of two calculations:

1. the difference between the tax that would have been due over the previous five years if the land had been assessed at its just value on the date of withdrawal, less the tax actually paid for those years. Interest is applied to that difference as if the differences were underpayments; and
2. the difference between the just value of the land and the current use value, multiplied by a percentage, depending on the number of years the land is in the program.

Number of years	Penalty percentage
1-10 .....	30%
11 .....	29%
12 .....	28%
13 .....	27%
14 .....	26%
15 .....	25%
16 .....	24%
17 .....	23%
18 .....	22%
19 .....	21%
20 or more .....	20%

In practice, you will need to calculate both penalty numbers to determine the larger. For purposes of this textbook, we will assume that the second calculation is always higher.

If a municipality's certified ratio is less than or greater than 100%, the penalty will be determined using the property's just value, which can be calculated by dividing the assessed value by the certified ratio. For more information, see the Current Use Assessments section of PT102 – Maine Property Tax Law, Chapter 6.

**Example.** Linda owns 25 acres of land in the ski resort town of Rogers Valley that have been enrolled in the Tree Growth Tax Law program for five years. Linda decides to withdraw the land from the program for development purposes. The assessed value of undeveloped land in the municipality is \$1,000/acre. The current full value of land in the tree growth program, as reported in MRS Rule 202 for the county is \$200/acre. Property in Rogers Valley is assessed at 100% of current market value. Calculate the withdrawal penalty.

Penalty = 30% = 0.30 (land is in the program for fewer than 11 years)

### Chapter 3 – The Value of Property

Just value of land = \$1,000/acre x 25 acres = \$25,000 (no adjustment necessary, since property is assessed at 100% of just value)

Tree growth program value of land = \$200/acre x 25 acres = \$5,000

Difference in value = \$25,000 - \$5,000 = \$20,000

Penalty = \$20,000 x 0.30 = \$6,000

#### **Class Problem 3.67**

Deb owns 50 acres of land in Stetsonville that has been enrolled in the Tree Growth Tax Law program for 35 years. Deb decides to withdraw the land from the program for development purposes. The assessed value of undeveloped land in Stetsonville is \$2,000/acre. The current full value of land in the tree growth program in that county is \$450/acre. Property in Stetsonville is assessed at 100% of market value. Calculate the withdrawal penalty.

#### **Class Problem 3.78**

Matt and Andrea own eight acres of land on Lake Lubejko. The land has been enrolled in the Open Space program for five years. Matt and Andrea decide to move to another state and want to sell the land. A developer offers to buy the land for \$100,000 if Matt and Andrea withdraw the land from the Open Space program and pay the penalty first. Otherwise, the developer will pay \$80,000. The assessed value of undeveloped land on Lake Lubejko is \$12,000/acre. The current value of land in the Open Space program in that area is \$6,000/acre. Property on Lake Lubejko is assessed at 100% of current market value. Calculate the withdrawal penalty. Is it worth it to Matt and Andrea to withdraw the land and pay the penalty before selling to the developer?

## Chapter 3 – The Value of Property

A landowner may avoid a withdrawal penalty by transferring land to another current use program; however, the land must qualify for the program that the landowner wants to transfer the land into. Transferred land, while it may have a different value than while it was enrolled in the previous program, retains the total number of years in the old program for purposes of calculating the withdrawal penalty. For example, if land that has been enrolled in the Farmland program for 15 years is transferred to the Open Space program, then withdrawn from the Open Space program five years after the transfer, the withdrawal penalty will be based on the 20 years that the land was enrolled in a current use program.

### Other Current Use Affected Programs

#### Historic and Scenic Properties

The Maine Constitution, under article IX, section 8, subsection 5, allows a municipality to reduce the property tax on real estate with historic integrity, providing a scenic view, or designated as an important structure. The tax reduction must be in accordance with a municipally adopted program.

The Maine Historic Preservation Commission provides guidance in implementing this law.

#### Municipal Voluntary Farm Support Program

This program is also an option at the local level. If adopted by ordinance, this program allows working farmland and buildings eligible for a 20-year agricultural easement and which reimburses the property tax associated with the land and buildings designated. See 7 M.R.S. ch. 2-C.

The Department of Agriculture provides guidance on this program.

### Valuation Resources

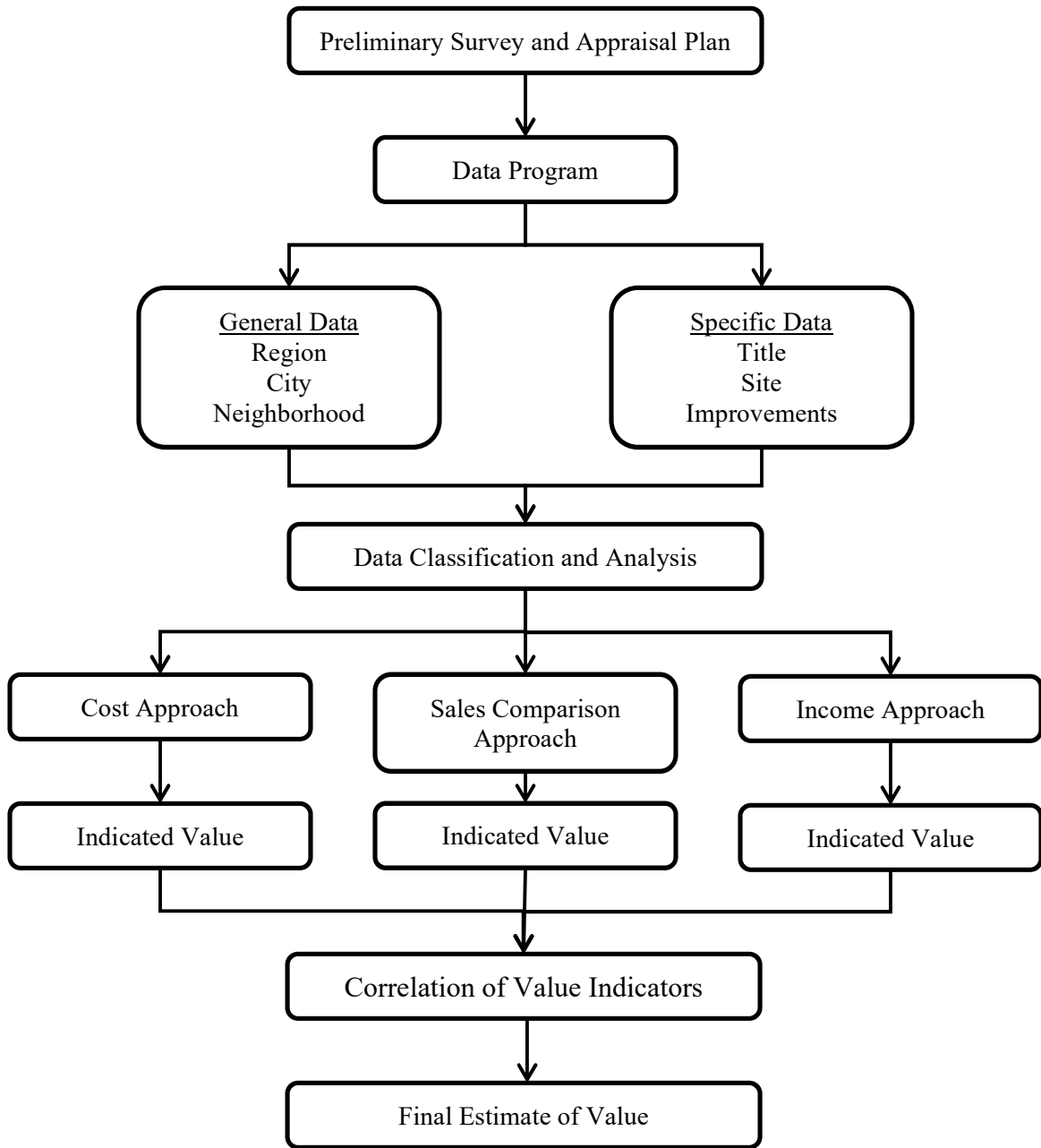
1. The State Assessment Manual;
2. Revaluation Company grading and pricing schedules; and
3. Professional valuation services like Marshall & Swift (CoreLogic).

## Chapter 3 – The Value of Property

### Summary

This chapter provides a general overview of the assessor's job of property valuation. The chapter discusses the forces that drive market value and the economic theories underlying the concept of value. A brief discussion of the three approaches to valuation that are used by municipal assessors is included and the programs that allow for reduced valuation due to current use are outlined.

**The Valuation Process**



## Chapter 3 – The Value of Property

### Answers to Class Problems

#### Class Problem 3.1

The replacement cost of a property to be assessed is \$180,000. Physical deterioration is estimated to be 20%, functional obsolescence is 20% and external obsolescence is 10%. Calculate the assessed value of the property.

Replacement cost:	\$ 180,000
Less: Physical deterioration (20%) $180,000 \times 0.2$	<u>(\$ 36,000)</u>
	\$ 144,000
Less: Functional obsolescence (20%) $144,000 \times 0.2$	<u>(\$ 28,800)</u>
	\$ 115,200
Less: External obsolescence (10%) $115,200 \times 0.1$	<u>(\$ 11,520)</u>
Assessed Property Value:	<b>\$ 103,680</b>

#### Class Problem 3.2

You are interested in purchasing an apartment building that is being offered for sale and you want to know if it is priced appropriately. Your required rate of return is 18% and you estimate you can earn income from this property of \$60,000 next year. What is the value of this property?

$$V = I/R = \$60,000/0.18 = \mathbf{\$333,333.}$$

The property is worth \$333,333. If you can buy it for this amount or less, this investment is worthwhile.

#### Class Problem 3.3:

A property is sold on the open market for \$390,000. The replacement cost new (RCNLD) of the building affixed to the property is \$140,000. Determine the value attributable to the land.

Sales price of property	\$390,000
RCNLD of building	<u>(\$140,000)</u>
Value attributable to land	<b>\$150,000</b>

## Chapter 3 – The Value of Property

### Class Problem 3.4:

A 3.5 acre property is sold on the open market for \$250,000. The replacement cost new (RCNLD) of the building affixed to the property is \$180,000.

Sales price of property	\$250,000
RCNLD of building	<u>(\$180,000)</u>
Value attributable to land	\$70,000
Acreage	<u>3.5 acres</u>
Value attributable to land (per acre)	<b>\$20,000 per acre</b>

### Class Problem 3.5

Rachael owns 20 acres of farmland in Stetson that has been enrolled in the Farmland program for one year. Rachael withdraws the land from the program on April 1, 2025. The April 1, 2025 assessed value of undeveloped land in the municipality is \$2,000/acre. The assessed value of land in the Farmland program in that area is \$1,000/acre. Stetson charges interest at 4% per year for unpaid taxes. The Farmland value and interest rate have not changed from 2024. Stetson's mill rate is 18 mills, the same as last year. Property in Stetson is assessed at 100% of current market value. Calculate Rachael's withdrawal penalty.

1. Determine the 2025 just value as undeveloped land. (Value per acre × number of acres).

$$\$2,000 \text{ per acre} \times 20 \text{ acres} = \$40,000 \text{ total just value.}$$

2. Determine the tax that would have been owed if taxes had been assessed on the just value of the property. (Just value × mill rate.)

$$\$40,000 \text{ total just value} \times 18 \text{ mills } (0.018) = \$720.00 \text{ just value tax.}$$

3. Determine the current use value of the property for 2024. (Current use value per acre × number of acres.)

$$\$1,000 \text{ per acre} \times 20 \text{ acres} = \$20,000 \text{ total current use value.}$$

4. Determine the tax that was assessed on the basis of the current use value. (Current use value × mill rate.)

$$\$20,000 \text{ total current use value} \times 18 \text{ mills } (0.018) = \$360.00 \text{ current use tax}$$

### Chapter 3 – The Value of Property

5. Determine the difference between the taxes that would have been owed, and the taxes actually paid. (Just value tax – Current use tax.)

$$\$720.00 \text{ just value tax} - \$180.00 \text{ current use tax} = \$540.00 \text{ difference}$$

6. Calculate the interest on the difference. (Difference x interest rate.)

$$\$540.00 \text{ difference} \times 4\% (0.04) \text{ interest rate} = \$21.60 \text{ interest}$$

7. Add the amounts from steps 6 and 7. (Difference + interest.)

$$\$540.00 \text{ difference} + \$21.60 \text{ interest} = \$561.60 \text{ penalty}$$

#### **Class Problem 3.6**

Justin owns 10 acres of farmland in Durginland that has been enrolled in the Farmland program for 35 years. Justin withdraws the land from the program on April 1, 2025. The April 1, 2025 assessed value of undeveloped land in the municipality is \$2,000/acre. The assessed value of land in the Farmland program in that area is \$1,000/acre. Durginland charges interest at 4% per year for unpaid taxes. The Farmland value and interest rate have not changed in the past five years. Durginland's mill rate is currently 18 mills and has been the same for the past five years. Property in Durginland is assessed at 100% of current market value. Calculate Justin's withdrawal penalty.

$$\begin{aligned} \text{2025 just value as undeveloped land} &= \text{value/ac} \times \# \text{ acres} = \$2,000/\text{ac} \times 10 \text{ acres} \\ &= \$20,000 \end{aligned}$$

$$\begin{aligned} \text{Tax on just value} &= \text{Just value} \times \text{mill rate}/1,000 = \$20,000 \times 18/1,000 \\ &= \$20,000 \times 0.018 = \$360.00 \end{aligned}$$

$$\begin{aligned} \text{Historical current use value, years 1-5} &= \text{Current use value/ac} \times \# \text{ acres} \\ &= \$1,000/\text{ac} \times 10 \text{ acres} = \$10,000 \text{ each year} \end{aligned}$$

$$\begin{aligned} \text{Tax on historical current use value} &= \text{Historical value} \times \text{mill rate}/1,000 \\ &= \$10,000 \times 18/1,000 = \$10,000 \times 0.018 = \$180.00 \end{aligned}$$

$$\begin{aligned} \text{Tax difference, years 1-5} &= \text{Just value tax} - \text{Current use tax} = \$360.00 - \$180.00 \\ &= \$180.00 \end{aligned}$$

A	B	C	D	E	F
Year			Sum	Interest	Total

### Chapter 3 – The Value of Property

	Previous row total	Tax difference	(B + C)	(D x rate)	(D + E)
2020	\$ 0.00	\$ 180.00	\$ 180.00	\$ 7.20	\$ 187.20
2021	187.20	180.00	367.20	14.69	381.89
2022	381.89	180.00	561.89	22.48	584.37
2023	584.37	180.00	764.37	30.57	794.94
2024	794.94	180.00	974.94	39.00	<b>\$1,013.94</b>

The Farmland penalty is \$1,016.94

#### **Class Problem 3.67**

Deb owns 50 acres of land in Stetsonville that has been enrolled in the Tree Growth Tax Law program for 35 years. Deb decides to withdraw the land from the program for development purposes. The assessed value of undeveloped land in Stetsonville is \$2,000/acre. The current full value of land in the tree growth program in that county is \$450/acre. Property in Stetsonville is assessed at 100% of market value. Calculate the withdrawal penalty.

Penalty = 20% = 0.20 (land is in program for more than 20 years)

Just value of land = \$2,000/acre x 50 acres = \$100,000 (no adjustment necessary, since property is assessed at 100% of just value)

Tree growth program value of land = \$450/acre x 50 acres = \$22,500

Difference in value = \$100,000 - \$22,500 = \$77,500

Penalty = \$77,500 x 0.20 = \$15,500

#### **Class Problem 3.78**

Matt and Andrea own eight acres of land on Lake Lubejko. The land has been enrolled in the Open Space program for five years. Matt and Andrea decide to move to another state and want to sell the land. A developer offers to buy the land for \$100,000 if Matt and Andrea withdraw the land from the Open Space program and pay the penalty first. Otherwise, the developer will pay \$80,000. The assessed value of undeveloped land on Lake Lubejko is \$12,000/acre. The current value of land in the Open Space program in that area is \$6,000/acre. Property on Lake Lubejko is assessed at 100% of current market value. Calculate the withdrawal penalty. Is it worth it to Matt and Andrea to withdraw the land and pay the penalty before selling to the developer?

Penalty = 30% = 0.30

Market value of land = \$12,000/acre x 8 acres = \$96,000

### Chapter 3 – The Value of Property

Open Space program value of land =  $\$6,000/\text{acre} \times 8 \text{ acres} = \$48,000$

Difference in value =  $\$96,000 - \$48,000 = \$48,000$

Penalty =  $\$48,000 \times 0.30 = \$14,400$

Net sale price after penalty =  $\$100,000 - \$14,400 = \$85,600$

Sale price with no penalty =  $\$80,000$

Withdrawal of land from the Open Space program is advantageous to Matt and Andrea.

## Chapter 3 – The Value of Property

### Chapter 3 Class Quiz

1. The three basic principles that create value are:
  - A. Price, demand, location
  - B. Utility, price, demand
  - C. Utility, scarcity, desirability
  - D. Desirability, price, utility
  
2. The relationship between an object desired and a potential purchaser is known as:
  - A. Price
  - B. Value
  - C. Exchange
  - D. Demand
  
3. Market value is defined by all of the following elements except:
  - A. The buyer and seller are motivated
  - B. A reasonable time is allowed for exposure to the market
  - C. The assessed value of the property is based on the price
  - D. The price represents normal consideration for the property
  
4. Which of the following contains substantial elements of an assessment:
  - A. Purpose of the assessment, discovery of the property, classification of the property
  - B. Discovery of the property, classification of the property, data collection and analysis
  - C. Classification of the property, data collection and analysis, price verification
  - D. Data collection and analysis, price verification, purpose of the assessment
  
5. The four great forces are:
  - A. Highest and best use, governmental, social, physical
  - B. Physical, economic, governmental, social
  - C. Supply and demand, physical, governmental, economic
  - D. Anticipated use, governmental, social, physical
  
6. Under the Tree Growth Tax Law, a parcel must contain a minimum of ten forested acres, be maintained for commercial harvesting, and have an up-to-

### Chapter 3 – The Value of Property

date forest management plan.

- True
- False

7. The cost approach asks the assessor to use the principle of supply and demand to determine the most probable market value of a property.

- True
- False

8. The prices of properties tend to increase with an increase of supply of similar properties

- True
- False

9. The principle of anticipation states that market value is the present worth of all anticipated future benefits.

- True
- False

10. Open space classification is only available for lots over five acres that contain scenic resources, public recreation opportunities, or preserve wildlife habitat.

- True
- False

**Answers on page 129**



# CHAPTER 4

## PERSONAL PROPERTY

Personal property is defined as all property that is not real estate. The two types of personal property are tangible and intangible. Tangible personal property are generally things you can touch, like furniture and appliances. Intangible personal property are generally things you cannot touch, like corporate stocks and bonds. Maine assesses property tax on tangible personal property, but not on intangible personal property. The Maine Constitution, however, permits the taxation of intangibles under Article IX, Section 8, if the Legislature chooses to enact a law doing so.

Personal property with a value of less than \$1,000 is exempt from property tax, unless that property is used by a business. See 36 M.R.S § 655(P).

Personal property of a Maine resident is generally taxed by the municipality where that person lives. Personal property of a nonresident is generally taxed by the municipality where the property is located. The tax is assessed to either the owner or the person in possession of the property.

While it may seem intuitive, determining whether an item is real estate or personal property can be difficult. Generally, if an item is movable, it is considered personal property. An item of personal property that is connected to real estate may be considered personal property or real estate. If an item connected to real estate can be separated from the real estate without damaging either pieces of property, the item is considered personal property. For example, a window air conditioning unit is easily removed from that window without damaging either, and is therefore considered personal property. An installed air conditioning system, however, cannot be removed without damaging the building or the system, and is therefore considered part of the real estate. Items of personal property closely related to real estate may include:

1. A home security system.
2. A bookcase secured to a wall.
3. A satellite dish.

## Chapter 4 – Personal Property

### Personal Property Schedule

An assessor is responsible for the assessment of personal property as well as real estate. For the assessor to determine the value of taxable personal property, that assessor must discover who and what is taxable. To do so, assessors may conduct on-site inspections, if allowed by the taxpayer. Assessors may also make a request, in writing, for a list of property owned by or in the possession of the taxpayer. These requests are authorized under 36 M.R.S. § 706-A. An example is shown below.

#### 2024 PERSONAL PROPERTY SCHEDULE FORM

*This schedule is required under 36 M.R.S. §§ 601 and 706-A.*

*Return to the Assessor's Office no later than May 1, 2024*

***Failure to return this form to the Assessor's Office may void your right to request an abatement of the assessment.***

### Situs Issues

Situs is a legal term that refers to the place where a thing is located for purposes of taxation. Generally speaking, the tax situs of personal property is the place where the owner of the property resides. However, certain kinds of property are considered to have different tax situs. Cargo trailers, for instance, are taxed in their “primary locations” even though the cargo trailer may not be present in that place on April 1.

Situs issues may arise when personal property is located in a municipality other than the residence of the property owner. In such cases, there are laws that establish where the property is to be taxed. For more information, see 36 M.R.S. §§ 602 – 603.

### Value

Typically, an assessor will apply the cost approach for valuation of personal property. Depreciation usually depends on the expected useful life of the property. Depending on the type of equipment the equipment's typical life expectancy will vary, but should be applied consistently. An assessor may use several sets of depreciation tables.

For example, computers have a shorter life than a backhoe, therefore the computer will have a larger percentage of depreciation applied over a shorter time span.

**Example.** Calculate the depreciated personal property value for the items listed below in Bill's Pizza Café:

## Chapter 4 – Personal Property

Item	Cost
100 feet of display cases	\$ 36 per linear foot
3 pizza ovens	\$ 2,500 each
1 electric slicer	\$ 145
1 walk-in cooler	\$ 4,000

The display cases were purchased one year ago; the rest of the equipment was purchased seven years ago. Property that is up to five years old is depreciated by 25%. Property that is more than five years old is depreciate by 40%.

Display case cost (\$36/ft x 100 feet)	\$3,600	
Less depreciation (\$3,600 x 25%)	<u>(\$ 900)</u>	
Value	=	\$2,700
Pizza ovens cost (\$2,500/oven x 3 ovens)	\$7,500	
Less depreciation (\$7,500 x 40%)	<u>(\$3,000)</u>	
Value	=	\$4,500
Electric slicer cost	\$ 145	
Less depreciation (\$145 x 40%)	<u>(\$ 58)</u>	
Value	=	\$ 87
Walk-in cooler cost	\$4,000	
Less depreciation (\$4,000 x 40%)	<u>(\$1,600)</u>	
Value	=	\$2,400
Total personal property value		<u>\$9,687</u>

The walk-in cooler is an item that may or may not be considered part of the real estate, depending on how easily it can be removed. In this case, the assessor considers the cooler personal property.

## Chapter 4 – Personal Property

### Class problem 4.1

Calculate the depreciated personal property value for the items listed below in Dr. Moreau's chiropractor office:

Item	Cost New
Waiting room furniture (3 years old) .....	\$ 3,500
Water cooler (5 years old) .....	\$ 400
3 patient tables (8 years old) .....	\$ 1,800 each
X-ray machine (1 year old) .....	\$15,000

Depreciation:

- 1 – 4 years: 20%
- 5 – 10 years: 50%

## Personal Property Tax Relief Programs

Business Equipment Tax Exemption (“BETE”). The BETE program exempts certain personal property owned by an eligible business. On or before May 1 of each year, a business must apply to the municipality for exemption for that property tax year. The municipality submits a list of exempt property to the Property Tax Division and the State reimburses the municipality for at least 50% of the revenue lost from not taxing that property.

Business Equipment Tax Reimbursement (“BETR”). The BETR program provides for a reimbursement from the State to businesses for certain personal property taxes paid. A taxpayer, through application, requests reimbursement for taxes on qualified personal property and the municipal assessor attests that this property has been assessed and the taxes on it have been paid. The application is then forwarded to the Property Tax Division, which then reimburses the taxpayer for up to 100% of the taxes paid.

## Chapter 4 – Personal Property

Business personal property cannot qualify for both the BETR and BETE programs. For more information, see t PT102 – Maine Property Tax Law, Bulletin No. 28 – Business Equipment Tax Exemption, and 36 M.R.S. §§ 691 – 700-B and 6651 – 6665.

### Answer to Class Problem

**4.1** Calculate the depreciated personal property value for the items listed below in Dr. Moreau’s chiropractor office:

Item	Cost New	
Waiting room furniture (3 years old) .....	\$ 3,500	
Water cooler (5 years old) .....	\$ 400	
3 patient tables (8 years old) .....	\$ 1,800 each	
X-ray machine (1 year old) .....	\$15,000	
 Depreciation:		
1 – 4 years: 20%		
5 – 10 years: 50%		
 Waiting room furniture cost	 \$ 3,500	
Less depreciation (\$3,500 x 20%)	(\$ 700)	
Value		\$ 2,800
 Water cooler cost	 \$ 400	
Less depreciation (\$400 x 50%)	(\$ 200)	
Value		\$ 200
 Patient tables cost (\$1,800 x 3)	 \$ 5,400	
Less depreciation (\$5,400 x 50%)	(\$ 2,700)	
Value		\$ 2,700
 X-ray machine cost	 \$15,000	
Less depreciation (\$15,000 x 20%)	(\$ 3,000)	
Value		\$12,000
 Total personal property value		 <u>\$17,700</u>

## Chapter 4 – Personal Property

### Chapter 4 Class Quiz

1. The local pizza restaurant listed the following items located in their establishment:

2 ovens 3 years old cost \$5,000 each

4 stainless steel tables 5 years old cost \$300 each

1 exterior sign 1 year old cost \$1,000

8 sets of tables with chairs, each set cost \$200, purchased 3 years ago

2 cash registers 1 year old cost \$300 each

1 counter (not built-in) 4 feet long cost \$150 per foot and was built new 6 years ago

#### Depreciation Schedule

1-3 years: 10%

4-5 years: 30%

6 or more years: 50%

What is the assessed value?      \$\_\_\_\_\_

2. BETE is a program that reimburses property tax to the taxpayer.

- True  
 False

3. Personal property of a Maine resident is taxed by the municipality where that person lives.

- True  
 False

**Answers on page 131**

# CHAPTER 5

## THE ASSESSOR'S PROCESS

### DISCOVERY OF PROPERTY

Real Property

Mapping and on-site inspection

Building permits

Routine inspections

Personal Property

Reported by owner

### PROPERTY IDENTIFICATION

Real Property

Parcel identification system

Personal Property

Account identification

### SITUS

Is it in your jurisdiction?

Real Property

Physical Location

Personal Property

Taxable location

Leased equipment

### PROPERTY CLASSIFICATION

Real Property

Personal Property

Exempt Property

Utility Property

### DATA COLLECTION AND ANALYSIS

General Data

Specific Data

Comparative data

### PROPERTY VALUATION

Cost Approach

Sales comparison approach

Income Approach

### PREPARATION OF VALUATION BOOK

TAX BILLS SENT

APPEALS PROCEDURE

REPEAT ANNUALLY

### Discovery

The first step in the assessment process is discovery. Discovery is the process of uncovering new property and improvements to existing property. In addition to new buildings and additions, the discovery process will reveal land improvements – such as the addition of a well or septic system – and the creation of new base lots – such as with a recent subdivision.

Discovery is accomplished through routine physical inspection of property. An assessor should drive through the municipality, looking for new buildings or expansion of existing buildings. Interior inspection of buildings (with approval from the owner) may also reveal property improvements.

An assessor should review building permits and other permits, such as structural improvement permits and subsurface wastewater disposal permits. Review of other municipal documents, such as recorded deeds and planning board subdivision approvals will assist with the discovery process. Discovery can also be accomplished through desk research, such as reviewing real estate listings published on the internet to determine if a property has been renovated.

While inspecting properties, the assessor assigns quality grades and depreciation to each property. The sum of these gives a basis for determining the comparative value for different properties. The assessor also prepares ratio studies from recently sold properties that will assist in developing the market value of properties within the municipality. Based on this sales information, the assessor must then develop pricing schedules for various kinds of properties. The quality grades, pricing schedules, and depreciation will develop, subject to the accuracy of the listing and pricing process, the market value.

### Records in the Assessor’s Office

Property record cards. A property record card is a document that contains detailed information about a property, including:

1. Owner name and mailing address;
2. Location of the property, including address and parcel identification number;
3. Construction details, such as building material, style, and layout;
4. Quality grades for components. These grades are representations of the quality of a structure and are covered in Course PT103 – Valuation of Real Estate;

## Chapter 5 – The Assessor’s Process

5. Inspection date and inspector’s name;
6. Building areas, such as bedrooms and bathrooms in residential property; and
7. A picture of the building from the outside and an interior floor plan.

### **Building Inspection**

An assessor must visit a property to describe it, its neighborhood, and its environment. This visit is an opportunity to update the property record card, develop an accurate profile of the entire property, and create the basis for valuation.

During a visit, look around the neighborhood for the conformity of the improvements with other properties, the possibility of problems, easements, and outbuildings. Other tasks an assessor should perform during a property visit include:

1. Check lot size and topography;
2. Determine the relationship of land to other land in the area;
3. Take exterior measurements of the foundation. The total area of the foundation is normally the square footage used in valuing the improvements. Some improvements may extend beyond the foundation;
4. Make a sketch of the outline of the building for the property record card, showing story heights, type of construction, and other information for the cost schedules being used. Determine the quality and elements of the building exterior including style, siding, and roof;
5. Look at the building interior (if the property owner allows access) and note the quality, number of rooms, floors, walls, and other information contained on the property card. Be detailed with these notes;
6. Record details of heating systems, fireplaces, bathrooms, kitchen, and other rooms, which are important elements of value in a residential property. Note location, ceiling height, electric utility, and access to the highway and other transportation routes, which are important to commercial and industrial property.

## Chapter 5 – The Assessor’s Process

### Tax Maps

A sound municipal valuation relies on a complete set of tax maps. An assessor must know where property is located in the municipality and how much land makes up a parcel before an assessment can be made. Mapping an entire municipality is a complex process, generally accomplished by highly trained firms, and requires the following records and processes:

Map scales should be developed to accurately represent the land parcels in the municipality. In urban areas with many small lots and in areas being developed, where land is likely to be subdivided, a scale of at least one inch equals one hundred feet should be used. Rural areas may be mapped in smaller scales.

Maintenance of existing maps and the mapping of deeds as they come into the office are the responsibility of the assessor. To accomplish this task, an assessor must have basic drawing skills, be able to read and understand deed descriptions, maps, and other sketches.

Revision of tax maps should be done every year to reflect the status of all property as of April 1.

### Parcel Identification

The identification of all parcels in a municipality is a necessary part of an assessor’s job. Each parcel should have an account number, a tax map and lot number, and a book and page reference.

Each parcel should also have a physical location, and any parcel with a building should have a street number assigned in accordance with statewide emergency response regulations and standards.

### Valuing Buildings and Other Improvements

After an assessor has inspected all properties and prepared property cards for each, the building costs must be developed using local cost schedules and construction cost manuals such as Marshall & Swift. Details of the valuation process are covered in Course PT103 – Valuation of Real Estate.

A municipality should conduct a revaluation of all property when it becomes apparent to the assessor that inequality has developed with property in the municipality that cannot be repaired by changing a few values. A revaluation is a major task and usually requires the vote of the municipality to spend the money to accomplish it. To

## Chapter 5 – The Assessor’s Process

have a quality revaluation, tax maps should be revised, a new assessment manual prepared, and new, up-to-date property record cards made with current photos of the improvements.

### Valuing Land

Each parcel of land, whether a minimum house lot or large acreage, is unique, with characteristics that affect value. The fair valuation of land is, therefore, a complex task for the assessor.

The first task for land valuation is to look at recent sales. For that sales data, the assessor should make adjustments for the time between sales and the differences between properties. Finally, current values for land are developed. If there have been few land sales in a municipality, the assessor may have to look at sales in nearby towns.

Next, the assessor will make land tables reflecting the differences in values for different sizes of property and different acreages of the larger lots. In this way the assessor will identify characteristics of land that affect value such as:

1. The effect of lot width and depth on value;
2. The effect of location (corner lot, lots on curves) on value; and
3. The effect of topography on lot value.

The assessor should have tax map descriptions and dimensions of all lots and parcels available for use during property inspections.

Once a land table has been developed, the assessor will then apply the physical characteristics of each parcel, as found during the property inspection, to the land tables, adjusting for minor differences in parcels. All differences and comparisons should be noted on the property records.

Front foot value method. One method of valuing land is called the front foot value method. With this method, a parcel of standard depth is assigned a value per foot of road frontage (or water frontage).

The standard parcel depth is determined through an analysis of local custom and preference and is considered the most representative parcel depth in the area. An analysis of land sales will help the assessor determine the value of one foot of frontage for a parcel of standard depth (the front foot value).

## Chapter 5 – The Assessor’s Process

Once the front foot value is determined, that value may be adjusted up or down for lots of non-standard depth. The depth of a lot influences the front foot value. Lots that are deeper than the standard lot are typically more valuable and lots that are shallower are less valuable than lots of standard depth. The depth influence, however, is not linear.

For example, a lot that is half as deep as the standard is not worth half as much. The front foot value adjustment based on depth is called the depth factor. The depth factor is calculated by taking the square root of the the division between the subject lot depth by the standard depth. For more information, see the text for Course PT103 – Valuation of Real Estate.

**Example.** The subject lot depth is 120 feet in an area where the standard lot depth is 100 feet. Calculate the depth factor.

$$\text{Depth factor} = \sqrt{(120/100)} = \sqrt{1.2} = 1.095$$

### Class Problem 5.1

The subject lot depth is 100 feet in an area where the standard lot depth is 125 feet. Calculate the depth factor.

Land residual method. Another technique for valuing land is called the land residual method. When an assessor has a sale price for the entire property and the value of the building is known, the assessor can subtract the value of the building from the total sale price and the result is the value of the land.

Square foot and acreage method. Residential land can be put into one of two categories, urban or rural. The most common approach to urban land valuation is the square foot method, which applies a value per square foot to the total area of the parcel. In rural areas, the acreage method is used. The acreage method uses the same process as the square foot method but applies a value to each acre rather than each square foot.

## Chapter 5 – The Assessor’s Process

**Example.** Mr. Durgin owns a lot in downtown McMannville. The lot is 60 feet wide and 125 feet deep. Calculate the size of Mr. Durgin’s land in square feet and acres (see conversion chart in Chapter 2).

$$\begin{aligned} \text{Area} &= 60 \text{ ft} \times 125 \text{ ft} = 7,500 \text{ sq ft} \\ 7,500 \text{ sq ft} &= (7,500/43,560) \text{ acres} = 0.17 \text{ acres} \end{aligned}$$

### Class Problem 5.2

Mr. Durgin owns a lot adjacent to the lot in the example above. This lot is also 125 feet deep, but the width is 87 feet. What is the size of this lot in square feet and in acres?

## Sales Analysis

Assessors use the information collected from mass appraisals to create land tables, cost schedules, and depreciation schedules, all of which are used to determine market value of specific properties.

An annual analysis of sales is required of each assessor by statute (36 M.R.S. § 328(8)) and is recorded through a document provided by the Property Tax Division for the purposes of state valuation. This document is known as the Real Estate Sales Analysis, or the “turnaround” document.

State valuation is the process the Property Tax Division goes through each year to determine the current market value of all property in Maine. This is done to equalize property value throughout Maine for purposes of State funding to municipalities. A review of sales compared to assessments should be done often by a municipality to help maintain fairness and equity of value for all taxpayers.

## Exemptions

Some properties in Maine are partially or totally exempt from the property tax. Determining whether property qualifies for exemption is an important part of the assessor’s responsibility. The Law Court has stated that “[t]he general rule of construction of tax statutes is that taxation is the rule and that exemptions are exceptions to the rule and are to be strictly construed.” *Owls Head v. Dodge*, 151 Me 473, 121 A.2d 347 (1956). A description of this case is included in the text for Course PT102 – Maine Property Tax Law.

All exemptions listed below require an application be submitted on or before April 1.

### **Benevolent and charitable institutions**

There are a number of court cases that define which properties and uses of property are benevolent and charitable, but the opinions in those cases do not cover all options.

The decision of an assessor will be based on the following statutory requirements:

1. The property must be owned by the institution and must be used and/or occupied solely for charitable purposes.
2. The institution must operate solely for benevolent and charitable purposes. The court has allowed some profit-making activity, although a hard line between acceptable and unacceptable has yet to be drawn.
3. The institution must be incorporated.
4. All profit must be used exclusively for the purposes for which the institution was organized and may not be distributed to officers or employees of the institution other than for reasonable compensation.

### **Literary and scientific institutions**

The definition of literary and scientific is much clearer than benevolent and charitable. Academic schools and colleges are literary, whereas schools of karate or outdoor skills have been declared by the courts not to be literary or scientific. Scientific research laboratories also may be exempt.

The requirements for qualification as a literary and scientific institution are:

1. The property must be owned by the institution and must be used and/or occupied solely for literary and scientific purposes. A building used primarily for employee housing is not exempt.

## Chapter 5 – The Assessor’s Process

2. Officers and employees of the institution may not receive a share of the entity’s profits in excess of reasonable compensation.
3. All profits of the institution must be used exclusively for the purposes for which the institution was organized.

Unlike the exemption for benevolent and charitable institutions, a literary and scientific institution does not have to be incorporated.

### **Churches**

This exemption is limited to the actual house of worship, vestry, and the pews and furniture therein. The exemption also includes enough land for entry to and exit from the church, including parking lots.

In addition, a parsonage is also exempt up to a real estate value of \$20,000 and a personal property value of \$6,000. Other property of a religious organization is taxable as ordinary property in a municipality.

### **Veterans**

The following veterans are eligible for an exemption of property tax on up to \$6,000 of property valuation:

1. All veterans at least 62 years old as of April 1 who have served in the U. S. Armed Forces during a federally designated war period (see 36 M.R.S. § 653(1)).
2. 100% disabled veterans of any age, whose injuries are incurred while in the military.
3. Unremarried spouses, parents, and minor children of deceased veterans who would have been entitled to exemption if living.

Veterans (or unremarried widows/widowers) of World War I or earlier war periods are eligible for an exemption of property tax on up to \$7,000 of property valuation.

The property of veterans who are disabled as defined in federal law (38 U.S.C. § 2101), or their unremarried widows or widowers, and who received a grant from the United States Government for specially adapted housing units, may be eligible for an exemption of property tax on up to \$50,000 of property value.

## Chapter 5 – The Assessor’s Process

### Blind persons

The residential real estate, up to the just value of \$4,000, of Maine residents who are legally blind is exempt from property tax. An applicant must be legally blind as determined by a properly licensed Doctor of Medicine, Doctor of Osteopathy, or Doctor of Optometry.

### Homestead

Maine residents who own homestead property in Maine for at least 12 months as of April 1 and make that property their primary residence are eligible for an exemption of up to \$25,000 of the property value.

### Others

There are many other exemptions to all or part of property taxes that must be taken into consideration by the assessor, such as public property. See Course PT102 – Maine Property Tax Law for more information.

## Municipal Valuation

When all property has been inspected and valued in the community, the assessor totals the taxable value of all property in the municipality to determine the taxable value of the municipality as of April 1 for that year.

This information can be used to establish the mill rate. The mill rate is determined by dividing the amount to be raised through the property tax (i.e., the municipal budget less other revenues), plus an amount called an overlay; divided by the total taxable municipal valuation:

$$\text{Mill Rate} = \frac{\text{Amount to be Raised}}{\text{Taxable Valuation of Municipality}}$$

There is no statute that states who must determine the final tax rate, but in practice, this task is often delegated to the assessor.

Overlay. As mentioned in Chapter 2, the overlay is an amount of excess revenue collected by a municipality to cover unexpected costs. An overlay may not be more than 5% of the budget to be raised through property tax (36 M.R.S. § 710). The municipal officers determine how much this overlay should be, estimating the miscellaneous charges (legal fees, other special needs). The overlay is added to the amount to be raised before setting the mill rate. Once the mill rate has been set, it is applied to each property in the municipality and entered into the valuation book.

## Chapter 5 – The Assessor’s Process

**Example:** The town of McManville has a municipal valuation of \$350,000,000. The town has a budget to be raised through property taxes of \$5,100,000. The town voted to incorporate a 3% overlay to cover unplanned expenses. Determine the tax rate and the mill rate for McMannville.

$$\text{Overlay} = 3\% \times \text{tax} = 0.03 \times \$5,100,000 = \$153,000$$

$$\begin{aligned}\text{Tax rate} &= (\text{tax} + \text{overlay})/\text{municipal valuation} \\ &= (\$5,100,000 + \$153,000)/\$350,000,000 \\ &= \$5,253,000/\$350,000,000 = 0.01501\end{aligned}$$

$$\text{Mill rate} = \text{Tax rate} \times 1,000 = 0.01501 \times 1,000 = \underline{15.01 \text{ mills}}$$

### Class Problem 5.3

The town of Ledewiston has a municipal valuation of \$500,000,000. The amount to be raised by property tax is \$10,000,000 and the town wants an overlay of \$489,000. Is the overlay under the legal limit? Determine the tax rate and the mill rate for Ledewiston.

Commitment book. The commitment book consists of a list of every property located in the municipality, including owner names, mailing address, map and lot number, book and page reference, acreage, land and building valuations, exemptions and property tax amount. Once completed, the commitment book is officially turned over (committed) to the tax collector. The date that the assessor turns over the commitment book to the tax collector is the commitment date.

### Abatements and Appeals

Once the commitment book is committed to the tax collector, there is a period of time for a taxpayer to appeal their property assessment. The burden of proof is on the taxpayer to show that the assessment is manifestly wrong. See Maine Revenue Services Bulletin No. 10 – Property Tax Abatement and Appeals Procedures.

There are several types of abatements.

## Chapter 5 – The Assessor’s Process

### **Abatements for error or mistake**

An error or mistake in an assessment is defined as taxing the wrong property, taxing to the wrong party, or another, similar, issue. If the assessor assesses a property and the valuation is incorrect, this is not an error or mistake in assessment; it is an error in valuation and subject to the valuation abatement process outlined below.

An assessor may abate taxes for error or mistake within 185 days of the commitment date, if requested, in writing, by the taxpayer. An assessor may also abate taxes or on their the assessor’s own initiative within one year. of commitment. Municipal officers may abate taxes on written application or on their own initiative within three years of commitment.

Different appeal procedures apply to property enrolled in current use programs or nonresidential property valued at \$1 million or more. See MRS Bulletin No. 10 and the Course PT102 textbook for more details.

### **Abatements for error in valuation**

An assessor may abate taxes for errors in valuations within 185 days of the commitment date if requested, in writing, by a taxpayer. An assessor also has one year from the commitment date to make an abatement on their own initiative. Municipal officers may not abate taxes related to an error in valuation.

An assessor must respond to an abatement request within 60 days. If an assessor denies an abatement request, the taxpayer has 60 days to appeal either to the local Board of Assessment Review (“BAR”) or to the county commissioners in certain circumstance. If the assessor does not respond to the application within 60 days, the request is deemed denied and the taxpayer may proceed with an appeal. When denying an abatement request, an assessor must inform the taxpayer of the next step in the appeal process, stating where an appeal must be made and the time limit for making that appeal.

The local BAR or county commissioners have 60 days to make a decision. If the BAR or commissioners deny the appeal or neglect to respond within 60 days, the taxpayer may appeal to Superior Court in accordance with the Maine Rules of Civil Procedure, Rule 80B, within 30 days of denial of that appeal.

Different appeal procedures apply to property enrolled in current use programs (Tree Growth, Open Space, Farmland, or Working Waterfront) or nonresidential property valued at \$1 million or more. See MRS Bulletin No. 10 and the Course PT102 textbook for more details.

### **Abatements for hardship or poverty**

## Chapter 5 – The Assessor’s Process

When a property owner tells a municipal officer that they are unable to pay taxes, the officer must inform the owner of the right to request an abatement. Municipal officers must make application forms available and offer to assist individuals in making application for abatement.

Municipal officers, within three years of the commitment date, may abate property taxes for reason of hardship or poverty, if a property owner, in their judgment, is unable to pay taxes. The municipal officers may extend the three-year abatement period, if appropriate. If the selectmen of a municipality are also the assessors, they must specifically convene as selectmen and go into executive session so that any decisions as to a poverty abatement are confidential. Assessors may not abate taxes for reasons related to hardship or poverty.

Decisions on poverty abatement requests must be made within 30 days of the date the application is received and all information must be kept confidential. If an abatement request is denied, the municipal officers must notify the taxpayer of the right to appeal.

### Summary

Tax maps are useful in determining the location and ownership of property in a municipality. Such maps enable the assessor to develop accurate records not only of the land but the location and value of all improvements to the land. A detailed inspection and the use of property record cards is the primary method of listing a property so that all elements of land and building can be compared with other properties in the municipality. The commitment book is developed to determine a fair property tax for each property in a municipality. The mill rate is the rate of tax on property in a municipality. Taxpayers may request abatement of taxes if their property is overvalued or an error in assessment is made. Poverty abatements are also available.

## Answers to Class Problems

### Class Problem 5.1

The subject lot depth is 100 feet in an area where the standard lot depth is 125 feet. Calculate the depth factor.

$$\text{Depth factor} = \sqrt{(100/125)} = \sqrt{0.8} = 0.8944$$

### Class Problem 5.2

Mr. Durgin owns a lot adjacent to the lot in the example above. This lot is also 125 feet deep, but the width is 87 feet. What is the size of this lot in square feet and in acres?

$$\begin{aligned}\text{Area} &= 87 \text{ ft} \times 125 \text{ ft} = 10,875 \text{ sq ft} \\ &= 10,875/43,560 = 0.25 \text{ acres}\end{aligned}$$

### Class Problem 5.3

The town of Ledewiston has a municipal valuation of \$500,000,000. The amount to be raised by property tax is \$10,000,000 and the town wants an overlay of \$489,000. Is the overlay under the legal limit? Determine the tax rate and the mill rate for Ledewiston.

$$\begin{aligned}\text{Maximum overlay} &= 5\% \times \text{tax} = 0.05 \times \$10,000,000 = \$500,000 \\ \text{Ledewiston's overlay of } &\$489,000 \text{ is under the legal limit.}\end{aligned}$$

$$\begin{aligned}\text{Tax rate} &= (\text{tax} + \text{overlay})/\text{municipal valuation} \\ &= (\$10,000,000 + \$489,000)/\$500,000,000 \\ &= \$10,489,000/\$500,000,000 \\ &= \underline{0.02098}\end{aligned}$$

$$\text{Mill rate} = \text{tax rate} \times 1,000 = 0.02098 = \underline{20.98 \text{ mills}}$$

## Chapter 5 – The Assessor’s Process

### Chapter 5 Class Quiz

1. The most important records used by an assessor to determine the assessed value are:
  - A. Economic statistics, building codes, property surveys, tax maps
  - B. Property record cards, building codes, income data, sales records
  - C. Tax maps, property record cards, an assessment manual, property lists
  - D. Inspection reports, tax rates, tax maps, cost manuals
  
2. In determining the value of parcels of land, the assessor must consider:
  - A. The effect of width and depth of each parcel
  - B. The effect of location within the municipality and neighborhood
  - C. The effect of topography
  - D. All of the above
  
3. Municipal tax maps should be revised:
  - A. Whenever a municipality accomplishes a revaluation
  - B. Annually as of April 1
  - C. Annually prior to town meeting
  - D. Whenever the Property Tax Division requests it
  
4. If a municipality needs to raise \$2,000,000 and the taxable valuation of the municipality is \$100,000,000, the minimum mill rate is:
  - A. 50 mills
  - B. 20 mills
  - C. 25 mills
  - D. 33 mills
  
5. The commitment book:
  - A. Describes each property in detail for mapping purpose
  - B. Is used to develop the values of real property rights
  - C. Is the document giving the values of property from which the tax rate is calculated
  - D. Is the work product used by assessors in the field

## Chapter 5 – The Assessor’s Process

6. When performing an on-site property inspection, which of the following is least useful in developing the property value?
- A. The topography of the site
  - B. The style of the building
  - C. The cosmetic treatment of the rooms
  - D. The utility of the basement

**Answers on page 133**

# CHAPTER 6

## MAPPING PROCEDURES

Assessors should be knowledgeable in the maintenance of tax maps. Although some municipalities contract the work out to a professional cartographer, it is important to understand the concept of the deed description and any survey information that defines the metes and bounds of the parcel. Metes and bounds is a system where the perimeter of a parcel is described from an initial reference point using angles and distances. An accurate metes and bounds description will end at the starting point.

Deed Description. When reviewing the description of a parcel, an assessor should first make sure that there is an accurate metes and bounds description. Once that has been determined, then the deed exceptions, rights-of-way, and easements can be noted and considered.

In most cases, deeds describe property by angles and/or bearings from base line and linear measurements along property lines. When bearings are used, it is first necessary to relate the north point to the point of beginning. This is done through use of a protractor.

**As an example, a deed provides that:**

*Beginning at an iron pipe set on the north side of the street line running N 15° W, 180 feet to a stone wall; thence N 17° E, 200 feet to a wooden stake; thence running S 10° E, 220' to an iron pipe at the street line; and running along said street line to the point of beginning.*

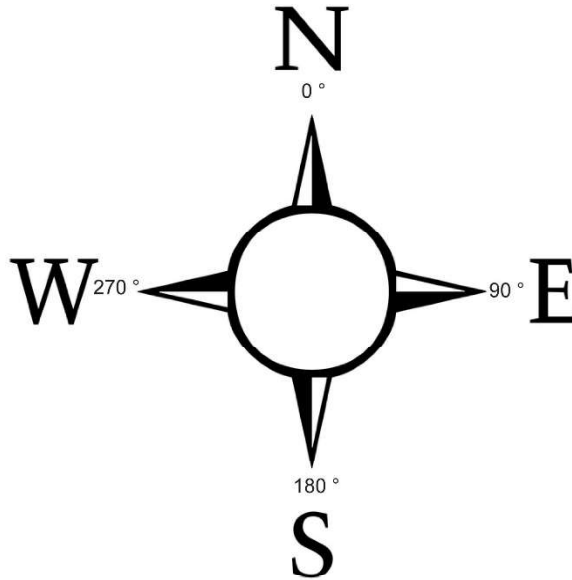
From the information given, this parcel can be plotted on a map if the point of beginning is known. The dimensions along the street and one bearing are missing. By construction and measurement with scale and protractor, these can be determined.

### Compass Points

Each tax map must show which direction is north and the map must be oriented so that north is facing up. A compass shows north as straight up and is the beginning measure for all directions. North is always at 0° and angles from north are usually measured clockwise. There are 360° in a full circle, which puts east at 90°, south at 180°, and west at 270°. Angles may also be measured counterclockwise from north.

## Chapter 6 – Mapping Procedures

Therefore, the description N 45° W means that from north, measure 45° toward west, resulting in a direction that is halfway between north and west, or northwest.

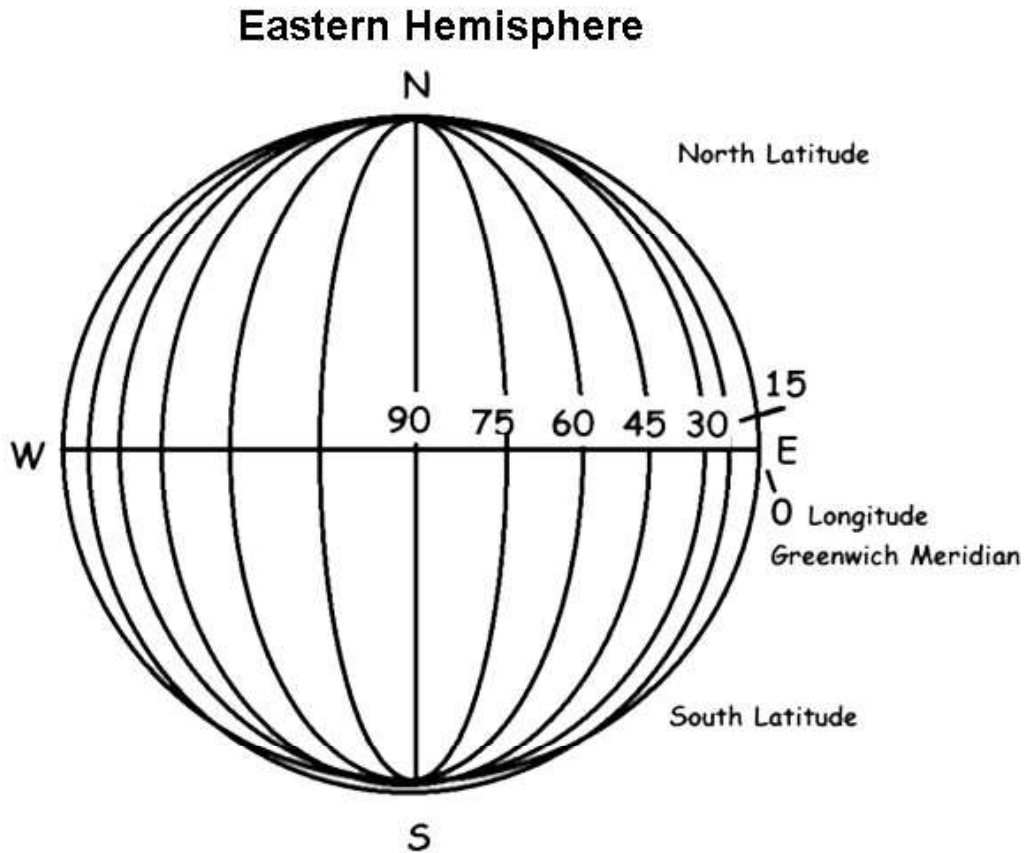


### Property Location

In properly locating a parcel of land, we must determine the absolute location of the corners of the parcel as well as the direction or bearing of the property boundary lines. In describing the process by which a ship or aircraft determines its coordinates (exact location) and the direction they must travel to reach their determination, we are preparing ourselves for properly locating and describing the parcel of land. The location of any point on the surface of the earth requires coordinates or cross references. These coordinates used to determine locations on Earth are based on lines referred to as latitude and longitude.

Latitude. Latitude is expressed as the angular distance of a place above or below the equator. It can be expressed as north latitude or south latitude (see diagram below). Latitude is expressed in degrees. The latitude of the equator is 0°, the latitude of the North Pole is N 90°, and the latitude of the South Pole is S 90°.

Longitude. The direction of any line is determined by the angle the line makes with a true north south line (meridian). A meridian of longitude is referred to as any line drawn north or south through the poles and parallel to all other meridians at the equator (see diagram below). By using a line of longitude we can determine how much east and west we are from a base meridian. The base longitude, or Prime Meridian, passes through Greenwich, England and is designated as zero longitude. One would travel 360° around the earth to return to this place of beginning (see diagram on next page).



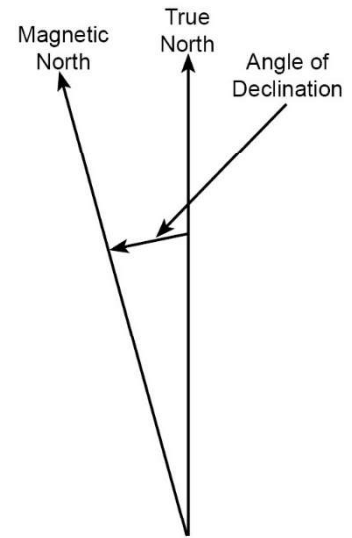
Through latitude and longitude, we can determine how far we are located north and south of the equator and how far we are located east or west of the Prime Meridian. Maine's location would be N 45° W 70°. On a local property tax map, we would determine how far and in what direction our property is from a known point or monument.

### **Magnetic North**

The North Pole is the northern spot where all lines of longitude converge. Lines of longitude also converge in the south at the South Pole. Magnetic north is the spot where the northern lines of attraction enter Earth. Because Earth has a core composed significantly of metal, our planet acts like a magnet, with northern and southern magnetic poles. A compass always points to magnetic north because of the magnetic effect of Earth itself. Magnetic north differs from the true north or the North Pole.

## Chapter 6 – Mapping Procedures

The angle between magnetic north and true north (measured from true north) is called the angle of declination. The angle of declination varies from year to year and is called the variation of declination. The angle of declination changes because part of Earth's metallic core is liquid. The movement of the liquid metal core changes the location of the magnetic poles. Magnetic bearings on many older maps may not agree with current readings. The declination in Maine ranges roughly from 15° W to 20° W of true north. Generally, the declination in the western U.S. is east of true north and the declination of the eastern U.S. is west of true north. Zero magnetic north is where the magnetic north agrees with true north and can be shown on an isogonic chart as running in an irregular course from eastern Louisiana through eastern Minnesota.



### Theory and Construction

A map is a diagrammatic representation of a portion of Earth's surface drawn to scale. A portion of Earth, which is three-dimensional, is represented in a flat, level surface (planimetric), with the aid of sophisticated equipment and qualified personnel. Earth would appear as a circle if shown on a flat level surface. The relief of the hills, valleys and sloping areas would be removed in planimetric maps – all would appear the same on a flat surface. Construction of property tax maps generally involves the use of aerial photography. The drawback for aerial photography is that the images are not easily scalable, making area computations difficult.

A municipality's property tax maps should be prepared according to the following criteria:

1. Orientation. A uniform north arrow should be used on all map sheets with the north arrow directed to the top of the sheet.
2. Title. Each map should have a title block containing the municipality, county, contractor's or assessor's name and address, and effective date of the map.
3. Legend. Each sheet should have a legend fully describing any symbols used.
4. Parcel identification. A parcel is a land area enclosed within a continuous boundary and under one ownership. Each parcel should show, at least:
  - a. Border lines;

## Chapter 6 – Mapping Procedures

- b. Parcel identification number; and
- c. Area or dimensions.

Tax maps may also show unique characteristics such as roads, forests, fields, and bodies of water.

Property tax maps also serve as an excellent basis for many planning and coordinating projects, such as sewage disposal systems and municipal land-use planning. Many different types of maps are available. A few that the assessor might use are as follows:

1. Land use maps;
2. Land value maps;
3. Risk area maps;
4. Subdivision maps on plot plans;
5. Highway maps;
6. Right-of-way maps;
7. Topographical maps;
8. Soil type maps; and
9. Orthophoto maps.

Assessors can make important determinations concerning a given parcel from the maps when used in conjunction with other maps of the same area:

1. Exact size or area (in square feet or acres);
2. Exact location (in relation to a known street, corner or monument);
3. Accessibility;
4. Amount of road and/or lake frontage; and
5. Land use.

## Chapter 6 – Mapping Procedures

While tax maps are an important tool, they do not represent the legal basis for assessment.

### Measurement Tools

Although modern technology supplies the computer applications used to digitize maps, it is good practice for an assessor to become familiar with the measurement tools used to manually plot parcels of land. When measuring property, always use the same ruler or tape measure consistently to minimize errors. Most tape measures have a lug on the eye (the beginning of the tape) that is the starting point for measurement.

Rulers are necessary for proper scaling of the assessor's maps. Rulers are used to accurately scale the sketches of buildings and structures for the basis for computations of valuation. There are two general types of rulers.

The architect's scale. The architect's scale is a ruler divided into inches and scales of  $\frac{3}{32}$ " -  $\frac{1}{8}$ " -  $\frac{3}{16}$ " -  $\frac{1}{4}$ " -  $\frac{3}{8}$ " -  $\frac{1}{2}$ " -  $\frac{3}{4}$ " - 1" - 1  $\frac{1}{2}$ " - 3" equaling one foot of measurement. Architect's scale tape measures are likewise divided and generally have only one or two scales per tape.

The engineer's scale. Also known as an engineering ruler, the engineer's scale is a ruler or tape measure used to translate measurements between a map and actual size. An engineer's scale ruler is divided into decimal inches and scales of 10' - 20' - 30' - 40' - 50' per inch. Assessors usually use engineer's scales to create maps.

Maps may be drawn at scales of 100' - 200' - 300' - 400' - 500' - 1000' per inch using the engineer's scale in multiples of 10. Engineer's scale tape measures are likewise divided and generally have only one or two scales per tape.

The plotting of land parcels requires accurate scale drawings to assure accurate basis for maps and computation of land valuation.

### Drafting equipment

Before computer technology was available, an assessor would use a drawing board, T-square, drafting machine, triangles, and other tools. In this course we will concern ourselves with a basic understanding of some of their applications for specific uses. Later courses will cover additional applications as required.

Triangles. The 30-degree – 60-degree – 90-degree triangle and the 45-degree – 90-degree triangle are basic tools and may be used in conjunction with scaled rulers to develop sketches and maps.

## Chapter 6 – Mapping Procedures

The sum of internal angles of a triangle total 180 degrees. Two identical triangles may be reversed to draw a parallel line to a given line or to extend a line. Placed against a T-square or a given line, a line may be drawn perpendicular to that line and to a given point. The use of this in the construction of scale drawings or given areas will be shown in computation of problems in this section.

Parallel ruler. The parallel ruler is another mechanical aid by which a line may be developed parallel to another without mechanical construction to draw that line both parallel to the given line and through a point.

Protractor. The protractor is used for measuring angles. Most protractors are divided into 180 equal parts (degrees) and have two sets of numbers. The bottom set is for angles that open to the right and the upper set is used for angles that open to the left.

Computer mapping programs. Over the years, there have been great strides in the development of tax maps using aerial and satellite photography, global positioning systems (GPS) and surveying equipment. With GPS maps, overlays can be made, showing locations of utilities, buildings, elevations, and zoning districts. Nevertheless, good basic cartographic skills are helpful.

### Map Scales

Scale. All maps must be drawn to the proper scale. Scale is defined as what a given map distance (usually 1 inch) represents on the ground.

1" = 50' indicates that a scale of 1 inch on the map represents 50 feet on the ground.

1:24,000 indicates that a scale of 1 inch on the map represents 24,000 inches (2,000 feet) on the ground.

Common scales:

1. 1" = 50'; 1" = 100'; 1" = 500' (Tax Maps);
2. 1" = 20 chains; 1" = 40 chains (Forestry Maps); and
3. 1:24,000; 1:62,500 (Topographic Maps).

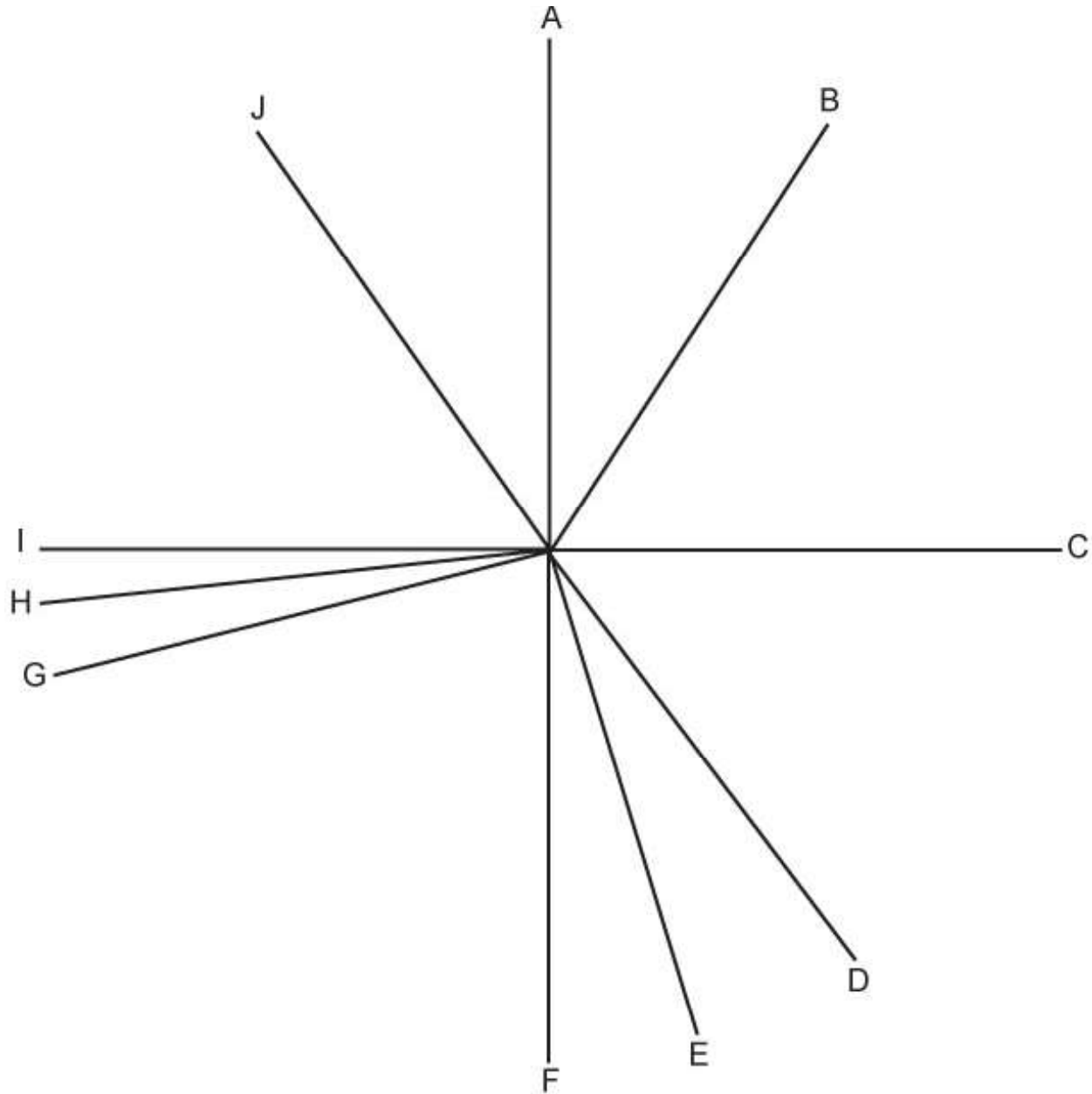
In drawing maps, the plotting should be done in feet per inch using an engineer's scale. Remember that this scale is divided into 10, 20, 30, etc. units per inch. Each unit represents some unit of measurement (feet, chains, miles, etc.) on the ground.

In field surveying work, the surveyor uses an engineer's tape, and distances are measured in feet, tenths, and hundredths of a foot. 3" would be measured as 0.25'; 6" as 0.5 'and 8" as 0.75'.

## Chapter 6 – Mapping Procedures

Older maps were often drawn based on surveys made with the Gunther's Chain. This chain is 66 feet long and consists of 100 links, each 66 hundredths of a foot. The chain was particularly adapted to measurement of acreage. An area of ten square chains constitutes one acre. The chain also has a simple relationship to the mile, which is 80 chains. The use of the chain has been almost entirely superseded by the steel tape.

Chapter 6 Class Quiz



1. Determine the number of degrees in the following angles (all angles turn to the right):

$\angle AOB = \underline{\hspace{1cm}}^\circ$   
 $\angle AOC = \underline{\hspace{1cm}}^\circ$   
 $\angle AOD = \underline{\hspace{1cm}}^\circ$

$\angle AOE = \underline{\hspace{1cm}}^\circ$   
 $\angle AOF = \underline{\hspace{1cm}}^\circ$   
 $\angle AOG = \underline{\hspace{1cm}}^\circ$

$\angle AOH = \underline{\hspace{1cm}}^\circ$   
 $\angle AOI = \underline{\hspace{1cm}}^\circ$   
 $\angle AOJ = \underline{\hspace{1cm}}^\circ$



## Chapter 6 – Mapping Procedures



3. Find the area of the above parcel if the scale of the map is 1" represents 400'.



4. What is the area of the above parcel if the rounded end of the parcel is a semicircle? (Scale: 1" = 300')

## Chapter 6 – Mapping Procedures

5. Lot 1 is described as: beginning at a point on the west side of Cook Street, 175 feet south of the intersection of Cook Street and Mayo Avenue, thence at right angles westerly 150 feet to a point thence 88 feet due south to a large maple tree, thence 275 feet in westerly direction to the east bank of Lohead Stream, thence following the east bank of said stream northerly (assumed to be a straight line) to the bridge over said stream on Mayo Avenue thence following Mayo Avenue easterly to Cook Street and following Cook Street to the point of beginning.

FIND:

- a. Number of front feet on Cook Street: \_\_\_\_\_
  - b. Number of front feet on Mayo Avenue: \_\_\_\_\_
  - c. Acreage of Lot 1: \_\_\_\_\_
  - d. Number of front feet on Lohead Stream: \_\_\_\_\_
  - e. Plot a reserved strip on east side of Lohead Stream 50 feet wide extending the length of the westerly boundary of this lot.
6. Lot 2 is described as: beginning at a point on the north side of Mayo Avenue 100 feet east of Lohead Stream thence due North 275 feet, thence at a right angle in an easterly direction 75 feet to a point, thence due south to Mayo Avenue and following Mayo Avenue to the point of beginning.

FIND:

- a. Number of front feet on Mayo Avenue: \_\_\_\_\_
  - b. Area of Lot 2 in square feet and acres: \_\_\_\_\_
7. Lot 3 is described as: beginning at the southeast corner of Lot 2, thence north along the east line of said Lot 2, 9 rods to a point, thence parallel with Mayo Avenue in an easterly direction 5 rods, thence parallel with the first mentioned boundary to the street and thence westerly to the point of beginning.

FIND:

- a. Area of Lot 3 in square rods: \_\_\_\_\_

## Chapter 6 – Mapping Procedures

- b. Area of Lot 3 in acres: \_\_\_\_\_
- c. Number of feet on Mayo Avenue: \_\_\_\_\_
8. Plot a triangular lot (Lot 4) whose boundaries are 120 feet on Mayo Avenue and 110 feet bordering Lot 3 on the east side.
- a. Find the area of Lot 4
- in square feet: \_\_\_\_\_
- in acres: \_\_\_\_\_
9. Plot the following subdivision: beginning at the corner of Mayo Avenue and Emery Drive, thence north in 100' intervals for 400' thence west at a right angle 150', thence southerly parallel with Emery Drive to Mayo Avenue, thence easterly to the point of beginning. Each lot will have 100' of frontage on Emery Drive and be 150' deep
- Find the area of one of these lots, in acres: \_\_\_\_\_
- If someone needs  $\frac{1}{3}$  of an acre to build a home, can they build on one of these lots? \_\_\_\_\_
10. Plot the following: beginning at a point on the west bank of Michael Stream where an old stone wall ends near the stream. Following the stone wall 950 feet west to the intersection of the stone wall and a small brook; thence 800 feet north along an old field to the easterly side of the same small brook; thence easterly to Michael Stream, thence following Michael stream south to the point of beginning. Excluded from the property is a 900 square foot parcel in the southwest corner.
- a. Find the area of this parcel, in acres: \_\_\_\_\_
- b. Number of feet along Michael Stream: \_\_\_\_\_
11. Draw a parcel of five lots along the north side of Old County Road, each with 200 feet of road frontage and 300 feet deep.

## Chapter 6 – Mapping Procedures

- a. Find the area of the five lots, in square feet: \_\_\_\_\_  
in acres? \_\_\_\_\_
- b. Plot a 125' border strip on the east side of this parcel and adjust the road frontage for each lot so that all lots are the same size. Find the acreage of conveyed single lot: \_\_\_\_\_
12. Beginning at a point on Route 5; thence east 1,000 feet; thence south 200 feet; thence 600 feet west; thence north 75 feet; thence to the point of beginning.

Find the area of this lot, in acres: \_\_\_\_\_

**Answers on page 134**

# CHAPTER 7

## SALES COMPARISON APPROACH

The three approaches to value are the sales comparison approach (otherwise known as the “market” approach), cost approach, and income approach.

In practice, assessors will value residential property using the cost approach and confirm the valuation through the sales comparison approach. This combination of approaches can sometimes be a balancing act, because often the cost schedules an assessor uses are several years old, while the sales used in the sales comparison approach are more recent.

The income approach is generally not applicable to residential property, but it is important for valuing commercial and industrial property.

The data collected for all three approaches comes from one common source: the market.

The sales comparison approach relates to the principle of substitution, which states that the market value of a property tends to be set by the cost of an equally desirable property. A normal buyer will not pay more for a property than that buyer would pay for a comparable property with similar utility. An estimate of market value is developed by comparing the subject property to similar properties that have recently sold.

Advantages. The sales comparison approach works well in the following situations:

1. When sales are plentiful;
2. For use on residential property;
3. When there are many recent sales of very similar properties; and
4. If good records are kept in the assessor's office (maps, sales data, field work).

Disadvantages. The sales comparison approach works poorly in the following situations:

1. When there are only a few recent sales in the area;

## Chapter 7 – Sales Comparison Approach

2. When valuing commercial, industrial, or other property types that aren't sold very often;
3. When sales are of dissimilar type property and require many adjustments; and
4. When the records kept in the assessor's office are inadequate.

### Points to Remember

1. The value estimated is only as good as the analysis of the data.
2. Market data is history.
3. Accurate sales data must be from recent history and indicative of the present market and its motivating forces.
4. The sales comparison approach does not produce an exact figure, but rather an estimate which will fall within a bracket or range.
5. No two properties are exactly alike. Even if the properties are adjacent and the structures similar, the difference in location can create a difference in value.
6. Take note of the desirability of a neighborhood. The nature of an adjacent neighborhood may vary from the subject neighborhood.
7. Heating and cooling systems, plumbing, and other special equipment may vary from property to property.
8. Depreciation will affect value. Care, maintenance, and repairs can vary even though the house may have been built at the same time and with the same grade of construction.
9. Similar properties may vary in value because they face different directions, command different views, etc.
10. There may be difficulty in obtaining all the information pertaining to the circumstances surrounding each sale, necessary to determine if it is a valid or representative sale.
11. There may be difficulty in finding sales of comparable properties.
12. In the case of income properties, it may be difficult to obtain facts about rental charges, terms of leases, and similar information needed to make an analysis.

## The Subject Property

“Subject property” refers to the property an assessor is valuing. A comparable property is a recently sold property that is substantially similar to the subject property. Ideally, a comparable property will have exactly the same style, age, and other characteristics as the subject property. In practice, a comparable property should have only a few differences. When comparing recent sales to determine the estimated value of a subject property, differences between the subject and the comparable sale are always accounted for by adjusting the value of the comparable property (i.e., similar properties that were recently sold).

If the comparable property is better than the subject property, the sale price of the comparable property is adjusted down. If the subject property is better than the comparable property, the sale price of the comparable property is adjusted up.

Adjustments are always made to the comparable properties, not the subject property.

**Example.** Consider the table below comparing the details of a subject property and three comparable sales. All properties are single story homes and the comparable properties were all sold within the previous three months. All comparable properties were built within two years of the subject property, so no age adjustment is necessary. Adjust the comparable properties accordingly to estimate the subject property value. The assessor schedules show the following values:

Rooms	=	\$5,000/room
Area	=	\$65/sq ft
Hot water baseboard heating	=	\$12,000/system
Forced air heating	=	\$6,000/system
1-car garage	=	\$10,000
2-car garage	=	\$15,000
Land	=	\$1.33/sq ft

	Subject	Comparable #1	Comparable #2	Comparable #3
<b>Sale price</b>		\$230,000	\$207,500	\$225,000
<b>Number of rooms</b>	5	5	5	6

## Chapter 7 – Sales Comparison Approach

<b>Area</b>	1,020 sq ft	1,126 sq ft	970 sq ft	1,200 sq ft
<b>Heat source</b>	Forced air	Hot water baseboard	Forced air	Forced air
<b>Garage</b>	1-car	2-car	1-car	1-car
<b>Land</b>	10,500 sq ft	9,000 sq ft	9,000 sq ft	9,000 sq ft

### Adjustments to Sale Price

#### Comparable #1

Sale price:     \$230,000

Rooms:         No adjustment, same number of rooms as the subject

Area:           Determine the difference in value between the size of this house and the subject house.  $(1,126 \text{ sq ft} - 1,020 \text{ sq ft}) \times \$65/\text{sq ft} = 106 \text{ sq ft} \times \$65/\text{sq ft} = \$6,890$ . This is a subtraction from Comparable #1 because it is larger than the subject property.

Heat:           Determine the difference in value between the two heating systems.  $\$12,000 - \$6,000 = \$6,000$ . This is a subtraction from Comparable #1 for the difference in heating system values, because the system in the comparable is more valuable.

Garage:         Determine the difference in value between the 2-car and 1-car garages.  $\$15,000 - \$10,000 = \$5,000$ . This is a subtraction from Comparable #1 for the difference in garage values, because the garage with Comparable #1 is more valuable.

Land:           Determine the difference in value due to the difference in lot sizes.  $(10,500 \text{ sq ft} - 9,000 \text{ sq ft}) \times \$1.33/\text{sq ft} = 1,500 \text{ sq ft} \times \$1.33/\text{sq ft} = \$1,995$ . This is an addition to Comparable #1 because the parcel is smaller than that of the subject.

#### Comparable #2

Sale price:     \$207,500

Rooms:         No adjustment, same number of rooms as the subject

## Chapter 7 – Sales Comparison Approach

Area:  $(1,020 \text{ sq ft} - 970 \text{ sq. ft.}) \times \$65/\text{sq ft} = 50 \text{ sq ft} \times \$65/\text{sq ft} = \$3,250$ .  
This is an addition to Comparable #2 because it is smaller than the subject property.

Heat: No adjustment, same heating system as subject

Garage: No adjustment, both the subject and the comparable have 1-car garages

Land:  $(10,500 \text{ sq ft} - 9,000 \text{ sq ft}) \times \$1.33/\text{sq ft} = 1,500\text{sq ft} \times \$1.33/\text{sq ft} = \$1,995$ . This is an addition to Comparable #2 because the parcel is smaller than that of the subject.

### Comparable #3

Sale price: \$225,000

Rooms: A \$5,000 subtraction is required because the comparable has one more room than the subject.

Area:  $(1,200 \text{ sq ft} - 1,020 \text{ sq ft}) \times \$65/\text{sq ft} = 180 \text{ sq ft} \times \$65/\text{sq ft} = \$11,700$ .  
This is a subtraction from Comparable #3 because it is larger than the subject property.

Heat: No adjustment, same heating system as subject

Garage: No adjustment, both the subject and the comparable have 1-car garages

Land:  $(10,500 \text{ sq ft} - 9,000 \text{ sq ft}) \times \$1.33/\text{sq ft} = 1,500\text{sq ft} \times \$1.33/\text{sq ft} = \$1,995$ . This is an addition to Comparable #3 because the parcel is smaller than that of the subject.

<b>Adjustments</b>	<b>Comparable #1</b>	<b>Comparable #2</b>	<b>Comparable #3</b>
<b>Sale price</b>	\$230,000	\$207,500	\$225,000
<b>Rooms</b>	No adjustment	No adjustment	(\$5,000)
<b>Area</b>	(\$6,890)	\$3,250	(\$11,700)

**Chapter 7 – Sales Comparison Approach**

This	<b>Heat</b>	(\$6,000)	No adjustment	No adjustment
	<b>Garage</b>	(\$5,000)	No adjustment	No adjustment
	<b>Land</b>	\$1,995	\$1,995	\$1,995
	<b>Total adjusted value</b>	\$214,105	\$212,745	\$210,295

result gives us a range of values roughly between \$210,000 and \$215,000. The assessor could apply one of these adjusted values or a rounded value in between. A strong defense could be made for selecting the adjusted value for Comparable #2, rounded to \$213,000. The adjusted value for Comparable #2 represents the central estimate of the three sales and has the fewest adjustments, meaning it is most like the subject property.

**Class Problem 7.1**

The table below shows the details of a subject property and three comparable sales. All properties are single story homes roughly the same age and the comparable properties were all sold within the previous three months. Adjust the comparable properties accordingly to estimate the subject property value.

The assessor schedules show the following values:

	Bedrooms	=	\$12,000/bedroom
	Area	=	\$72/sq ft
Heat:	Hot water baseboard	=	\$12,000/system
	Forced air	=	\$6,000/system
Garage:	1-car	=	\$10,000
	2-car	=	\$15,000
Land:		=	\$1.50/sq ft

	<b>Subject</b>	<b>Comparable #1</b>	<b>Comparable #2</b>	<b>Comparable #3</b>
<b>Sale price</b>		\$258,800	\$222,000	\$217,700
<b>Number of bedrooms</b>	3	4	2	3
<b>Area</b>	1,100 sq ft	1,500 sq ft	1,100 sq ft	1,200 sq ft
<b>Heat source</b>	Forced air	Hot water baseboard	Forced air	Forced air

## Chapter 7 – Sales Comparison Approach

<b>Garage</b>	1-car	2-car	1-car	None
<b>Land</b>	11,000 sq ft	9,000 sq ft	17,000 sq ft	6,000 sq ft

Adjustments	Comparable #1	Comparable #2	Comparable #3
<b>Sale price</b>	\$258,800	\$222,000	\$217,700
<b>Bedrooms</b>			
<b>Area</b>			
<b>Heat</b>			
<b>Garage</b>			
<b>Land</b>			
<b>Total adjusted value</b>			

Estimated value of subject property: \_\_\_\_\_

### Summary

The sales comparison approach (also called the “market” approach) is one of the three methods assessors use to value property. When an adequate number of sales is available, the sales comparison approach traditionally yields the most accurate market value of property. To value a subject property using the sales comparison approach, an assessor determines comparable properties that have recently sold and adjusts the sale price of each comparable property to account for differences between that property and the subject property.

## Chapter 7 – Sales Comparison Approach

### Answer to Class Problem

**7.1.** The table below shows the details of a subject property and three comparable sales. All properties are single story homes roughly the same age and the comparable properties were all sold within the previous three months. Adjust the comparable properties accordingly to estimate the subject property value.

The assessor schedules show the following values:

	Bedrooms	=	\$12,000/bedroom
	Area	=	\$72/sq ft
Heat:	Hot water baseboard	=	\$12,000/system
	Forced air	=	\$6,000/system
Garage:	1-car	=	\$10,000
	2-car	=	\$15,000
Land:		=	\$1.50/sq ft

	Subject	Comparable #1	Comparable #2	Comparable #3
<b>Sale price</b>		\$258,800	\$222,000	\$217,700
<b>Number of bedrooms</b>	3	4	2	3
<b>Area</b>	1,100 sq ft	1,500 sq ft	1,100 sq ft	1,200 sq ft
<b>Heat source</b>	Forced air	Hot water baseboard	Forced air	Forced air
<b>Garage</b>	1-car	2-car	1-car	None
<b>Land</b>	11,000 sq ft	9,000 sq ft	17,000 sq ft	6,000 sq ft

### ADJUSTMENTS TO SALE PRICE

Comparable #1

Bedrooms:	$(3 - 4) \times \$12,000 = (\$12,000)$
Area:	$(1,100 \text{ sq ft} - 1,500 \text{ sq ft}) \times \$72/\text{sq ft} = (\$28,800)$
Heat:	$\$6,000 - \$12,000 = (\$6,000)$
Garage:	$\$10,000 - \$15,000 = (\$5,000)$
Land:	$(11,000 \text{ sq ft} - 9,000 \text{ sq ft}) \times \$1.50/\text{sq ft} = \$3,000$

## Chapter 7 – Sales Comparison Approach

### Comparable #2

Bedrooms:  $(3 - 2) \times \$12,000 = \$12,000$   
 Area: No adjustment  
 Heat: No adjustment  
 Garage: No adjustment  
 Land:  $(11,000 \text{ sq ft} - 17,000 \text{ sq ft}) \times \$1.50/\text{sq ft} = (\$9,000)$

### Comparable #3

Bedrooms: No adjustment  
 Area:  $(1,100 \text{ sq ft} - 1,200 \text{ sq ft}) \times \$72/\text{sq ft} = (\$7,200)$   
 Heat: No adjustment  
 Garage:  $\$10,000 - \$0 = \$10,000$   
 Land:  $(11,000 \text{ sq ft} - 6,000 \text{ sq ft}) \times \$1.50/\text{sq ft} = \$7,500$

Adjustments	Comparable #1	Comparable #2	Comparable #3
<b>Sale price</b>	\$258,800	\$222,000	\$217,700
<b>Rooms</b>	(\$12,000)	\$12,000	No adjustment
<b>Area</b>	(\$28,800)	No adjustment	(\$7,200)
<b>Heat</b>	(\$6,000)	No adjustment	No adjustment
<b>Garage</b>	(\$5,000)	No adjustment	\$10,000
<b>Land</b>	\$3,000	(\$9,000)	\$7,500
<b>Total adjusted value</b>	\$210,000	\$225,000	\$228,000

Estimated value of subject property: \$225,000

Sale 2 is the most comparable to the subject property because it has the fewest number of adjustments and the adjusted value is in line with the other comparable properties.

## Chapter 7 – Sales Comparison Approach

### Chapter 7 Class Quiz

1. Assessors generally value residential property using the \_\_\_\_\_ approach and confirm that value through the \_\_\_\_\_ approach.
  
2. Which is a disadvantage to using the sales comparison approach?
  - A. Sales are plentiful
  - B. Sales are similar to subject
  - C. Valuing commercial property
  - D. Assessor records are good
  
3. Value can be affected by the direction a house faces. T F
  
4. Complete the sale comparison chart below based on the following information.

The assessor schedules show the following values:

Bedrooms	=	\$12,000/bedroom
Area	=	\$72/sq ft
Heat: Hot water baseboard	=	\$12,000/system
Forced air	=	\$6,000/system
Garage: 1-car	=	\$10,000
2-car	=	\$15,000
Land:	=	\$1.50/sq ft

	Subject	Comparable #1	Comparable #2	Comparable #3
<b>Sale price</b>		\$242,500	\$254,500	\$254,000
<b>Number of bedrooms</b>	3	1	2	2
<b>Area</b>	1,100 sq ft	1,000 sq ft	1,100 sq ft	1,200 sq ft
<b>Heat source</b>	Forced air	Hot water baseboard	Forced air	Hot water baseboard
<b>Garage</b>	None	2-car	1-car	None
<b>Land</b>	11,000 sq ft	12,000 sq ft	14,000 sq ft	11,000 sq ft

## Chapter 7 – Sales Comparison Approach

<b>Adjustments</b>	<b>Comparable #1</b>	<b>Comparable #2</b>	<b>Comparable #3</b>
<b>Sale price</b>			
<b>Bedrooms</b>			
<b>Area</b>			
<b>Heat</b>			
<b>Garage</b>			
<b>Land</b>			
<b>Total adjusted value</b>			

**Answers on page 143**



# CHAPTER 8

## THE ASSESSOR'S YEAR

The Maine Constitution, Article IX, Section 8 states:

“All taxes upon real and personal estate, assessed by authority of this State, shall be apportioned and assessed equally according to the just value thereof.”

36 M.R.S. § 502 states, in part:

“All real estate within the State, all personal property of residents of the State and all personal property within the State of persons not residents of the State is subject to taxation on the first day of each April as provided; and the status of all taxpayers and of such taxable property must be fixed as of that date.”

In the previous chapters, we learned about property, property rights, the nature of value, the approach to value, and the proper mapping techniques for assessors. The following calendar outlines the administrative responsibilities for an assessor during a typical year.

### February/March/April/May/June

- Send personal property and real estate “706-A” notifications
- Review all transfers, verifying ownership information, mailing addresses
- Review exemption applications and current status of eligibility
- Begin field work, discover new construction, review building permits, update personal property accounts
- Prepare map updates
- Confirm current use program eligibility, verifying farmland reports and tree growth deadlines are met, update acreage values
- Apply certified ratio to exemptions, current use, and personal property
- May 1 is the BETE application deadline!
- Attend MRS-sponsored educational events

## Chapter 8 – The Assessor’s Year

### July/August

- Finalize all assessments personal and real
- Verify exemptions
- Write new value letters for significant changes
- Review approved budgets – municipal, school, and county
- Prepare commitment warrant, tax rate
- Prepare commitment book and bind with commitment documents
- Confirm tax billing

### MRS-sponsored

### September/October/November

- Correspondence with taxpayers regarding assessment, tax rate, transfers  
AFTER April 1
- November 1 – MVR is due! (Good habit to prepare at the same time as  
commitment, keeping supporting work for auditor’s visit)
- Print tax maps for public use and GIS use
- Process appeals and confirm abatements and supplements
- Update deed transfers since April 2
- Process 801 (BETR) notifications
- Attend the MMA Convention, the MAAO Convention, the Annual ME  
Chapter IAAO Meeting, and other educational events
- Forestry report

### December/January

- Prepare assessor’s budget
- Complete the turnaround document

## Chapter 8 – The Assessor’s Year

- Sales analysis and equalization
- Attend MRS-sponsored educational events

### Regular Responsibilities of the Assessor

- Discover and value all taxable property and acknowledge exempt property
- Administer and abide by property tax laws
- Equality of assessments
- Tax commitment
- Meet continuing education requirements
- Public relations

### Daily Responsibilities

- Public interaction – inquiries via phone calls, emails, and walk-ins
- Discovery – real estate ads, news, building permits
- Filing – permits, applications, correspondence
- Log – mileage, budget, notes
- Review deaths – make necessary changes to ownership and exemptions

### Monthly Responsibilities

- Deed transfers – registry, web based
- Sales review – qualified, ratios
- Department head reports – summary of the past month
- Website updates – assessor news, notifications, and updates
- Mapping updates – track splits
- Current use – notification of eligibility, deadlines

## Chapter 8 – The Assessor’s Year

### Annual Responsibilities

- Sales analysis – types, dates, prices, location
- Field work – on site inspections
- Abatements/supplements – post commitment
- Commitment – final assessments, tax rate
- Budget – preparation and vote
- Application review – current use, exemptions
- Record retention – disposal and retention of records
- Print tax maps – public use

### **Documents Used by the Assessor**

The assessor should be knowledgeable and familiar with several forms and publications published by the Property Tax Division.

#### Forms:

1. Exemption applications
2. Current use applications
3. Warrant and certificate of commitment
4. Abatement and supplementals
5. Municipal Valuation Return
6. Real Estate Assessment Analysis Return (“turnaround document”)
7. Real Estate Transfer Tax Declaration
8. Form 801 (BETR)
9. Property Tax Deferral application

## Chapter 8 – The Assessor’s Year

### 10. BETE application

#### Publications:

1. Law book
2. Rules
3. Bulletins
4. Guidance documents
5. Introductory course textbooks
6. Public relations pamphlets
7. State Assessment Manual

### **Training of Assessors**

36 M.R.S. § 318 states: “[t]he State Tax Assessor may establish, either on the assessor’s own initiative or in conjunction with professional or educational agencies, or both, a program of training to meet the needs of the State of Maine for a sufficient supply of competently trained assessors. For such purposes, the State Tax Assessor may designate what programs either within or outside the State are acceptable for these training purposes.”

It is not necessary to take any of the courses offered by the State to become a Certified Maine Assessor (CMA). The only requirement is the passage of the qualifying examination. Higher assessor designations are available to assessors who complete specific education and experience criteria. For more information, see Bulletin No. 26 – Advanced Assessor Training and Certification.

### **Examinations**

The Property Tax Division holds qualifying exams for assessors at least twice each year, but usually more often. Those exams will be announced at least one month before the scheduled date, but are generally held in February, June, August, and November. The exams test an applicant’s knowledge of property tax law and techniques of assessment.

## Chapter 8 – The Assessor’s Year

The CMA examination is an eight-hour test broken into five parts. Part I covers property tax law and the other four parts cover various areas of assessor knowledge taught in the three introductory courses developed by the Property Tax Division (PT101 – Introduction to Property Tax Assessment, PT102 – Maine Property Tax Law, and PT103 – Valuation of Real Estate). A minimum of 70% must be scored on each part to pass the entire exam; passing grades on one or more parts may be held for up to 18 months while a person attempts to pass parts of the exam that they did not pass previously.

### **Certification and Certification Renewal**

The State Tax Assessor issues a certificate to an applicant who passes the CMA exam. The certificate declares that the applicant is a Certified Maine Assessor and has the basic knowledge required to be an assessor. Certificates are renewed annually, provided the assessor completes at least 16 hours of classroom training approved by the State Tax Assessor each year.

The Property Tax Division keeps records of the status and continuing education of all certified assessors. It is the assessor’s responsibility to understand the laws concerning certification and to submit qualifying continuing education credits each year. The Property Tax Division allows for an inactive/retired certification status. To have your certification placed on inactive status, you must request it, in writing, from the Chief of Training and Certification.

If an assessor is unsure whether a course will be accepted for recertification credit, they should contact the person providing that course to confirm that the course has been approved by the Chief of Training and Certification. Any certificate issued by the State Tax Assessor may for cause be revoked after hearing and findings of fact. In revoking a certificate, the State Tax Assessor will give the assessor 30 days' written notice of the time and place of the hearing and the reason for the investigation.

### **Summary**

An assessor’s year is filled with many responsibilities. These obligations are established to ensure the laws of Maine are followed. The Property Tax Division provides assessors with many publications and forms to assist with property tax administration. The Property Tax Division also hosts assessor certification exams throughout the year.

# CHAPTER 9

## PUBLIC RELATIONS

### General Considerations

The work of an assessor goes well beyond the discovery, listing, and valuation of real and personal property. A municipal assessor must also be able to convey this information in a manner that convinces the public of the professionalism, accuracy, and integrity of the assessor's office.

Taxpayers, attorneys, politicians, and the media all pay attention to local property tax issues. A well thought out public relations program will reduce a taxpayer's anxiety, anger, and confusion.

Assessors deal with many segments of the public:

1. property owners (taxpayers);
2. attorneys;
3. real estate appraisers;
4. real estate brokers;
5. lending institutions;
6. government officials and agencies;
7. tax representatives; and
8. the media.

Each of these groups has a different level of knowledge about property assessment. Property owners may know very little about assessment. On the other hand, some real estate professionals may understand the assessment function and technical language as well as the assessor. Everyone seeks a different level of information.

Individual property owners may be concerned only with their own properties, while a real estate broker may be interested in properties throughout the municipality.

## Chapter 9 – Public Relations

Real estate appraisers are usually interested only in those properties that have sold. Lending institutions are interested in properties that they are financing.

### Elements of Public Relations

As an assessor, you should treat the public as you would like to be treated. Try to see the situation from the customer's point of view. There are three basic elements to meeting this goal.

1. Availability. An assessor must be available to answer questions at reasonable hours for the size of the municipality and for the time of year. The weeks after tax bills are sent consist of increased communication with the public, who often want to know why an assessment has increased, how the increase was determined, the factors that influenced the decision, and many other matters. Other times of the year may require extra hours of an assessor's time in order to create a good relationship with the public.

**Note:** A person applying for an assessment position needs to be aware of this when negotiating a contract for employment.

2. Honesty. This is a critical element of effective public relations. Once the assessor is perceived as dishonest, evasive, or untruthful, it will be extremely difficult to regain the public's trust. An assessor who does not follow through on a promise, or is inconsistent, will be perceived as dishonest. If an assessor develops and maintains a reputation for honesty and integrity, the public will develop faith in the assessor and the accuracy of assessments, make fewer complaints, and be more cooperative.

If you promise to review a property with the intention of attempting to avoid an appeal, you must do so timely and advise the taxpayer as to their appeal rights. If you tell one property owner that the assessment is based on one set of facts and procedures and then tell a neighboring property owner something else, you will likely damage your credibility.

You need to admit when you do not know something; attempt to get the correct information and provide that information to the taxpayer as soon as possible. If there is a delay, explain the reason for that delay.

All laws, rules, and municipal policies should be applied fairly and equally to all taxpayers. For example, do not abate the property tax on a house that burned on April 15, or accept late exemption applications.

## Chapter 9 – Public Relations

3. Attention. When meeting with a taxpayer or other party, the assessor must fully listen to what is said and not try to anticipate what the person means. Giving your complete and undivided attention conveys the message that what the person has said has been heard and is important. Ask questions to make sure you understand the issues.

Try to have such meetings in a private office or conference room so that the ambient noise of the municipal office does not interfere with what is being said.

### Traits of the Assessor

To properly represent the public face of the office, an assessor must have five basic traits:

1. knowledge;
2. tact;
3. patience;
4. objectivity; and
5. the ability to communicate effectively.

Knowledge. A knowledgeable assessor is able to explain technical concepts using terms that any person can understand.

Tact. Tact is the ability to say the appropriate thing when dealing with others without being offensive or abrasive. It requires skill in dealing with new and difficult situations or individuals. An assessor should treat every person with dignity and respect.

Patience. People dealing with an assessor are often angry and sometimes verbally abusive because of their own frustration in what they perceive as an unfair situation or the financial stress they are experiencing. The skilled assessor maintains poise and self-control, using sincerity, empathy and firmness in getting a taxpayer to understand the situation. It is important for the assessor to remember that the taxpayer may be completely unacquainted with basic aspects of assessing that have become second nature to the assessor.

Objectivity. When dealing with members of the public, treat everyone with respect for their point of view. Never make a conversation with a taxpayer personal.

## Chapter 9 – Public Relations

Remember that people will always complain about taxes, regardless of who sits in the assessor's chair.

Ability to communicate. Effective communication requires both verbal and writing skills.

Verbal skills involve talking to taxpayers, the public, and the media in a professional and courteous manner.

The four basic elements of talking to taxpayers are:

1. Listening;
2. Asking if the taxpayer has any more information to share;
3. Restating the issue, to make sure you understand it; and
4. Addressing the issue.

Several times a year you may be called on to speak either to other town officials or the public on the important issues facing assessors. There are some basic elements an assessor needs to follow to do this job adequately.

1. Speak clearly and in complete sentences. Avoid “ums” and “ahs” in speaking.
2. Avoid mannerisms that may distract your audience.
3. Involve your audience through open-ended questions or requests for information. If a person's questions are on point, be prepared to answer spontaneously.
4. Know your subject matter well enough so that you cannot be trapped by your audience. When speaking with newspaper or other media representatives, assessors should remember that the media, like taxpayers, may not be aware of all aspects of assessing. You should be sure of your facts, explain your answers fully, and avoid judgmental or opinionated statements. Remember that what you say may end up in the local paper or on the news for everyone, including taxpayers and other municipal officers, to see.

Frequent contact with the public also involves written communication.

The advantage of written communication is that you generally have more time to research a question and to think about your response. Always respond to a letter or email in writing unless the taxpayer asks a simple question or requests that you call.

## Chapter 9 – Public Relations

Even then, confirm such a conversation with a note. Part of your credibility is based on the accuracy of your correspondence.

There are four steps to answering a letter or email:

1. Timeliness. When you receive a letter or email requesting an answer, immediately establish a time limit for your answer. You may wish to note this as you record the time and date received. If a response will take extra time because of its complexity, notify the writer of your estimate as to the time of the answer.
2. Research. Read the letter or email to make sure you understand the issues being addressed. If you have questions, check resources to determine answers. You may call or write the taxpayer, asking for more information. Once you have identified the issues, develop a response.
3. Writing. Writing must be clear and concise, but with a professional tone, even if the party writing you has been otherwise. Responses should restate the issues as you understand them, give adequate answers to these issues and, when possible, include information that will add to the party's basic knowledge of the issues.
4. Revising. When writing a complex letter, after writing the initial draft, set the letter aside for a while and then go back and look at it from the point of view of revision. In many cases you will find that there is a better way to get your point across than you had originally written. Check all grammar and spelling.

**Assessors should be mindful that anything written, including notes taken in the field, are subject to Freedom of Access Act requests.**

### Summary

An assessor has many opportunities to contact the public and may be known in the community as well as any other official. The assessor's job is to decide on what taxes must be assessed to each taxpayer in relation to their fair share of the common expenses of the community. The technical nature of this job has the potential of creating considerable controversy with some taxpayers. Good public relations in face-to-face meetings, in writings, and in other public contact can make the job much easier and show the assessor to be honest, professionally competent, and respected in the municipality.

# ANSWERS TO CLASS QUIZZES

## Chapter 1 Class Quiz Answers

1. Real estate includes all the following except:
  - A. Land
  - B. A free-standing brick wall
  - C. An attached garage
  - D. A portable air conditioner
  
2. An adequate legal description in a deed is a description of the:
  - A. Real estate including all fixtures.
  - B. Improvements including all fixtures
  - C. Rights associated with ownership
  - D. Of the boundaries of the property by which a reasonable person knows what property is described.
  
3. Ownership of real estate includes:
  - A. Rights to use the surface, subsurface and the air over it
  - B. Rights to lease the land or improvements
  - C. Trees growing on the land
  - D. All of the above
  
4. The right of a landowner and their heirs to occupy a parcel of real estate forever is called:
  - A. A qualified estate
  - B. A life estate
  - C. An estate in fee simple
  - D. An indeterminate estate
  
5. By what authority may municipalities pass laws restricting landowners in certain uses of their land?
  - A. Manifest destiny
  - B. The law of nuisance
  - C. Police power

D. Governmental fiat

6. Escheat is the power of government to take your property without giving you just consideration. T F
7. A warranty deed guarantees that the appliances in the home work at the time of the transfer T F
8. An estate in severalty is an estate owned by one person. T F
9. A leasehold estate at sufferance does not allow the landlord to evict the tenant until the lease is terminated. T F
10. A warranty deed guarantees that the grantor will defend the deed against all title defects of any person in the chain of title. T F

## Answers to Class Quizzes

### Chapter 2 Class Quiz Answers

#### Fractions

1. Arrange the following, largest to smallest:

a.  $\frac{3}{4}$  b.  $\frac{5}{8}$  c.  $\frac{25}{32}$  d.  $\frac{13}{16}$

Convert so all fractions have the same denominator. a.  $\frac{3}{4} \times \frac{8}{8} = \frac{24}{32}$ ; b.  $\frac{5}{8} \times \frac{4}{4} = \frac{20}{32}$ ; c.  $\frac{25}{32}$ ; d.  $\frac{13}{16} \times \frac{2}{2} = \frac{26}{32}$ .

    d              c              a              b    

2. Add or subtract each of the following and reduce each to its simplest form:

a.  $\frac{1}{2} + \frac{5}{8} = \frac{4}{8} + \frac{5}{8} = \frac{9}{8} = 1 \frac{1}{8}$  b.  $\frac{3}{4} + \frac{3}{8} = \frac{6}{8} + \frac{3}{8} = \frac{9}{8} = 1 \frac{1}{8}$

c.  $\frac{5}{8} - \frac{3}{16} = \frac{10}{16} - \frac{3}{16} = \frac{7}{16}$  d.  $\frac{15}{16} - \frac{3}{4} = \frac{15}{16} - \frac{12}{16} = \frac{3}{16}$

3. For each of the following, state whether divisible by 2, 3, 4, or 5. A number may be divisible by more than one.

a. 615 3, 5 b. 42 2, 3 c. 243 3 d. 71 none

4. Multiply each of the following and reduce to its simplest form:

a.  $\frac{3}{8} \times \frac{5}{4} = \frac{(3 \times 5)}{(8 \times 4)} = \frac{15}{32}$  b.  $\frac{1}{2} \times \frac{7}{16} = \frac{(1 \times 7)}{(2 \times 16)} = \frac{7}{32}$

c.  $3 \frac{1}{2} \times 4 \frac{1}{2} = \frac{7}{2} \times \frac{9}{2} = \frac{(7 \times 9)}{(2 \times 2)} = \frac{63}{4} = 15 \frac{3}{4}$

d.  $3 \times 3 \frac{1}{2} = \frac{3}{1} \times \frac{7}{2} = \frac{(3 \times 7)}{(1 \times 2)} = \frac{21}{2} = 10 \frac{1}{2}$

5. Divide each of the following and reduce to its simplest form:

a.  $3 \frac{1}{2} \div 2 = \frac{7}{2} \div \frac{2}{1} = \frac{7}{2} \times \frac{1}{2} = \frac{(7 \times 1)}{(2 \times 2)} = \frac{7}{4} = 1 \frac{3}{4}$

b.  $\frac{1}{2} \div \frac{3}{5} = \frac{1}{2} \times \frac{5}{3} = \frac{(1 \times 5)}{(2 \times 3)} = \frac{5}{6}$

c.  $3 \div \frac{3}{8} = \frac{3}{1} \times \frac{8}{3} = \frac{(3 \times 8)}{(1 \times 3)} = \frac{24}{3} = 8$

d.  $\frac{3}{8} \div \frac{1}{2} = \frac{3}{8} \times \frac{2}{1} = \frac{(3 \times 2)}{(8 \times 1)} = \frac{6}{8} = \frac{3}{4}$

## Answers to Class Quizzes

e.  $5/8 \div 3/8 = \underline{5/8 \times 8/3 = (5 \times 8)/(8 \times 3) = 40/24 = 1 \ 16/24 = 1 \ 2/3}$

### Decimals

1. Write one hundred twenty five thousandths as a decimal: 0.125

2. Add:  $1.375 + 0.625 + 12.125 =$

$$\begin{array}{r} 01.375 \\ +00.625 \\ +12.125 \\ \hline \hline = 14.125 \end{array}$$

3. Multiply:  $0.625 \times 12.5 =$

$$\begin{array}{r} 625 \\ \times 125 \\ \hline 3125 \\ 1250 \\ 625 \\ \hline 78125 \end{array}$$

Add four decimal places = 7.8125

4. Divide:  $0.375 \div 0.05:$

$$\begin{array}{r} \underline{7.5} \\ 50 \overline{) 375} \\ \underline{350} \\ 250 \\ \underline{250} \\ 0 \end{array}$$

5. State  $5/8$  as a decimal:

$$\begin{array}{r} \underline{0.625} \\ 8 \overline{) 5} \\ \underline{50} \\ \underline{48} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

6. State 0.375 as a fraction reduced to its simplest form:  $375/1000 = 75/200 = 15/40 = 3/8$

7. State 1.25 as a percentage: 125%

8. State 52.5% as a decimal: 0.525

## Answers to Class Quizzes

9. State 37.5% as a fraction reduced to its simplest form:  $375/1000$ , divide by 5 =  $75/200$ , divide by 5 =  $15/40$ , divide by 5 =  $3/8$

10. State  $5/8$  as percent:  $\frac{0.625}{8 \overline{) 5}}$   
 $\frac{50}{48}$   
 $\frac{20}{16}$   
 $\frac{40}{40}$

## Percentages

1. What is 22.5% of 20,000?  $0.225 \times 20,000 = 4,500$

2. What is 5% of 24,000?  $0.05 \times 24,000 = 1,200$

3. What is 10% of 175?  $0.10 \times 175 = 17.50$

4. What is 25% of 100?  $0.25 \times 100 = 25$

## Units of Measure

1. How many mills are there in  $72\frac{1}{2}$  cents?  $72.5 \times 10 \text{ mills/cent} = 725$

2.  $\$0.035 = \underline{0.035 \times 1,000 = 35}$  mills.

3. How many cubic yards of fill will it take to fill a hole  $7\frac{1}{2}$  feet deep, 2 yards long and 36 inches wide?

$$\underline{(7.5 \text{ ft}/3 \text{ ft/yd}) \times 2 \text{ yds} \times (36 \text{ in}/36 \text{ in/ft}) = 2.5 \text{ yds} \times 2 \text{ yds} \times 1 \text{ yd} = 5 \text{ cubic yards}}$$

4. Forty square rods is what part of an acre?  $(40 \text{ sq rods} \times 272.25 \text{ sq ft/sq rod})/43,560 \text{ sq ft/ac} = 0.25 = 25\%$

5.  $94\frac{1}{2}$  cubic feet =  $94.5 \text{ cf}/27 \text{ cf/cy} = 3.5$  cubic yards.

6. A parking lot was computed to have 650 square yards of area. In the area parking lots are assessed at 25¢ per square foot for asphaltting. What would the value be?

## Answers to Class Quizzes

$$\underline{\$0.25/\text{sq ft} \times 9 \text{ sq ft}/\text{sq yd} \times 650 \text{ sq yd} = \$1,462.50}$$

7. 9 square yards =  $\underline{9 \text{ sq yds} \times 9 \text{ sq ft}/\text{sq yd} = 81}$  square feet.
8. 108,900 square feet =  $\underline{108,900 \text{ sq ft}/43,560 \text{ sq ft}/\text{ac} = 2.5}$  acres.
9. 3 rods =  $\underline{3 \text{ rods} \times 16.5 \text{ ft}/\text{rod} = 49.5}$  feet.
10. 1,760 yards =  $\underline{(1,760 \text{ yds} \times 3 \text{ ft}/\text{yd})/16.5 \text{ ft}/\text{rod} = 320}$  rods.

## Assessor Problems

1. Compute the following areas:
- a. A building 24 feet wide and 40 feet long.
- $$\underline{24 \times 40 = 960 \text{ sq ft}}$$
- b. A porch 12 feet wide and 14 feet long.
- $$\underline{12 \times 14 = 168 \text{ sq ft}}$$
- c. A garage 24 feet wide and 24 feet long.
- $$\underline{24 \times 24 = 576 \text{ sq ft}}$$
- d. A square parcel of land 12 rods each side. Express your answer in square feet.
- $$\underline{12 \text{ rods} \times 16.5 \text{ ft}/\text{rod} = 198 \text{ ft}; 198 \times 198 = 39,204 \text{ sq ft}}$$
- e. A triangular parcel of land with a base of 16 feet and an height of 12 feet.
- $$\underline{(16 \times 12)/2 = 96 \text{ sq ft}}$$
- f. A rectangular parcel of land 120 feet wide and 180 feet deep.
- $$\underline{120 \times 180 = 21,600 \text{ sq ft}}$$

## Answers to Class Quizzes

### Chapter 3 Class Quiz Answers

1. The three basic principles that create value are:
  - A. Price, demand, location
  - B. Utility, price, demand
  - C. Utility, scarcity, desirability
  - D. Desirability, price, utility
  
2. The relationship between an object desired and a potential purchaser is known as:
  - A. Price
  - B. Value
  - C. Exchange
  - D. Demand
  
3. Market value is defined by all of the following elements except:
  - A. The buyer and seller are motivated
  - B. A reasonable time is allowed for exposure to the market
  - C. The assessed value of the property is based on the price
  - D. The price represents normal consideration for the property
  
4. Which of the following contains substantial elements of an assessment:
  - A. Purpose of the assessment, discovery of the property, classification of the property
  - B. Discovery of the property, classification of the property, data collection and analysis
  - C. Classification of the property, data collection and analysis, price verification
  - D. Data collection and analysis, price verification, purpose of the assessment
  
5. The four great forces are
  - A. Highest and best use, governmental, social, physical
  - B. Physical, economic, governmental, social
  - C. Supply and demand, physical, governmental, economic
  - D. Anticipated use, governmental, social, physical
  
6. Under the Tree Growth Tax Law, a parcel must contain a minimum of ten forested acres, be maintained for commercial harvesting and have an up-to-date forest management plan. T F

## Answers to Class Quizzes

7. The cost approach asks the assessor to use the principle of supply and demand to determine the most probable market value of a property. T F
8. The prices of properties tend to increase with an increase of supply of similar properties T F
9. The principle of anticipation states that market value is the present worth of all anticipated future benefits. T F
10. Open space classification is only available for lots over five acres that contain scenic resources, public recreation opportunities, or preserve wildlife habitat.  
T F

## Answers to Class Quizzes

### Chapter 4 Class Quiz Answers

1. The local pizza restaurant listed the following items located in their establishment:

- 2 ovens 3 years old cost \$5,000 each
- 4 stainless steel tables 5 years old cost \$300 each
- 1 exterior sign 1 year old cost \$1,000
- 8 sets of tables with chairs, each set cost \$200, purchased 3 years ago
- 2 cash registers 1 year old cost \$300 each
- 1 counter (not built-in) 4 feet long cost \$150 per foot and was built new 6 years ago

#### Depreciation Schedule

- 1-3 years: 10%
- 4-5 years: 30%
- 6 or more years: 50%

Ovens cost (\$5,000 x 2)	\$10,000	
Less depreciation (\$10,000 x 10%)	<u>(\$ 1,000)</u>	
Value		\$ 9,000
Stainless steel tables cost (\$300 x 4)	\$ 1,200	
Less depreciation (\$1,200 x 30%)	<u>(\$ 360)</u>	
Value		\$ 840
Sign cost	\$ 1,000	
Less depreciation (\$1,000 x 10%)	<u>(\$ 100)</u>	
Value		\$ 900
Tables and chairs cost (\$200 x 8)	\$ 1,600	
Less depreciation (\$1,600 x 10%)	<u>(\$ 160)</u>	
Value		\$ 1,440
Cash registers cost (\$300 x 2)	\$ 600	
Less depreciation (\$600 x 10%)	<u>(\$ 60)</u>	
Value		\$ 540
Counter cost (\$150/ft x 4 feet)	\$ 600	
Less depreciation (\$600 x 50%)	<u>(\$ 300)</u>	
Value		<u>\$ 300</u>
Total value		<u>\$13,020</u>

## Answers to Class Quizzes

What is the assessed value?     \$13,020

BETE is a program that reimburses property tax to the taxpayer.      T F

Personal property of a Maine resident is taxed by the municipality where that person lives. T F

## Answers to Class Quizzes

### Chapter 5 Class Quiz Answers

1. The most important records used by an assessor to determine the assessed value are:
  - A. Economic statistics, building codes, property surveys, tax maps
  - B. Property record cards, building codes, income data, sales records
  - C. Tax maps, property record cards, an assessment manual, property lists
  - D. Inspection reports, tax rates, tax maps, cost manuals
  
2. In determining the value of parcels of land, the assessor must consider:
  - A. The effect of width and depth of each parcel
  - B. The effect of location within the municipality and neighborhood
  - C. The effect of topography
  - D. All of the above
  
3. Municipal tax maps should be revised:
  - A. Whenever a municipality accomplishes a revaluation
  - B. Annually as of April 1
  - C. Annually prior to town meeting
  - D. Whenever the Property Tax Division requests it
  
4. If a municipality needs to raise \$2,000,000 and the taxable valuation of the municipality is \$100,000,000, the minimum mill rate is:
  - A. 50 mills
  - B. 20 mills
  - C. 25 mills
  - D. 33 mills
  
5. The commitment book:
  - A. Describes each property in detail for mapping purposes
  - B. Is used to develop the values of real property rights
  - C. Is the document giving the values of property from which the tax rate is calculated
  - D. Is the work product used by assessors in the field

## Answers to Class Quizzes

6. When performing an on-site property inspection, which of the following is least useful in developing the property value?
- A. The topography of the site
  - B. The style of the building
  - C. The cosmetic treatment of the rooms
  - D. The utility of the basement

Answers to Class Quizzes

Chapter 6 Class Quiz Answers

1. Determine the number of degrees in the following angles (all angles turn to the right)

$AOB = 33^\circ$

$AOE = 163^\circ$

$AOH = 264^\circ$

$AOC = 90^\circ$

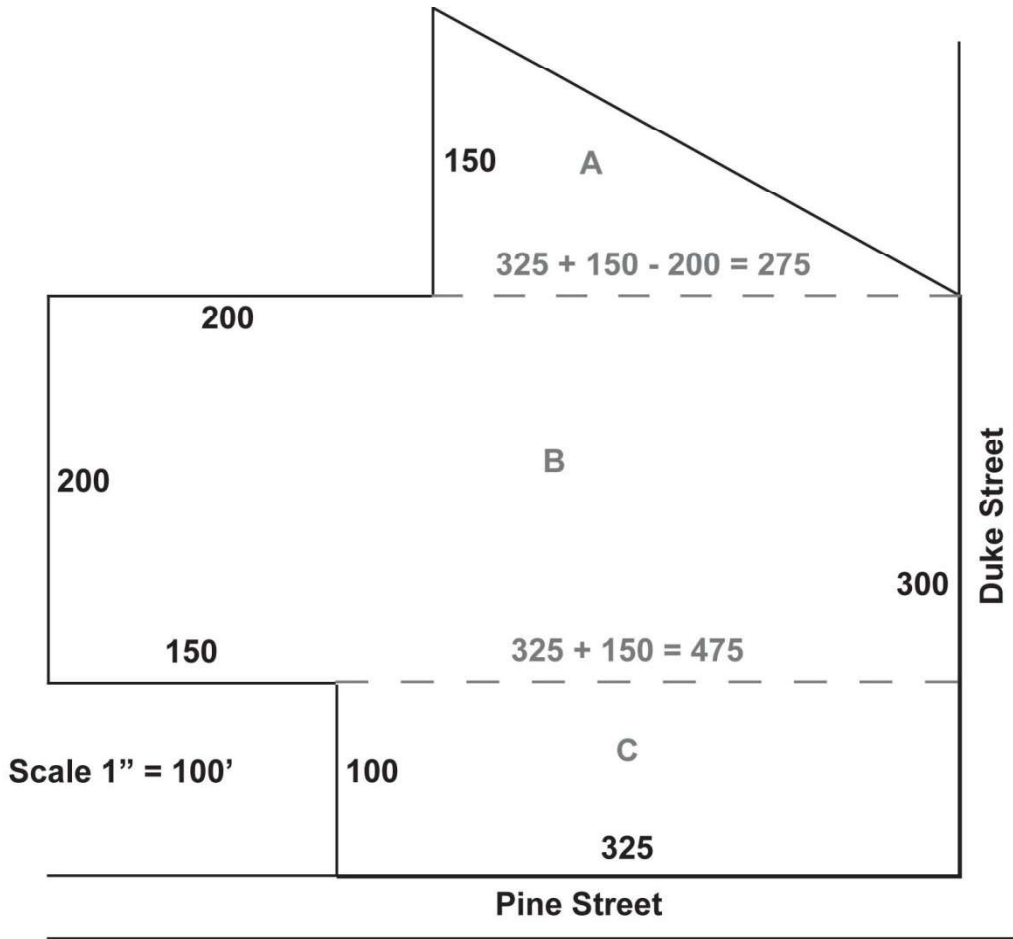
$AOF = 180^\circ$

$AOI = 270^\circ$

$AOD = 144^\circ$

$AOG = 255^\circ$

$AOJ = 325^\circ$



- 2a. For the above parcel, what are the number of front feet on Pine Street and Duke Street?

325'; 300'

## Answers to Class Quizzes

- 2b. For the above parcel, what is the area in square feet and acres? (Nearest 10 square feet and 100ths of acres)

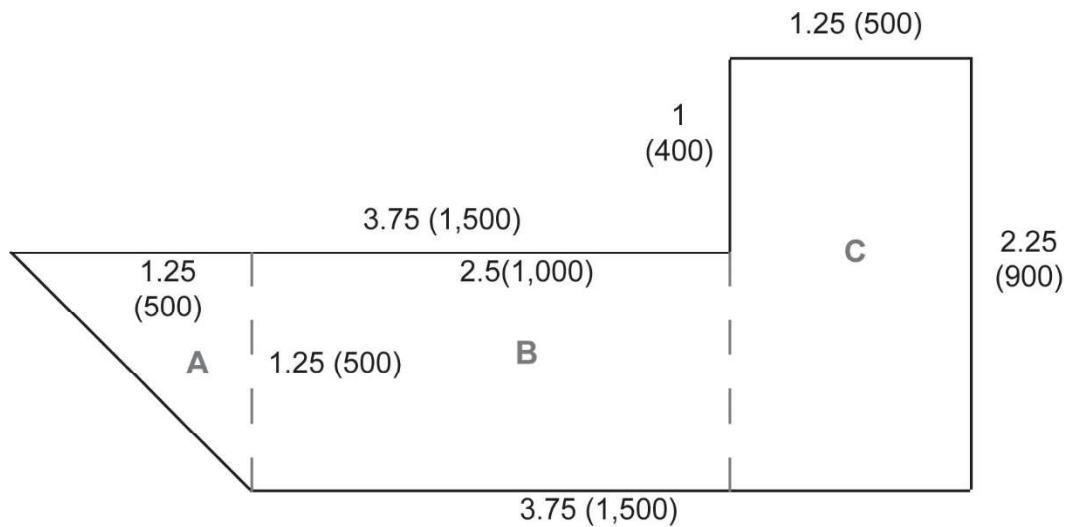
$$\text{Area} = A + B + C$$

$$A = (150' \times 275')/2 = 41,250/2 = 20,625 \text{ sq ft}$$

$$B = 200' \times 475' = 95,000 \text{ sq ft}$$

$$C = 100' \times 325' = 32,500 \text{ sq ft}$$

$$\text{Area} = 20,625 + 95,000 + 32,500 = \underline{148,125 \text{ sq ft}} = 148,125/43,560 = \underline{3.40 \text{ acres}}$$



3. Find the area of the above parcel if the scale of the map is 1" represents 400'.

$$\text{Area} = A + B + C$$

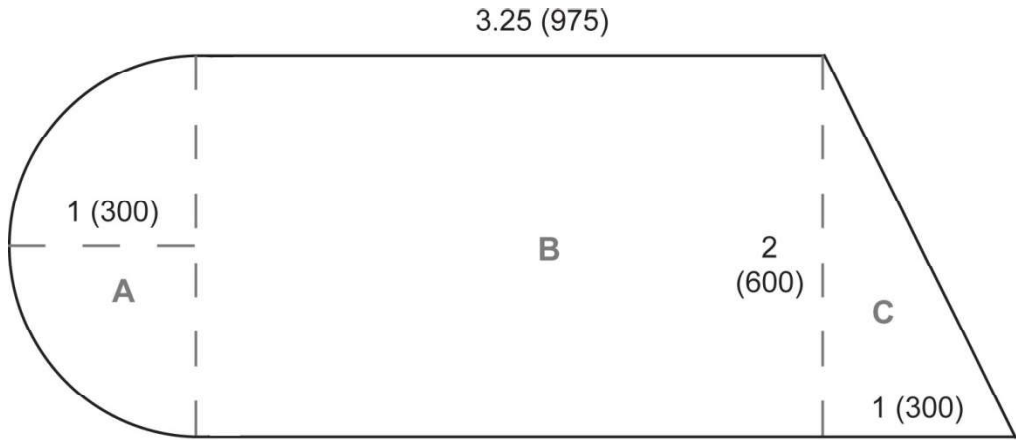
$$A = (500' \times 500')/2 = 250,000/2 = 125,000 \text{ sq ft}$$

$$B = 500' \times 1,000' = 500,000 \text{ sq ft}$$

$$C = 900' \times 500' = 450,000 \text{ sq ft}$$

$$\text{Area} = 125,000 + 500,000 + 450,000 = \underline{1,075,000 \text{ sq ft}} = 1,075,000/43,560 = \underline{24.68 \text{ acres}}$$

Answers to Class Quizzes



4. What is the area of the above parcel if the rounded end of the parcel is a semicircle? (Scale: 1" = 300')

Area = A + B + C; if height = 600' = semicircle diameter, the radius of the semicircle =  $600'/2 = 300'$

$$A = (\pi r^2)/2 = (3.1416 \times 300^2)/2 = (3.1416 \times 90,000)/2 = 282,744/2 = 141,372 \text{ sq ft}$$

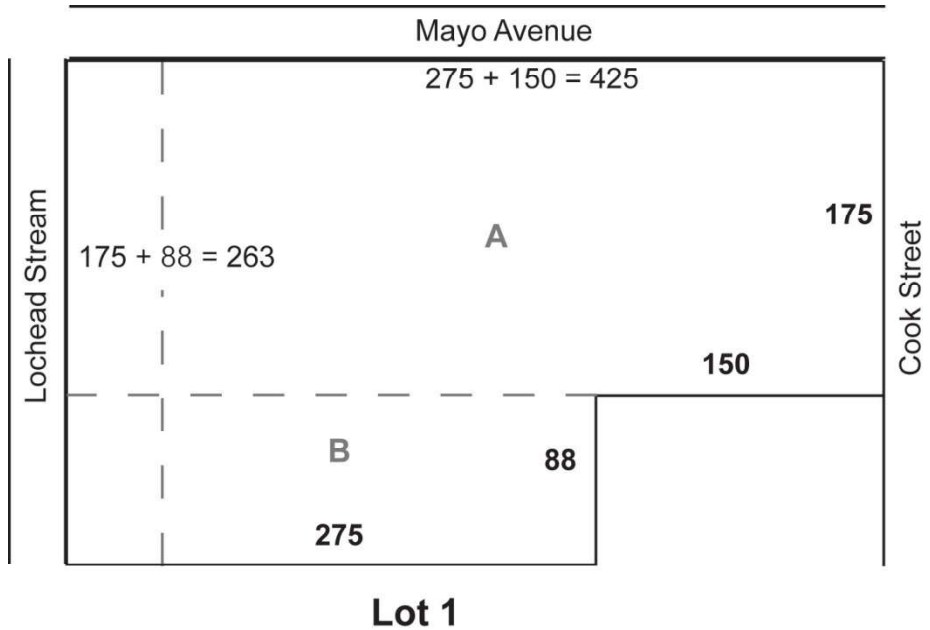
$$B = 600' \times 975' = 585,000 \text{ sq ft}$$

$$C = (600' \times 300')/2 = 180,000/2 = 90,000 \text{ sq ft}$$

$$\text{Area} = 141,372 + 585,000 + 90,000 = \underline{816,372 \text{ sq ft}} = 816,372/43,560 = \underline{18.74 \text{ acres}}$$

## Answers to Class Quizzes

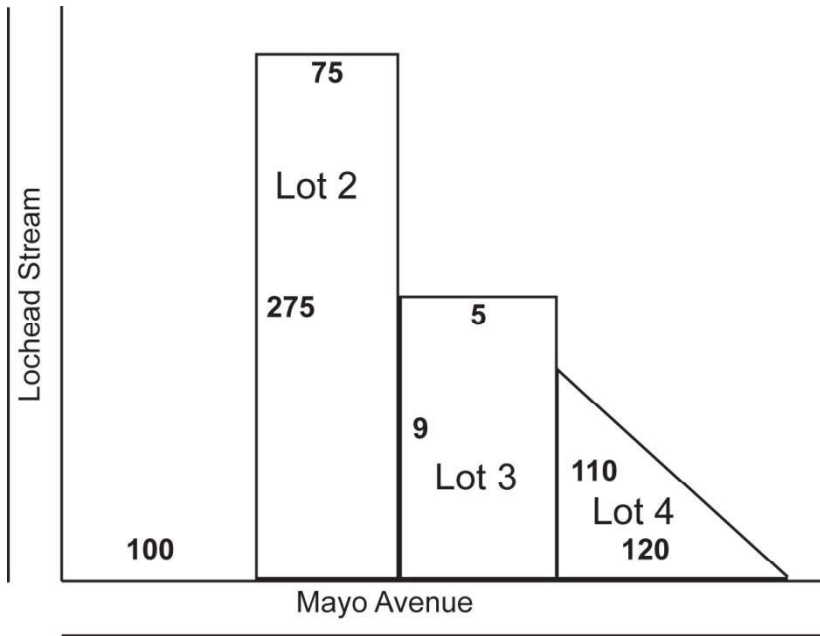
5. Lot 1 is described as: beginning at a point on the west side of Cook Street, 175 feet south of the intersection of Cook Street and Mayo Avenue, thence at right angles westerly 150 feet to a point thence 88 feet due south to a large maple tree, thence 275 feet in westerly direction to the east bank of Lochead Stream, thence following the east bank of said stream northerly (assumed to be a straight line) to the bridge over said stream on Mayo Avenue thence following Mayo Avenue easterly to Cook Street and following Cook Street to the point of beginning.



**FIND:**

- a. Number of front feet on Cook Street: 175 feet
- b. Number of front feet on Mayo Avenue:  $275 + 150 = \underline{425 \text{ feet}}$
- c. Acreage of Lot 1:  
 Area = A + B  
 $A = (175' \times 150') = 26,250 \text{ sq ft}$   
 $B = 88' \times 275 = 24,200 \text{ sq ft}$   
 $\text{Area} = 26,250 + 24,200 = \underline{50,450 \text{ sq ft}} = 50,450/43,560 = \underline{1.16 \text{ acres}}$
- d. Number of front feet on Lochead Stream:  $175 + 88 = 263 \text{ feet}$
- e. Plot a reserved strip on east side of Lochead Stream 50 feet wide extending the length of the westerly boundary of this lot.

## Answers to Class Quizzes



6. Lot 2 is described as: beginning at a point on the north side of Mayo Avenue 100 feet east of Lochead Stream thence due north 275 feet, thence at a right angle in an easterly direction 75 feet to a point, thence due south to Mayo Avenue and following Mayo Avenue to the point of beginning.

FIND:

- a. Number of front feet on Mayo Avenue: 75 feet
- b. Area of Lot 2 in square feet and acres:  
 $\text{Area}(\text{Lot } 2) = 275' \times 75' = \underline{20,625 \text{ sq ft}} = 20,625/43,560 = \underline{0.47 \text{ acres}}$

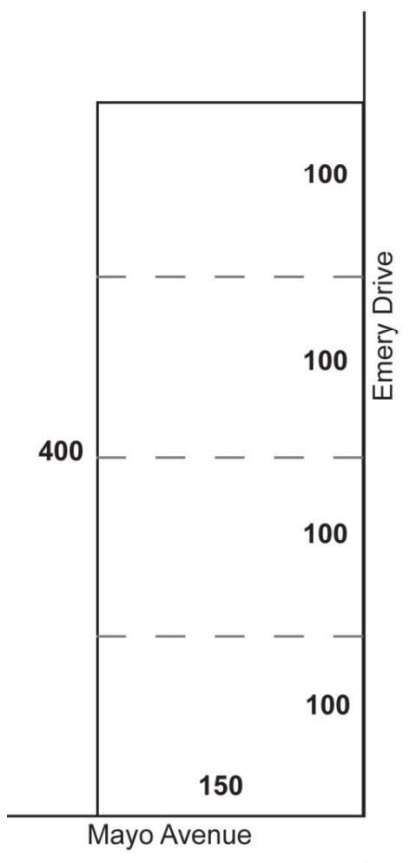
7. Lot 3 is described as: beginning at the southeast corner of Lot 2, thence north along the east line of said Lot 2, 9 rods to a point, thence parallel with Mayo Avenue in an easterly direction 5 rods, thence parallel with the first mentioned boundary to the street and thence westerly to the point of beginning.

FIND:

- a. Area of Lot 3 in square rods:  
 $\text{Area}(\text{Lot } 3) = 9 \text{ rods} \times 5 \text{ rods} = \underline{45 \text{ square rods}}$
- b. Area of Lot 3 in acres:  
 $1 \text{ acre} = 160 \text{ square rods}; 45 \text{ square rods} = 45/160 = \underline{0.28 \text{ acres}}$
- c. Number of feet on Mayo Avenue:  
 $1 \text{ rod} = 16.5 \text{ feet}; 5 \text{ rods} = 5 \times 16.5 = \underline{82.5 \text{ feet}}$

## Answers to Class Quizzes

8. Plot a triangular lot (Lot 4) whose boundaries are 120 feet on Mayo Avenue and 110 feet bordering Lot 3 on the east side.
- a. Find the area of Lot 4 in square feet:  
 $\text{Area}(\text{Lot 4}) = (120' \times 110')/2 = \underline{6,600 \text{ sq ft}}$
- in acres:  
 $6,600/43,560 = \underline{0.15 \text{ acres}}$
9. Plot the following subdivision: beginning at the corner of Mayo Avenue and Emery Drive, thence north in 100' intervals for 400' thence west at a right angle 150', thence southerly parallel with Emery Drive to Mayo Avenue, thence easterly to the point of beginning. Each lot will have 100' of frontage on Emery Drive and be 150' deep



Find the area of one of these lots, in acres:

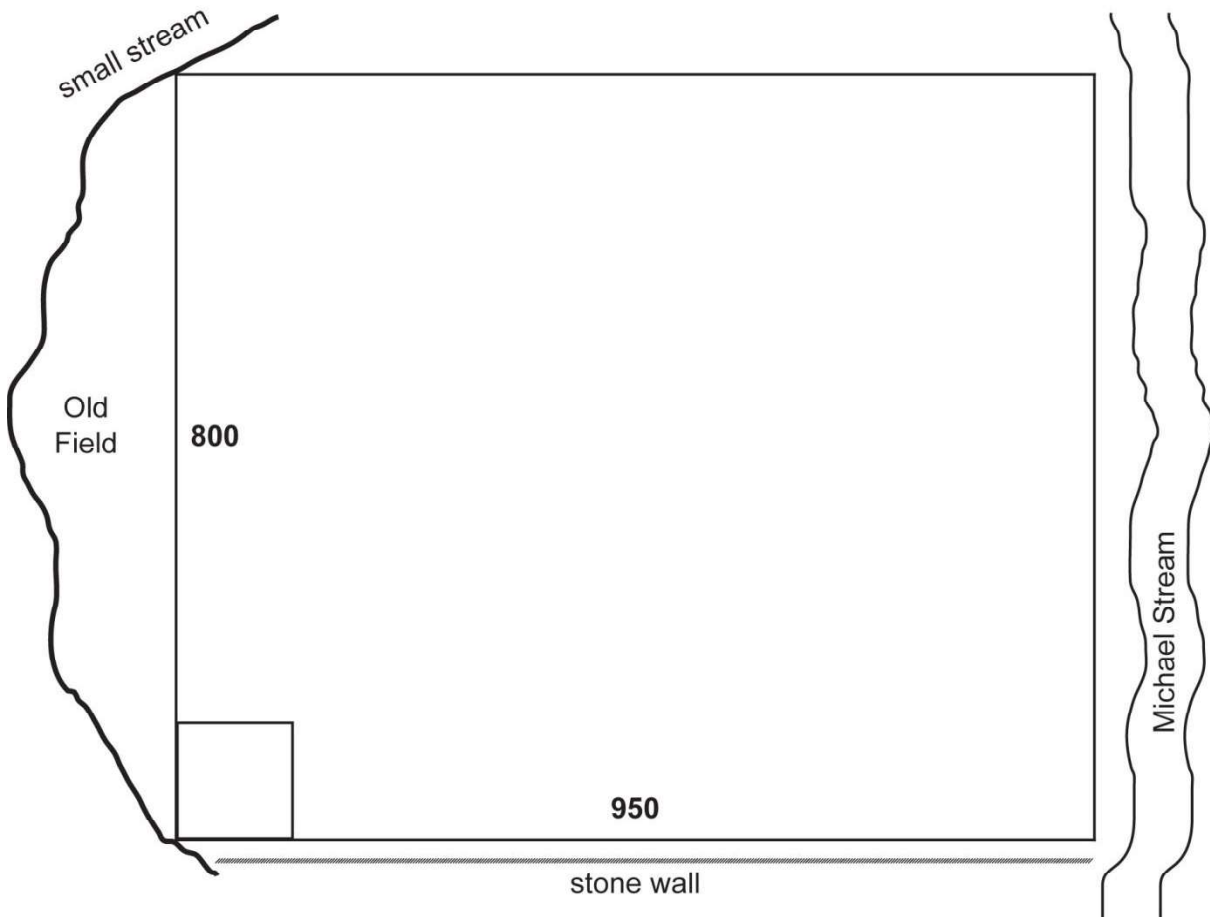
$$\text{Area}(\text{single lot}) = 150' \times 100' = 15,000 \text{ sq ft} = 15,000/43,560 = \underline{0.34 \text{ acres}}$$

## Answers to Class Quizzes

If someone needs  $\frac{1}{3}$  of an acre to build a home, can they build on one of these lots?

Yes ( $\frac{1}{3}$  acre = 0.33 acre)

10. Plot the following: beginning at a point on the west bank of Michael Stream where an old stone wall ends near the stream. Following the stone wall 950 feet west to the intersection of the stone wall and a small brook; thence 800 feet north along an old field to the easterly side of the same small brook; thence easterly to Michael Stream, thence following Michael stream south to the point of beginning. Excluded from the property is a 900 square foot parcel in the southwest corner.



- a. Find the area of this parcel, in acres:  
 $\text{Area} = (800' \times 950') - 900 \text{ sq ft} = 760,000 - 900 = 759,100 \text{ sq ft}$   
 $= 759,100/43560 = \underline{17.43 \text{ acres}}$

Answers to Class Quizzes

b. Number of feet along Michael Stream: 800'

11. Draw a parcel of five lots along the north side of Old County Road, each with 200 feet of road frontage and 300 feet deep.

a. Find the area of the five lots, in square feet:

$$\text{Area(parcel)} = 300' \times (200' \times 5) = 300' \times 1,000' = 300,000 \text{ sq ft}$$

in acres?  $300,000/43,560 = 6.89$  acres



b. Plot a 125' border strip on the east side of this parcel and adjust the road frontage for each lot so that all lots are the same size.

$$\text{Total road frontage less border strip} = 1,000' - 125' = 875'$$

$$\text{Frontage for each of the five lots} = 875'/5 = 175'$$



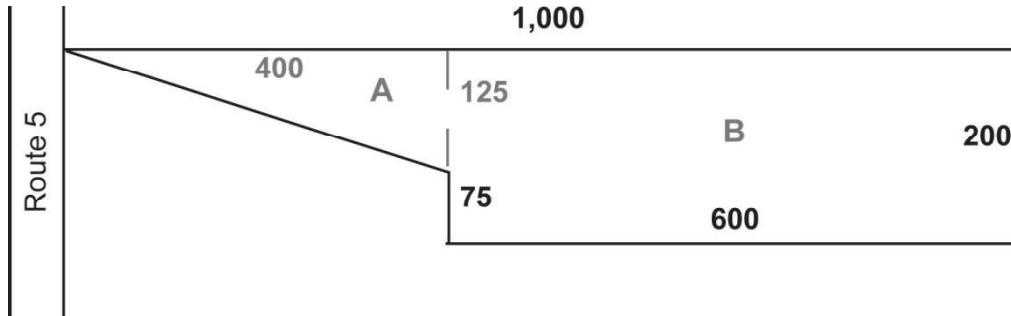
Find the acreage of conveyed single lot:

$$\text{Area(lot)} = 300' \times 175' = 52,500 \text{ sq ft}$$

$$= 52,500/43,560 = 1.21 \text{ acres}$$

Answers to Class Quizzes

12. Beginning at a point on Route 5; thence east 1,000 feet; thence south 200 feet; thence 600 feet west; thence north 75 feet; thence to the point of beginning.



Find the area of this lot, in acres:

$$\text{Area} = A + B$$

$$A = (125' \times 400')/2 = 25,000 \text{ sq ft}$$

$$B = 200' \times 600' = 120,000 \text{ sq ft}$$

$$\text{Area} = 25,000 + 120,000 = 145,000 \text{ sq ft} = 145,000/43,560 = 3.33 \text{ acres}$$

Answers to Class Quizzes

**Chapter 7 Quiz Answers**

1. Assessors generally value residential property using the **cost** approach and confirm that value through the **sales comparison approach**.
  
2. Which is a disadvantage to using the sales comparison approach?
  - A. Sales are plentiful
  - B. Sales are similar to subject
  - C. Valuing commercial property
  - D. Assessor records are good
  
3. Value can be affected by the direction a house faces. T F
  
4. Complete the sale comparison chart below based on the following information.

The assessor schedules show the following values:

- Rooms = \$12,000/bedroom
- Area = \$72/sq ft
- Heat: Hot water baseboard = \$12,000/system
- Forced air = \$6,000
- Garage: 1-car = \$10,000
- 2-car = \$15,000
- Land: = \$1.50/sq ft

	<b>Subject</b>	<b>Comparable #1</b>	<b>Comparable #2</b>	<b>Comparable #3</b>
<b>Sale price</b>		\$242,500	\$254,500	\$254,000
<b>Number of bedrooms</b>	3	1	2	2
<b>Area</b>	1,100 sq ft	1,000 sq ft	1,100 sq ft	1,200 sq ft
<b>Heat source</b>	Forced air	Hot water baseboard	Forced air	Hot water baseboard
<b>Garage</b>	None	2-car	1-car	None
<b>Land</b>	11,000 sq ft	12,000 sq ft	14,000 sq ft	11,000 sq ft

### Answers to Class Quizzes

<b>Adjustments</b>	<b>Comparable #1</b>	<b>Comparable #2</b>	<b>Comparable #3</b>
<b>Sale price</b>	\$242,500	\$254,500	\$254,000
<b>Bedrooms</b>	\$24,000	\$12,000	\$12,000
<b>Area</b>	\$7,200	No adjustment	(\$7,200)
<b>Heat</b>	(\$6,000)	No adjustment	(\$6,000)
<b>Garage</b>	(\$15,000)	(\$10,000)	No adjustment
<b>Land</b>	(\$1,500)	(\$4,500)	No adjustment
<b>Total adjusted value</b>	\$251,200	\$252,000	\$252,800