



STATE OF NEW MEXICO
 REAL ESTATE COMMISSION
 5200 Oakland Ave. NE Suite B
 Albuquerque, NM 87113
 (505) 222-9820

Office Use Only:

Approved _____ Education credit _____
 Denied _____ Training credit _____
 Date _____ Credit hours _____

CONTINUING EDUCATION COURSE APPLICATION

Date 9/27/13

Title of Course How to Measure Real Property CE Hours 3 Course Sponsor Kaplan Fee: \$70
 Upon approval

Address of Sponsor/School 8205 Spain Rd NE #109 City ABQ State NM Zip 87109 Phone number 821-5556

Approved Education Course Courses in:
Real estate law and practice; real estate financing including mortgages and other financing techniques; material specific to the regulatory, and ethical practice of real estate; and real estate related local, state and federal laws including but not limited to fair housing, the Americans with Disabilities Act (ADA), and lead-based paint disclosure.

Approved Training Course Courses in:
Personal and property protection for the broker and clients; using the computer, the internet, business calculators and other technologies to enhance the broker's service to the public; concerning professional development, customer relations skills, sales promotion including salesmanship, negotiation, marketing techniques, servicing the client, or similar courses.

Non-acceptable courses Courses in:
Mechanical office and business skills such as typing; speed reading; memory improvement; language report writing; offerings concerning physical wellbeing or personal development such as personal motivation; stress management; time management; dress-for-success; or similar courses.

ENCLOSED WITH THIS APPLICATION ARE ONE COPY OF:

- all instructor materials
- student handouts ARELLO Approval
- the final exam and answer key (if applicable)
- all proposed advertising
- any other applicable fees

COURSE TYPE

- Live lecture
- Independent Study
- Other On Demand Video

List major reference materials used in the development of this course:

This course will be taught at the following locations (attach additional sheet if necessary):

Date _____ Location _____
 Date _____ Location N/A
 Date _____ Location _____
 Date _____ Location _____
 Date _____ Location _____

Describe the physical classroom facilities:	N/A
The instructor(s) for the course will be:	Instructor on Record - Bill McCoy
Provide evidence of the instructor(s) New Mexico instructor certification, or attach instructor applications:	
How this course will serve to protect the public and increase the professional competence of the licensee:	See Attached

I certify that this course shall have significant intellectual and/or practical content and will be taught in accordance with the attached content outline.

Instructor of Record - Bill McCoy

 Signature of Instructor

9/30/13

 Date

Bill McCoy

 Instructor

9/30/13

 Date

Maurice DeAveiro

 Signature of Director/Responsible Party

9/30/13

 Date

COURSE CONTENT OUTLINE

What are the Levels of Learning that are to be expected from the student? The Levels will be reflected in the active verbs that are used when you write your Learning Objectives. For help in remembering some of the verbs for each level, see the attachment at the back of this application form.

LEARNING OBJECTIVES. Please provide three to five Learning Objectives for every three hours of course work (what will the student be able to do with the knowledge gained?)

Learning
Level:

- _____ 1. The licensee will be able to _____
 - _____ 2. The licensee will be able to _____
 - _____ 3. The licensee will be able to _____
 - _____ 4. The licensee will be able to _____
 - _____ 5. The licensee will be able to _____
- See Attached*

The following will be the means used in assessing whether the Learning Objectives have been reached:

Unit exams with 90% passing

COURSE OUTLINE: Describe in detail the components of the course by breaking it down into subject areas of no greater than 15 minutes (more detail is acceptable). What will be the method of instruction or teaching technique used for each area (lecture, slides, group involvement, videotape, etc.)? If this section is NOT completed, your application will be returned without review. If you wish, you may provide this information on a computer generated sheet.

Length in Time
(no greater than
15 min. segments)

Teaching
Technique

Subject Matter Segment and Description

Length in Time (no greater than 15 min. segments)	Teaching Technique	Subject Matter Segment and Description
_____	_____	_____
_____	_____	_____

See Attached

(continued on next page)

Course Description for:

“How to Measure Real Property OnDemand Course”

Appraisers, real estate licensees, assessors, builders, and contractors have specific methods used to measure and describe residential real estate. In this fascinating course, we will clarify the standards and pinpoint common mistakes made in measuring property.

It begins with the proper way to measure a house—where to start and what to include. You’ll take a look at the distinctions between above-grade and below-grade floor areas. Attics, lofts, and low ceilings will be discussed. You’ll also learn how to deal with detached rooms. And you’ll learn the industry standards for calculating room counts, bedrooms, and bathrooms.

In addition, through examples and exercises, you’ll practice formulas, rules of thumb, and ways to measure those oddball property designs.

Topics include: • History and development of property measurement standards • Property measurement language, definitions, and construction standards • Fannie Mae and ANSI standards for property measurement • Geometry: size, shape, formulas, and math • Nuances of styles and designs • What to measure and how to measure it

**OFFICIAL CERTIFIED COURSE SUMMARY CERTIFICATE FOR
DISTANCE EDUCATION INSTRUCTIONAL DESIGN AND DELIVERY**



**ARELLO CERTIFIED
DISTANCE EDUCATION COURSE**

*The number one credential for quality design and delivery
of distance education courses in the world.*

Administrative Information

Course Title: **How to Measure Real Property OnDemand Course**
Course Number: **5060** Provider: **Dearborn Real Estate Education Company**
Certified: **02/09/2013** Address: **332 Front St., Suite 555**
Expires: **02/09/2016** **La Crosse, Wisconsin 54601**
Status: **Approved** Phone: **608-779-5599**; Fax: **608-779-0442**
Contact: **Jackie Kreuzer** jackie.kreuzer@kaplan.com

Course Information

Provider Type: **Primary Provider**
Delivery Method: **Internet** *Clock Hours: **3** Clock Hour Enforcement Mechanism Present†: **No**
Final Exam: **Yes** Difficulty Rating: **Intermediate**
Proctored Exam: **No**

Description: **Appraisers, real estate licensees, assessors, builders, and contractors have specific methods used to measure and describe residential real estate. In this fascinating course, we will clarify the standards and pinpoint common mistakes made in measuring property. It begins with the proper way to measure a house-- where to start and what to include. You'll take a look at the distinctions between above-grade and below-grade floor areas. Attics, lofts, and low ceilings will be discussed. You'll also learn how to deal with detached rooms. And you'll learn the industry standards for calculating room counts, bedrooms, and bathrooms. In addition, through examples and exercises, you'll practice formulas, rules of thumb, and ways to measure those oddball property designs. Topics include:  History and development of property measurement standards  Property measurement language, definitions, and construction standards  Fannie Mae and ANSI standards for property measurement  Geometry: size, shape, formulas, and math  Nuances of styles and designs  What to measure and how to measure it**

Course Notes:

Instructors: **Use Secondary Provider**

****Course Approval Information**

This course may not be approved in any jurisdiction or the provider has chosen not to include which jurisdictions the course is approved in.

Disclaimers

* Professional reviewers have determined that the amount of content to be presented in this course, as specified in the provider's timed

outline, should take the stated time to complete. This certification does not suggest the course will take the hours listed if implemented into a distance education learning system that uses an inferior instructional design. In addition, ARELLO does not guarantee or audit the performance of classroom instructors to ensure the appropriate clock hours of instruction are presented to students.

** Regarding course approval information, the course provider may list here the jurisdictions that have approved this course for professional credit. Information in regard to jurisdictional course approval is not maintained by ARELLO but by course providers. If no jurisdictions appear in the course approval area, the provider may not yet be approved by a regulatory agency to offer the course. Please contact the provider if you have a question in regard to course approval information.

† A "Clock Hour Enforcement Mechanism" is course feature that mandates students spend X amount of time in the course. This mechanism is not required for certification but is required in certain jurisdictions. The absence of a clock hour enforcement mechanism does not compromise certification and the typical student taking the course can still be expected to take the appropriate amount of time to complete the course.

How to Measure Real Property (3 Hour)

continuing education

KAPLAN REAL ESTATE
EDUCATION

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional advice. If legal advice or other expert assistance is required, the services of a competent professional should be sought.

President: Dr. Andrew Temte
Chief Learning Officer: Dr. Tim Smaby
Vice President, Real Estate Education: Asha Alsobrooks
Development Editor: Matt Huss

HOW TO MEASURE REAL PROPERTY (3 HOUR)

© 2011 Kaplan, Inc.

Published by DF Institute, Inc., d/b/a Kaplan Real Estate Education

332 Front St. S., Suite 501

La Crosse, WI 54601

www.dearbornRE.com

All rights reserved. The text of this publication, or any part thereof, may not be reproduced in any manner whatsoever without written permission from the publisher.

Printed in the United States of America

11 12 13 10 9 8 7 6 5 4 3 2 1

ISBN: 978-1-4277-3258-3 / 1-4277-3258-2

PPN: 3200-0937

CONTENTS

Course Overview v

1
UNIT **ONE** HISTORY, LANGUAGE, AND GUIDELINES 1

2
UNIT **TWO** STYLES, DESIGN, AND WHAT COUNTS 15

3
UNIT **THREE** THE ART OF MEASURING 25

COURSE OVERVIEW

Appraisers, real estate licensees, assessors, builders, and contractors have specific methods used to measure and describe residential real estate. In this fascinating course, we will clarify the standards and pinpoint common mistakes made in measuring property.

It begins with the proper way to measure a house—where to start and what to include. You'll take a look at the distinctions between above-grade and below-grade floor areas. Attics, lofts, and low ceilings will be discussed. You'll also learn how to deal with detached rooms. And you'll learn the industry standards for calculating room counts, bedrooms, and bathrooms.

In addition, through examples and exercises, you'll practice formulas, rules of thumb, and ways to measure those oddball property designs.

Topics include:

- History and development of property measurement standards
- Property measurement language, definitions, and construction standards
- Fannie Mae and ANSI standards for property measurement
- Geometry: size, shape, formulas, and math
- Nuances of styles and designs
- What to measure and how to measure it

UNIT

1

HISTORY, LANGUAGE, AND GUIDELINES

I. HISTORY AND DEVELOPMENT OF PROPERTY MEASUREMENT STANDARDS

A. History and development

1. Before the mid-1970s, there was no standard method of measuring residential properties.
2. Real estate professionals, appraisers, assessors, builders, and others used a variety of different methods and processes to obtain the dimensions and areas of residential properties.
3. As a result, whenever a residential property was measured by any two professionals, the reported measurements inevitably differed from each other, but one was not necessarily more accurate than the other.
4. Descriptions of the components used in determining exterior and interior measurements varied greatly. Regional terminology often described the same style and design of residential property differently.
5. Certain professionals described residential property in a way that provided the best understanding for a specific level of clientele or professional service being provided.
6. In the mid-1970s, the Uniform Residential Appraisal Report (URAR) was developed by appraisal and lending professionals. The Federal National Mortgage Association (Fannie Mae), in particular, was instrumental in developing specific and detailed guidelines in regard to how the description of a residential subject property was to be reported in an appraisal assignment.
 - a. Square footage measurements for exterior and interior areas, room counts, and delineation of what part of the structure was above and below grade were all major components of the subject property description requirements.
 - b. The URAR contains a section that reports the gross living area (GLA) of the subject property.
 - c. Fannie Mae guidelines gained wide acceptance and, today, appraisers, real estate professionals, assessors, and other valuation professionals typically use these guidelines as a basis for residential property measurement.

7. Over time, other professional organizations and government agencies developed and published property measurement standards to meet ever-changing architectural styles and designs, development of and revisions to building codes, and different levels of government regulations. Those professional organizations included the following:

- a. National Association of Home Builders (NAHB)
- b. Building Owners and Managers Institute (BOMI)
- c. International Association of Assessing Officials (IAAO)
- d. Residential Cost Guides Services
- e. International Code Council (ICC)
- f. Building Officials and Code Administrators International (BOCA)

8. Before 1996, no nationwide standard existed for measuring square footage in single-family houses.

- a. A standard for commercial buildings has been in place for almost 100 years.
 - (1) *Office Buildings: Standard Methods of Measurement*¹
- b. In 1994, the NAHB, in conjunction with the American National Standards Institute (ANSI), developed standards for the measurement of square footage in detached and attached single-family houses.
- c. The first standards became effective in 1996, and revisions became effective in 2003.
- d. The current publication is the *American National Standard for Single-Family Residential Buildings: Square Footage—Method for Calculating*.²

¹ "Office Buildings: Standard Methods of Measurement (Z65.1-2010)." American National Standards Institute (ANSI)/Building Owners and Managers Association Institute (BOMA). 2010.

² "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

- e. The ANSI standard, which is voluntary, primarily is used by builders but is accepted by other valuation professionals such as Fannie Mae, the U.S. Department of Housing and Urban Development (HUD), the Federal Housing Administration (FHA), IAAO, and various governmental agencies in conjunction with their prescribed requirements.
- f. Because ANSI standards are voluntary, professionals should check the local and state building codes, rules, and regulations in their area.

II. PROPERTY MANAGEMENT LANGUAGE AND DEFINITIONS

A. Sources of property measurement language

1. *2009 International Residential Code (IRC)*

- a. Establishes minimum regulations for one- and two-family dwellings and townhouses using prescriptive provisions, and provides the model code development process for construction professionals and for implementation by various jurisdictions

2. *The Dictionary of Real Estate Appraisal (DREA), Fifth Edition*

- a. Compilation of acceptable industry terminology for the valuation profession

3. *Square Footage—Method for Calculating: (ANSI Z765-2003)*

- a. Voluntary set of standards established to provide consistent methods in addressing measurement of single-family houses
- b. Published by the National Association of Home Builders and developed by the American National Standards Institute (ANSI)

4. *Residential Cost Handbook (RCH)*

- a. Published by Marshall and Swift

B. Attic

1. The accessible space between the roof rafters and the ceiling joists³
2. The unfinished space between the ceiling joists and the top story and the roof rafters⁴

C. Attached single-family house

1. A house that has its own roof and foundation, is separated from other houses by dividing walls that extend from the roof to the foundation, and does not share utility services with adjoining houses.
 - a. May also be known as a townhouse, rowhouse, or duplex⁵

D. Balcony

1. A balustrade or railed platform that projects from the face of a building above the ground level
2. Has an entrance from the building interior and is usually cantilevered or supported by columns⁶

E. Basement

1. The lowest story of a building
2. May be partially or completely below ground level⁷

³ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

⁴ "2009 International Residential Code (IRC)." International Code Council. 2009.

⁵ "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

⁶ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

⁷ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

F. Build-out

1. Interior construction that converts raw space into space ready for occupancy
2. Includes the installation of equipment, finish carpentry, construction of amenities, and initial tenant improvements⁸

G. Cantilever

1. A beam or slab supported at one end only, or that projects beyond its support⁹

H. Carport

1. A roofed auto shelter that is not completely enclosed¹⁰

I. Cellar

1. A storage space usually (but not necessarily) below ground¹¹

J. Ceiling height guidelines

1. To be included in finished square footage calculations, finished areas must have a ceiling height of at least 7 feet (2.13 meters).
2. Exceptions include the following:
 - a. Under beams, ducts, and other obstructions, where the height may be 6 feet, 4 inches (1.93 meters)
 - b. Under stairs, where there is no specified height requirement
 - c. Where the ceiling is sloped

⁸ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

⁹ "Residential Cost Handbook." Marshall & Swift.

¹⁰ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

¹¹ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

3. If a room's ceiling is sloped, at least half of the finished square footage in that room must have a vertical ceiling height of at least 7 feet (2.13 meters).
4. No portion of the finished area that has a height of less than 5 feet (1.52 meters) may be included in finished square footage.¹²
5. Habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms, and basements may not have a ceiling height of less than 7 feet (2,134 mm).
 - a. The required height must be measured from the finished floor to the lowest projection from the ceiling.
6. Exceptions include the following:
 - a. Beams and girders spaced not less than 4 feet (1,219 mm) on center may project not more than 6 inches (152 mm) below the required ceiling height.
 - b. Ceilings in basements without habitable spaces may project to within 6 feet, 8 inches (2,032 mm) of the finished floor, and beams, girders, ducts, or other obstructions may project to within 6 feet, 4 inches (1,931 mm) of the finished floor.
 - c. Not more than 50 percent of the required floor area of a room or space is permitted to have a sloped ceiling less than 7 feet (2,134 mm) in height, with no portion of the required floor area less than 5 feet (1,524 mm) in height.¹³

K. Crawl space

1. An unfinished, accessible space below the first floor of a structure that is usually less than full story height¹⁴

L. Porch

1. A porch usually is at the ground-floor level or on the roof of a ground-floor porch or wing.¹⁵

¹² "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

¹³ "2009 International Residential Code (IRC)." International Code Council. 2009.

¹⁴ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

¹⁵ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

2. **A porch is an amenity to a home and, if viewed correctly, it is not considered a year-round livable space unless it is a four-season porch, which should be considered a sunroom.**

3. **There are many different kinds of porches, including the following:**
 - a. Open porch
 - (1) It features flooring and a cover overhead.
 - (2) Sometimes, open porches are called verandas.

 - b. Screened porch
 - (1) The flooring, cover overhead, and walls are screened.

 - c. Three-season porch
 - (1) It features flooring, cover overhead, partial walls, and combination windows.

 - d. Four-season porch
 - (1) A four-season porch is a space for use year-round.
 - (2) It features flooring, a ceiling, walls that are insulated, and combination windows.
 - (3) A four-season porch is considered gross living area and should be counted in the overall living space of the home.
 - (4) Mild-climate areas may include any area in which true walls and combination windows are considered part of GLA.
 - (5) Professionals should check for the particulars in their area.

M. Dormer

1. **A projection from a sloping roof to provide more headroom under the roof, allowing for the installation of dormer windows¹⁶**

¹⁶ "Residential Cost Handbook." Marshall & Swift.

N. Finished area

1. An enclosed area in a house that is suitable for year-round use, embodying walls, floors, and ceilings that are similar to the rest of the house¹⁷

O. Grade

1. The ground level at the perimeter of the exterior finished surface of a house¹⁸
2. The finished ground level adjoining the building at all exterior walls¹⁹
3. The slope of a surface, such as a lot or road, with the vertical rise or fall expressed as a percentage of horizontal distance
 - a. For example, a 3-percent upgrade indicates a rise of 3 feet for each 100 feet of horizontal distance.
4. The level or elevation of a lot
 - a. For example, rough grade is the level, slope, or general elevation of the land surface on which topsoil will be placed in landscaping, and finished grade is the final level, slope, or elevation of a lot.²⁰
5. Above-grade living area (AGLA)—the total area of finished, above-grade residential space
 - a. Unfinished attics are not considered a part of AGLA.²¹

¹⁷ "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

¹⁸ "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

¹⁹ "2009 International Residential Code (IRC)." International Code Council. 2009.

²⁰ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

²¹ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

6. Above- and below-grade finished areas

- a. The above-grade finished square footage of a house is the sum of finished areas on levels that are entirely above grade.
- b. The below-grade finished square footage of a house is the sum of finished areas on levels that are completely or partly below grade.²²

P. Grade floor opening

1. A window or other opening located such that the sill height of the opening is not more than 44 inches (1,118 mm) above or below the finished ground level adjacent to the opening²³

Q. Grade plane

1. A reference plane representing the average of the finished ground level adjoining the building at all exterior walls²⁴

R. Gross building area (GBA)

1. GBA is the total floor area of a building, including below-grade space but excluding unenclosed areas, measured from the exterior of the walls.
2. Gross building area for office buildings is computed by measuring to the outside finished surface of permanent outer building walls without any deductions.
3. All enclosed floors of the building, including basements, mechanical equipment, floors, and penthouses, are included in the measurement.
4. Parking spaces and parking garages are excluded.²⁵

²² "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

²³ "2009 International Residential Code (IRC)." International Code Council. 2009.

²⁴ "2009 International Residential Code (IRC)." International Code Council. 2009.

²⁵ "The Dictionary of Real Estate Appraisal, Fifth Edition." Appraisal Institute. 2010.

S. Gross floor area

1. The total area of all the floors of a building, including intermediately floored tiers, mezzanine, basements, and so forth, as measured from the exterior surfaces of the outside walls of the building²⁶

T. Gross living area (GLA)

1. The total area of finished, above-grade residential space, excluding unheated areas such as porches and balconies
2. The standard measure for determining the amount of space in residential properties²⁷

U. Habitable space

1. A space in a building for living, sleeping, eating, or cooking
2. Bathrooms, toilet rooms, closets, halls, storage or utility spaces, and similar areas—not considered habitable spaces²⁸

V. Joist

1. One of several parallel beams carrying a floor or ceiling, sometimes acting both as a ceiling joist and a rafter²⁹

W. Room areas

1. Every dwelling unit must have at least one habitable room that does not have less than 120 square feet (11.2 m²) of gross floor area.
2. Other habitable rooms must have a floor area of not less than 70 square feet (6.5 m²).

²⁶ “The Dictionary of Real Estate Appraisal, Fifth Edition.” Appraisal Institute. 2010.

²⁷ “The Dictionary of Real Estate Appraisal, Fifth Edition.” Appraisal Institute. 2010.

²⁸ “2009 International Residential Code (IRC).” International Code Council. 2009.

²⁹ “Residential Cost Handbook.” Marshall & Swift.

3. Every kitchen must have at least 50 square feet (4.64 m²) of gross floor area.
4. Habitable rooms may not be less than 7 feet (2,134 mm) in any horizontal dimension (except kitchens).
5. Portions of a room with a sloping ceiling measuring less than 5 feet (1,524 mm) or a furred ceiling measuring less than 7 feet (2,134 mm) from the finished floor to the finished ceiling may not be considered as contributing to the minimum required habitable area for that room.³⁰

X. Openings to the floor below

1. Openings to the floor below may not be included in the square footage calculation. However, the area of both stair treads and landings preceding the floor below is included in the finished area of the floor from which the stairs descend, not to exceed the area of the opening of the floor.³¹

Y. Story above grade

1. Any story having its finished floor surface entirely above grade, except that a basement will be considered a story above grade in instances in which the finished surface of the floor above the basement is
 - a. more than 6 feet (1,829 mm) above grade plane;
 - b. more than 6 feet (1,829 mm) above the finished ground level for more than 50 percent of the total building perimeter; and
 - c. more than 12 feet (3,658 mm) above the finished ground level at any point.³²

Z. Unfinished area

1. Sections of a house that do not meet the criteria of a finished area³³

³⁰ "2009 International Residential Code (IRC)." International Code Council. 2009.

³¹ "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

³² "2009 International Residential Code (IRC)." International Code Council. 2009.

³³ "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

III. MEASUREMENT GUIDELINES AND CALCULATION METHODS

A. Fannie Mae Single-Family Selling Guide

1. Layout, floor plans, and gross building and living areas

- a. Dwellings with unusual layouts, peculiar floor plans, or inadequate equipment or amenities generally have limited market appeal.
- b. A review of the room list and floor plan for the dwelling unit may indicate an unusual layout—such as bedrooms on a level with no bath, or a kitchen on a different level than the dining room.
- c. Professionals must be consistent when calculating and reporting finished above-grade room counts and square footage for the gross living area above grade.

B. Calculating square footage

1. American National Standards Institute calculation methods

- a. Calculation of square footage made by using exterior dimensions but without an inspection of the interior spaces is allowed but must be stated when reporting calculation results.
- b. Measurements should be made to the nearest inch or tenth of a foot, and the final square footage should be rounded to the nearest whole square foot.
- c. Detached single-family units should be measured at floor level to exterior finished surface of outside wall.
- d. Attached single-family units should be measured at floor level to the exterior finished surface of the outside wall or from the centerline between units.
- e. Unfinished areas above grade are not included in final square footage.
 - (1) Measure from the exterior edge or unfinished surface of any interior partition between areas

- f. Openings to the floor below are not calculated in square footage.
 - (1) Include area of both stair treads and landings preceding the floor below
- g. Finished areas that are connected to the main body of the house (such as hallways or stairways) are included in the finished square footage of the floor that is at the same level.
 - (1) Finished areas that are not connected may not be included.
- h. Garages, chimneys, windows, and other areas that protrude beyond the exterior finish without the benefit of flooring are not included in the calculation.
- i. Finished areas must have a ceiling height of 7 feet.
 - (1) Under beams, ducts, and other obstructions, the height may be 6 feet, 4 inches.
 - (2) For sloped ceilings, at least half of the finished square footage must have a vertical ceiling height of 7 feet.
 - (3) No portion of the finished area with a ceiling height of less than 5 feet may be included.
- j. Wall and ceiling finishes include (but are not limited to) painted gypsum board, wallpaper-covered, plaster board, and wood paneling.
- k. Floor finishes include carpeting, vinyl sheeting, tile, and hardwood flooring.
 - (1) Does not include bare or painted concrete
- l. Exterior finishes include (but are not limited to) masonry or masonry veneer, wood, aluminum, or vinyl siding (gypsum board used on exterior wall to attached garage).³⁴

³⁴ "Square Footage—Method for Calculating: ANSI Z765-2003." American National Standards Institute, Inc. November 2003.

UNIT

2

STYLES, DESIGN, AND WHAT
COUNTS

I. NUANCES OF STYLES AND DESIGNS

A. More-than-two-story

1. These are single-family homes that are three stories or more.
2. This style of home was typical in the Victorian era. Today, they are typical in the construction of high-end, multimillion-dollar homes.
3. For this style of home, the different levels are just that—different levels of different sizes and shapes than the first floor.
4. Measurements of these types of homes will require inside and outside measurements.

B. Multi-level

1. There are several different styles of multi-level homes.
 - a. Split-entry or split foyer
 - b. Three-level splits that feature only a partial basement and crawl space
 - c. Four-level splits that feature four levels that are never larger than the foundation size
 - (1) The bottom two levels often are considered basement levels because at least one wall is partially or completely below grade.

C. One-and-a-half-story

1. The typical one-and-a-half-story homes were built around the earlier part of the century and featured one story with a living space that would be considered an attic, as long as the attic had the correct code height requirement.
 - a. The second story is half the size of the first story.

D. One-story

1. A one-story structure is just that—a one-level home.
2. Different regions use different names for one-story homes, such as *rambler* and *ranch*.

E. Two-story

1. A two-story home is one in which the first and second levels are identical.
2. Many two-story homes also may include an open-foyer plan, which would need the second level square footage modified to subtract the open foyer area on the second floor.

F. Modified two-story

1. A modified two-story home actually is a one-and-a-half-story with a second level that is not straight on.
2. The second level on a modified two-story home typically is off to one side or the other, leaving a vaulted ceiling over the area where there is only one story.

II. WHAT TO MEASURE AND HOW TO MEASURE

A. Methods and techniques

1. Calculating building size and square footage varies regionally and according to property type.
2. Local practices may reflect biases that significantly affect calculations and, ultimately, value opinions.
 - a. Different parts of the country use different language. Professionals should be cognizant of local practices and biases.

3. Professionals must define and understand the appropriate methods and techniques in each assignment.

- a. Fannie Mae, Federal National Mortgage Corporation (Freddie Mac), Federal Housing Administration (FHA), or Department of Veterans Affairs (DVA) guidelines
- b. American National Standard for Single-Family Residential Buildings (ANSI Z765)
- c. International Building Code for One- and Two-Family Dwellings—2006
- d. Local techniques and interpretations

4. Measuring and sketching software programs

5. Reliable and verified public and private sources

- a. Tax records
- b. Real estate listings
- c. Builder specifications

B. Starting point

1. Determine the obstacles and challenges of the subject property

- a. Slope/grade
- b. Style/design
- c. Finished living areas
 - (1) Must be space intended for human occupancy
 - (2) Must be heated by conventional, permanent heating system
 - (3) Must have walls, floors, and ceilings acceptable for interior construction

- (4) Must be directly accessible from another finished area—a finished room accessed through an unfinished space may not be counted as finished square feet
- (5) Mark all unfinished areas on sketch

- d. Local nuances
- e. Public sources of stated measurements
- f. Resources needed (surveyor/building inspector/tax assessor)

2. Steps in the process of measuring residential properties

- a. Determine the area of the dwelling by taking the exterior or gross measurements.
- b. Begin at one corner of the dwelling and proceed with measuring each exterior wall.
- c. Determine the degree of accuracy for specific measurements (feet/inches/tenths) and a consistent method of rounding.
- d. Record measurements after every step.
 - (1) Use of sketching software/hard-copy template
- e. Describe any abnormal design or measurements issues.
- f. When exterior measurements are prohibited (attics and below-grade areas), measure the perimeter walls from the interior of the dwelling.
- g. Reconcile the exterior lengths of the front and rear sides, as well as the ends, so they are equal or sketching will *close*.
- h. Determine what degree of interior measurements is needed to complement exterior calculations.
- i. Take photographs that show adequate views of the dwelling's exterior and interior to assist in verifying any usual or abnormal calculation.
- j. Determine final calculations, rounding procedures and, if necessary, double-check specific measurements.

C. Tips and error-avoidance

1. Small mistakes may turn into large errors.

- a. In regard to GLA, miscalculations in multiplying length and depth measurements can multiply the effect of the mistakes.
 - (1) A 1-inch error may result in a 6-inch mistake if it causes a professional to round up or down in the wrong direction.
 - (2) A 6-inch mistake multiplied by a length of 50 feet may equal a 25-square-foot mistake.
 - (3) When rounding to the nearest foot, a 50-square-foot mistake may result.

2. Units of measure conversion

1 inch	=	0.10 ft	7 inches	=	0.60 ft
2 inches	=	0.20 ft	8 inches	=	0.70 ft
3 inches	=	0.25 ft	9 inches	=	0.75 ft
4 inches	=	0.30 ft	10 inches	=	0.80 ft
5 inches	=	0.40 ft	11 inches	=	0.90 ft
6 inches	=	0.50 ft	12 inches	=	1.00 ft

3. Wall thickness

- a. When should a professional consider both exterior and interior thickness?
- b. The design type can affect overall measurements.
- c. Sketching software sometimes does not accommodate for the separation of wall thickness.
- d. Portions of dwellings may have different layers of siding, brick veneer, or build-outs.

4. Room configurations

- a. Sloped ceilings
 - (1) Include only the portion of a room where the ceiling height is at least 5 feet.

- (2) A minimum of half the finished area of a room must have ceilings at least 7 feet high.
- (3) An example is an attic: Since a legal room requires 70 square feet, 35 square feet must have at least a 7-foot ceiling height. The other 35 feet must be at least 5 feet in height.

b. Bay windows

- (1) An area may be counted if it has a floor, a ceiling height of at least 7 feet, and it meets the criteria for a living area.

c. Furnace room

- (1) If a furnace, a water heater, or other similar items are located in a closet within the living area, it should be part of the total square footage.

d. Hallways and closets

- (1) Hallways and closets should be included in the total square footage if they are functional parts of the living space.

e. Stairs

- (1) If a stairway opening is larger than its length and width, the excess space from the upper level's square footage should be deducted.

f. Open foyer and other open space

- (1) Do not include open space as part of the square footage for an upper level.

5. Significant effects on the appraisal assignment

a. Variance in square footage

b. Market adjustment as to degree in GLA adjustments

- (1) Is less than or more than 100 square footage among sales significant?

c. Construction cost per square foot

6. Adequate and appropriate descriptions in appraisal report

- a. List of building definitions may be needed
- b. Identify method(s) used in measuring
- c. Specific description of what constitutes above- and below-grade measurements

D. Sizes, shapes, and formulas

1. Multiply length by width to find the number of square feet in a square or rectangular room.
2. Remember to calculate unfinished areas and deduct them from the total.
3. To calculate the area of a triangle, multiply its base length by its height and divide that figure by two.

E. Multiple shapes

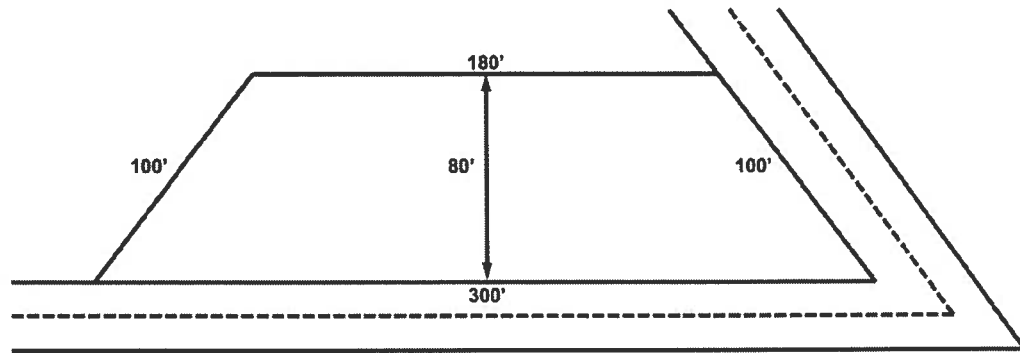
1. The dimensions of nearly any house or room can be split into multiple shapes to make calculations easier.
2. Some areas may be split into a square and triangle.

F. Circular and build-out shapes

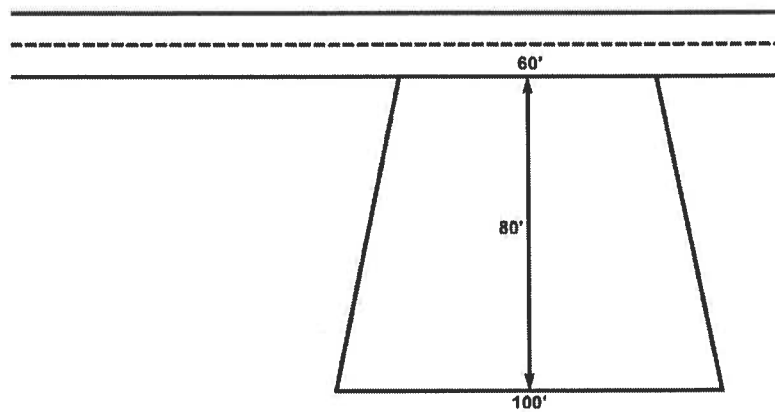
1. Some houses have bay windows or circular areas that jut out from the house.
2. The area of a circle is $\text{Pi} \times r^2$ or $\text{Pi} \times r \times r$.
 - a. In the equation, r is the length of the circle's radius.
 - b. Pi is approximately 3.14159.
3. Calculate the area of an octagon by splitting it into a rectangle and triangles.

G. Angles and corners

1. Perimeter (linear feet) = the distance around an area
2. Rectangle area (square feet) = length \times width
3. Trapezoid area (square feet) = $\frac{1}{2}$ (sum of bases) \times height
4. Example 1



5. Example 2



6. Answers

a. Answer: 100 feet + 300 feet + 180 feet + 100 feet = 680 feet

b. Area of the lot would be actual square feet of the total lot

c. Answer: 5,600 square feet

(1) $60 \times 80 = 4,800$

(2) $20 \times 80 = 1,600$

(3) $1,600 \div 2 = 800$

(4) $4,800 + 800 = 5,600$

UNIT

3

THE ART OF MEASURING

I. EXTERIOR: MEASURING UP

A. What to look for

1. The items professionals look for when conducting the exterior measurement include the *lay of the land* and the areas that are completely above grade on all four sides—this is the key to GLA.
2. Some professionals recommend measuring the exterior of the home first so you know where to put your rooms on the diagram. Others recommend going through the interior of the home first to see what rooms are there and where they are in relation to the level of the land.
3. It makes no difference which way you go, but be prepared to look at these areas more than once.
4. The reason we measure the exterior of the home is because we need to include closets, hallways, bathrooms, and all living areas of the home, and the easiest way to measure is the exterior.
5. For a one-and-a-half-story, a two-story, or a more-than-two-story home, measuring the second and third levels can be tricky. These homes may need to be measured from the interior.

B. How to measure

1. After arriving at the property, take a walk around the house and look for possible obstacles.
2. Start at a particular corner and make sure to get all the way around the house when measuring.
3. If the landscape is inclining or declining, make sure the tape is still level from corner to corner.

C. Possible obstacles

1. Cantilevers or windows (bump-outs)

- a. After discovering a bump-out, look to see if that area features finished space inside the house. If so, the bump-out will need to be measured and counted as GLA.
- b. To make measuring easier, measure a bump-out and then subtract the measurement from the entire length of the wall.

2. Porch/deck

3. Yard obstacles

- a. If trees or shrubs are growing along the house, making it difficult to measure a wall, place sticks or other markers in the ground parallel to the corners of the house and measure from marker to marker on the lawn.
- b. Extensions of back rear of home
 - (1) Sunroom
 - (2) Porch
 - (a) If it is a four-season porch, it must be measured because the square footage will count as GLA.
- c. Find ways around drop-offs or rough terrain

4. Measuring homes with multiple stories

- a. Check to see if the length and/or width of the second story is the same as the first story. If so, it could save you time and trouble.

5. Chimneys

- a. The chimney stack is not included in GLA.

6. Measuring second-story depth**7. Measuring second-story jut-outs**

- a. Look for architectural features at ground-level for help in identifying length and width

8. Completing the exterior measurement**D. Things to remember****1. Several items to remember when measuring the exterior of a property include the following:**

- a. What obstacles will I need to compensate for?
 - (1) Landscaping
 - (2) Lay of the land
- b. What type of siding am I working with? What measurement tools will I need?
- c. When measuring the exterior, pay attention to the foundation because foundation measurements also will be needed.
- d. If you are working around gutters, you will need to subtract the additional inches around the gutter.
- e. Bay windows, chimney stacks, and any other style of window that protrudes from the home are not counted.
- f. Be sure to look inside the garage to see if there are any unusual walls or additional space that would not be included in GLA.
- g. Look for additional livable foundation space beneath a garage.
 - (1) Relatively rare

- h. Garages are counted by the number of garage door openings in the space, even though more vehicles could fit in the space.
 - (1) For example, a garage that can hold four vehicles but has only two openings would be considered a two-car tandem garage with the ability to hold four vehicles.
 - (2) This would need to be explained in the report.
 - (3) In the grid, it would be reported as a two-plus-car garage.
 - (4) The same applies for a garage beneath a garage, which often is not accessible from a driveway.
 - (a) These garages normally are used for the storage of boats, lawn equipment, and toys.
 - (b) If there is no access to this garage, it is counted as an addition to the garage above.
 - (c) The report would require a detailed explanation and photos.

- i. Remember, the most important thing about an exterior measurement is to determine what is above- and below-grade finished space.
 - (1) Needed for correct square footage within GLA and basement finishing

- j. Additional items on a lot may include out-buildings, guest houses, sheds, and workshops.
 - (1) These are additional amenities to a property and would be counted separately from the home.
 - (a) Added amenities
 - (2) Out-buildings or barns are not counted as garages.
 - (3) These amenities will need to be explained in the report. They should be measured, and photos should be taken.
 - (a) Unless they feature electricity, heating, concrete flooring, heated flooring

- k. Professionals should do the same things in the same order at every property.
 - (1) Create a checklist of items that need observation.

1. Make sure to have every tool needed to do the measurement, along with spares.
 - (1) Tape measures
 - (2) Electronic measuring devices
 - (3) Sticks to which measuring tape can be attached for assistance in maneuvering around certain landscaping
 - (4) Camera
 - (5) Batteries
 - (6) Pencils and pens
 - (7) Foul-weather gear (boots, rain coat, dry socks, additional shoes, gloves, etc.)

II. PROPERTY CONSTRUCTION STANDARDS

A. Room sizes

1. **Every dwelling unit must have at least one habitable room that must have at least 120 square feet of gross floor area.¹**
2. **Other habitable rooms must have a floor area of at least 70 square feet.**
3. **Habitable rooms may not be less than 7 feet in any horizontal dimension.**
4. **Exception: Every kitchen must have at least 50 square feet of gross floor area.**

B. Natural light and ventilation

1. **All habitable rooms need a total glass area of at least 8 percent of the floor area.**
2. **At least half (4 percent) must be openable.**

¹ "2009 International Residential Code (IRC)." International Code Council. 2009.

3. Exceptions include the following:

- a. The windows do not need to open if they are not required for egress, and if an approved mechanical ventilation system is installed.
 - b. Windows are not required in rooms where the aforementioned requirements are met and adequate artificial light is provided.
- 4. Any room will be considered as part of an adjoining room when at least half of the area of the common wall is open and without obstructions and the wall provides an opening of at least one-tenth of the floor area of the interior room (minimum of 25 square feet).**

C. Ceiling height

1. Not more than 50 percent of the required floor area of a room or space is permitted to have a sloped ceiling less than seven feet in height, with no portion of the required floor area less than 5 feet in height.
2. Ceiling height
 - a. Minimum room size: 70 square feet
 - (1) 35 square feet at 7 feet or above
 - (2) 35 square feet at 5 feet or above
3. Habitable rooms in basements must have a ceiling height of at least 7 feet, measured from the finished floor to the lowest projection from the ceiling.
4. Beams spaced at least 4 feet on center must be at least 6 feet, 6 inches from the floor.
5. Ceilings in basements that do not have finished spaces may project to within 6 feet, 8 inches of the finished floor; and beams, ducts, or other obstructions may project to within 6 feet, 4 inches of the finished floor.
6. Areas or rooms with ceiling heights of less than 7 feet are considered crawl spaces.

D. Egress requirements

1. Basements with habitable space and every sleeping room must have at least one openable emergency escape and rescue window or exterior door opening for emergency escape and rescue.
2. Where openings are provided as a means of escape and rescue, they must have a sill height of up to 44 inches (1,118 mm) above the floor.
 - a. This measurement is taken from the sill, not from the window opening, as some inspectors incorrectly suggest. The sill often is several inches below the actual window opening.

III. INTERIOR: MEASURING UP

A. What to consider

1. Measurements
2. How to measure rooms
3. What is counted at what level
4. GLA, finished square feet, needed to value houses

B. Real estate professional's perspective

1. Must work side-by-side with appraiser
2. Must make sure that information is consistent and accurate
3. Consistency between real estate professional and appraiser is important
4. Should be cognizant of the different ways appraisers and real estate professionals work
 - a. Terminology

- b. Real estate professional is more concerned with total finished square feet
 - c. Appraiser values homes based on what is above/below grade
 - (1) Above-grade space is considered GLA.
 - (2) To be included as GLA, the entire level must be above ground/grade.
 - d. What is counted and where
 - e. Sometimes, real estate professionals include below-grade space in their finished square feet.
- 5. Real estate professionals often consider the following:**
- a. Finished square feet above grade
 - (1) Applicable for both real estate professionals and appraisers
 - b. Finished square feet below grade
 - (1) The key difference is that real estate professionals count the area, but appraisers do not.
 - c. Foundation size
 - d. Room sizes
 - (1) Real estate professionals consider the size of rooms for the benefit of consumers, who like to see how their furniture might fit, if it fits their lifestyle, and so forth.
- 6. Typically, the foundation determines total square feet.**
- 7. Total above- and below-grade measurements should be determined by measuring the exterior.**
- 8. Typically, appraisers do not measure the interior unless there are odd or unique features within the home.**

9. It is important for real estate professionals to know how to measure rooms because that is what consumers are looking at when viewing listings online or looking at a house.

C. Measuring tools

1. Standard measuring tape
 - a. Real estate professionals should keep a tape measure in their vehicle at all times.
2. Electronic measuring devices
 - a. Infrared technology is used to measure from wall to wall.
3. Real estate professionals should own all types of tools because there normally are areas in a home that make it difficult to use one tool or the other.

D. Measurements real estate professionals might not consider

1. Bump-outs
 - a. Might not be included in measurement
 - b. More of a feature
 - c. Easier to measure from base wall to base wall
 - d. Should be measured if it provides space into which an individual may walk

E. Measuring the kitchen

1. Measure from wall to wall
 - a. Standard in any room

2. Start measurement at walls, not cabinets

- a. If professionals start a measurement from a cabinet, their final measurement numbers will be a few feet short of the actual kitchen dimensions.

3. Professionals should not put too much emphasis on the floor when measuring because they might miss some square feet from a finished area (near a cabinet, for example)

4. Record all measurements

F. Possible problems

1. “Great” rooms

- a. A kitchen, dining room, family room, or living room may not have walls that provide definitive separation.
- b. These areas may look like one large, open room.
- c. Guideline: If you can physically build a wall around a room without changing the traffic-flow pattern of the house, you have individual rooms.
- d. Professionals should create *fake* walls to differentiate the rooms.
 - (1) Use common sense
 - (2) Find natural breaks
 - (3) Measure from fake wall to real wall

2. Measuring multiple stories

- a. When measuring a two-story house, professionals might measure the main story and double the amount to account for both stories.
- b. The second story might not feature the same dimensions as the first story.

- c. Open foyers and one-and-a-half-story houses may present similar problems.
 - (1) In regard to open foyers, measurements of the stairwell, treads, and landings should be included in the finished square footage because it is finished space.

3. Porches

- a. Four-season porches
 - (1) Appraisers often do not use the term *porch* because people in different regions have different visions of porches.
 - (2) A four-season porch must provide heat, be insulated, and have normal windows. If it features all those elements, it technically is not a porch—it is a *sunroom*.
- b. Three-season porches
 - (1) Do not have heat sources
 - (2) Not used during winter months
- c. Measuring porches
 - (1) Real estate professionals do not include four-season porches in the total square footage of the foundation.
 - (2) The foundation should be measured separately, and the measurements of the porch should count toward the above-ground finished square footage.

4. Room purpose

- a. Just because a room features a bed or a desk does not make it an office or a bedroom.
- b. Professionals should look beyond what is actually in the room.
- c. Do not look at how the room is being used; instead, observe the structural elements of the room.
 - (1) How far off the floor does a window have to be?
 - (2) How wide must a window open to allow for an escape?
 - (3) State and local codes may determine which rooms are allowed to be bedrooms.

5. Unfinished rooms

- a. In regard to any unfinished room (utility rooms, furnace rooms, laundry rooms, etc.), measure the size of the unfinished area and subtract the square feet from the finished area of the foundation.

G. Things to remember

1. **Appraisers are not required to draw all interior walls of a residential property; however, they do have to indicate which rooms are which in the report.**
 - a. This guideline is to ensure that the home has a typical and operational flow.
 - b. This is a Fannie Mae guideline.
2. **Lenders may require that all interior walls, doorways, bathroom fixtures, kitchen fixtures, and kitchen appliances be included in the drawing of the report.**
 - a. This also may be a requirement of appraisal companies.
3. **Interior measurements mainly are used for agents to indicate room counts and sizes on MLS sheets.**
 - a. Providing room counts and room measurements benefits prospective buyers, who might want to make sure that their furniture will fit.
4. **An appraiser or a real estate professional should do the same things in the same order at every property.**
 - a. Having a routine order of events will help prevent a task from being overlooked or forgotten.
 - b. Measure by floor, rather than measuring all bedrooms then all bathrooms, for example, because some rooms may be overlooked or forgotten when moving through the home. Homes with multiple levels also can be very confusing.
5. **Many appraisers will measure the exterior first and then come inside to measure the rooms and place them into the drawings.**

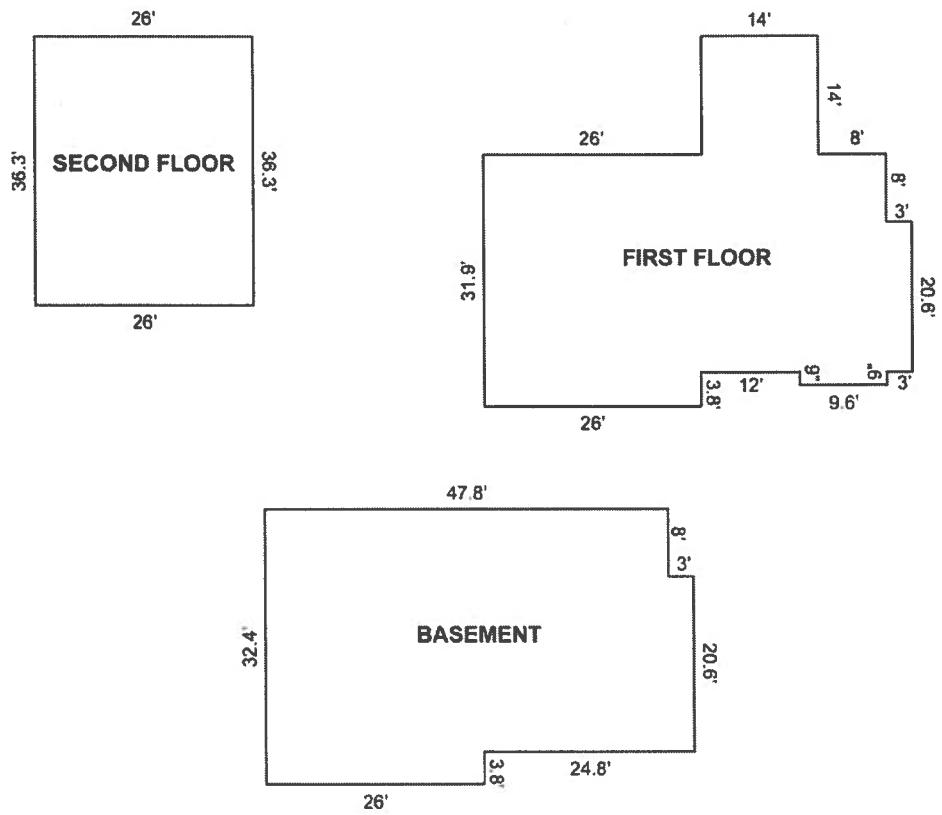
6. **An appraiser or real estate professional would not always measure a feature of a room (such as a bay window); instead, measure wall to wall.**

7. **Appraisers and real estate professionals might have to measure a new home design known as a great room, which is a room that is completely open but consists of the kitchen, dining room, and living room/family room.**
 - a. Great rooms are measured as individual rooms when a wall can be erected around an area without obstructing the traffic-flow pattern of the home.
 - (1) This is a process that requires some imagination.
 - (2) Imaginary or *fake* walls must be created around areas to define rooms and their sizes.
 - (3) There often are architectural features that will help identify where a *fake* wall should be created, such as the end of a kitchen counter, the opening to an additional room, pillars within the area, and half-walls.
 - (4) Appraisers and real estate professionals will need to rely on their professional judgment when designating these areas.

H. Measurement exercise

1. Area calculations

- a. What is the area of the first floor?
- b. What is the area of the second floor?



2. Answers

- a. First floor
 - (1) $14 \times 14 = 196$
 - (2) $3 \times 20.6 = 61.8$
 - (3) $0.9 \times 9.6 = 8.64$

$$(4) 26 \times 3.8 = 98.8$$

$$(5) 48 \times 28.1 = 1,348.8$$

$$(6) \text{ Total} = 1,714.04$$

b. Second floor

$$(1) 26 \times 36.3 = 943.8$$

$$(2) \text{ Total GLA} = 2,657.85$$

How to Measure Real Property OnDemand Courses

Unit Title		Total Mins/Unit	Learning Objective
Unit 1: History, Language, and Guidelines	Problems Based on Age of House - 10 min, The Basics - 5 min, Water Intrusion - 5 min, Foundation Movement/Settling 10 min, Insects - 5 min Building within a Climate Contest - 10 min	45	Discuss the history and guidelines of property measurement and language. Calculate square footage of a home.
Unit Exam		15	
Unit 2: Styles, Design and What Counts	The Basics - 15 min, Biggest Offenders/Problems - 15 min, Control Strategies - 15 min	45	Recognize nuances and styles of design. Demonstrate what to measure and how to measure.
Unit Exam		15	
Unit 3: The Art of Measuring	The Basics - 15 min, Biggest Offenders/Problems - 15 min, Control Strategies - 15 min	45	Explain what to look for when measuring a home. Measure the interior and exterior of a home.
Unit Exam		15	
		180.0	TOTAL MINUTES