

The slide features the Bureau of Land Management logo on the left, which includes the text 'NATIONAL SYSTEM OF PUBLIC LANDS', 'U.S. DEPARTMENT OF THE INTERIOR', and 'BUREAU OF LAND MANAGEMENT'. To the right of the logo, the text '2000-16' is displayed. The main title 'Interpret & Write Descriptions of Land' is in a large white font on a dark background, with 'The Public Land Survey System' in a smaller white font on a green background below it. At the bottom, three images are shown: two people in the field with a surveying instrument, a historical survey map, and a commemorative coin.

Interpret and Write Descriptions of Land: The Public Land Survey System

MODULE OVERVIEW



This module provides the foundational concepts and terminology of the Rectangular Survey System:

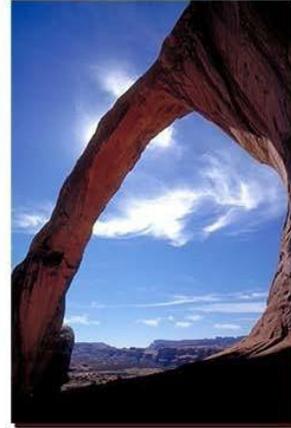
interpreting land location on a map, writing a description of the land using the nomenclature of the Public Land Survey System, and emphasizing the importance of punctuation placement.

This module provides the foundational concepts and terminology of the Rectangular Survey System: interpreting land location on a map, writing a description of the land using the nomenclature of the Public Land Survey System, and emphasizing the importance of punctuation placement.

Objectives

The objectives of this module are to help you:

- Explain key land description terminology
- Apply principles of Rectangular Survey System
- Interpret Subdivisions of Sections (aliquot parts)
- Explain excess or deficiency due to convergence
- Explain why lots were created
- Describe the Preferred Writing Method elements and proper use
- List the four most commonly used map types and define their use for land descriptions



The objectives of this module are to help you: explain key land description terminology, apply principles of Rectangular Survey System, interpret subdivisions of sections (aliquot parts), explain excess or deficiency due to convergence, explain why lots were created, describe the preferred writing method elements and proper use, and list the four most commonly used map types and define their use for land descriptions.

A presentation slide for Lesson 1: Rectangular Survey System. On the left is the Bureau of Land Management logo, which includes the text "NATIONAL SYSTEM OF PUBLIC LANDS", "U.S. DEPARTMENT OF THE INTERIOR", and "BUREAU OF LAND MANAGEMENT" above a stylized landscape with a river, mountains, and a tree. To the right of the logo, the text "Lesson 1" is displayed in white on a dark grey background, and "Rectangular Survey System" is displayed in white on a green background. Below these elements are three small images: a surveyor using a tripod-mounted instrument, a historical survey map, and a silver coin with the BLM logo and the text "U.S. DEPARTMENT OF THE INTERIOR" and "BUREAU OF LAND MANAGEMENT".

Lesson 1: Rectangular Survey System

Objectives

After completing this lesson, you should be able to:

- Explain key land description terminology
- Apply principles of Rectangular Survey System
- Interpret Subdivisions of Sections
- Describe the Preferred Writing Method elements and proper use

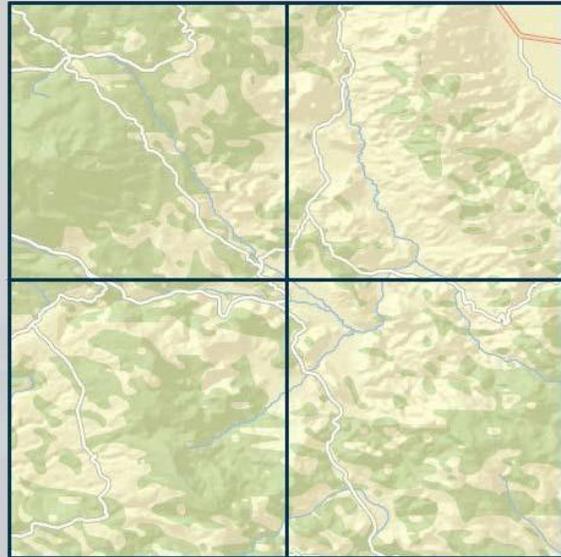


After completing this lesson, you should be able to: explain key land description terminology, apply principles of Rectangular Survey System, interpret subdivisions of sections, and describe the preferred writing method elements and proper use.

Rectangular Survey System

- Provides simplicity to interpreting and describing any piece of land

Specifications Reference: Chapter II

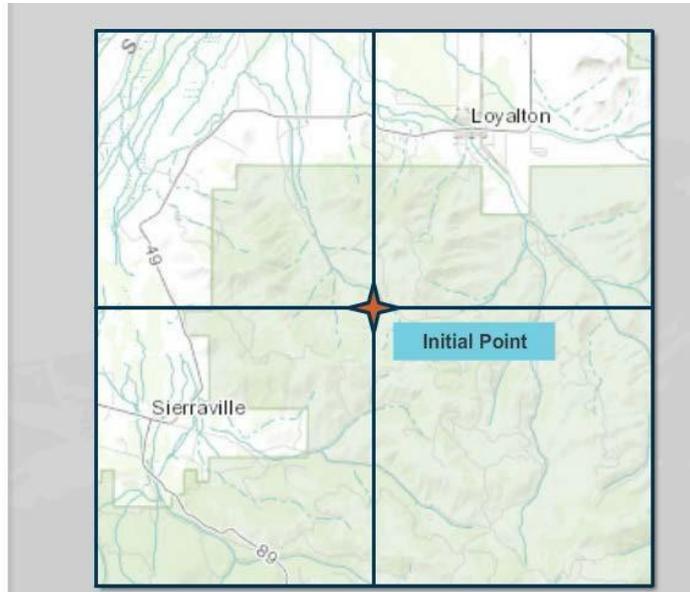


The Rectangular Survey System was created to provide simplicity to interpreting and describing any piece of land, located on a map or on the ground, and where practicable, its units are in a rectangular grid form. Rectangular Survey information can be found in Chapter II of the Specifications.

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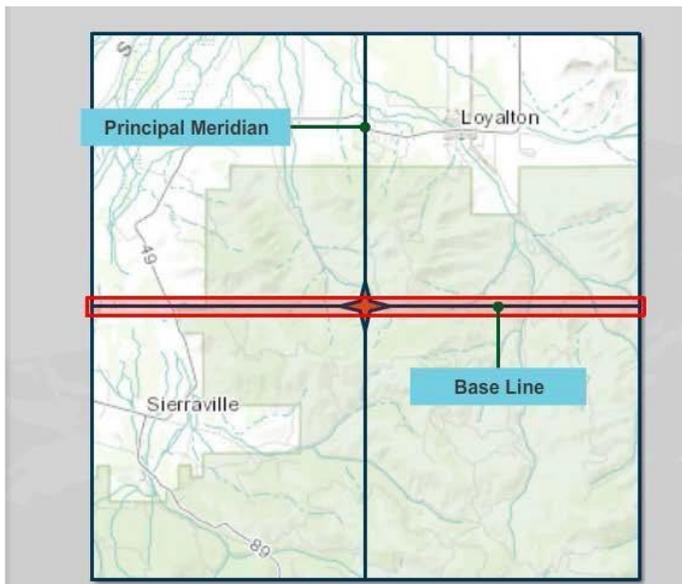
The Rectangular Survey System is a grid of lines based upon a true meridian and is originated from an **initial point**.

The surveyor establishes an initial point.



The Rectangular Survey System is basically a grid of lines based upon a true meridian and is originated from an initial point. To begin the grid, the surveyor establishes an initial point from which to begin surveying.

From the initial point, the surveyor extends a north-south line called a **Principal Meridian** and a **Base Line** running east and west parallel to the equator.



From the initial point, the surveyor extends a north-south line called a Principal Meridian and a Base Line running east and west parallel to the equator.

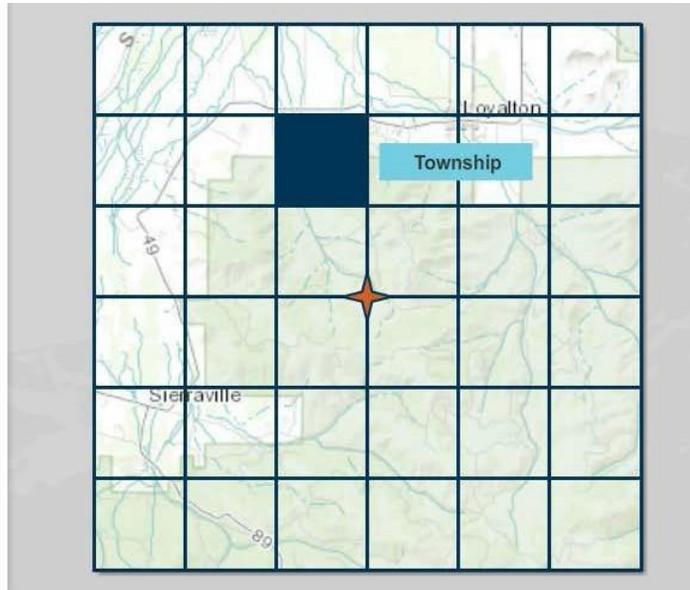
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Along the north-south line, the surveyor establishes **township lines** north and south from the initial point.

Each line is created at 6 **nominal mile intervals**.

Along the east-west line, the surveyor establishes **range lines** east and west from the initial point also at 6 nominal mile intervals.

Each of these 6 by 6 nominal mile squares is called a **township**.



Along the north-south line, the surveyor establishes township lines north and south from the initial point. Each line is created at 6 nominal mile intervals. Along the east-west line, the surveyor establishes range lines east and west from the initial point also at 6 nominal mile intervals. Each of these 6 by 6 nominal mile squares is called a township.

SkillCheck

Match the letter to its term.

<input type="text"/>	▼	Township
<input type="text"/>	▼	Base Line
<input type="text"/>	▼	Township Line
<input type="text"/>	▼	Initial Point
<input type="text"/>	▼	Range Line
<input type="text"/>	▼	Principal Meridian

Correct Answers: A. Township Line, B. Principal Meridian, C. Range Line, D. Initial Point, E. Base Line, and F. Township.

SkillCheck

A Township is how many nominal miles wide and high?

- A. 1
- B. 5
- C. 6
- D. 10

Correct Answer: B. 5

Each township is subdivided into 36 sections of one square nominal mile each.

Section numbering begins at number one in the upper right northeast.

Sections are numbered right to left and left to right down the rows until reaching the lower right southeast section.

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Each township is further subdivided into thirty-six sections of one square nominal mile each. Section numbering begins at number one in the upper right northeast. Sections are numbered right to left and left to right down the rows until reaching the lower right southeast section. This wandering arrangement is based on how farmers plowed their land or “as the ox plows.” The benefits of this numbering system guarantee that a section is always adjoined by its preceding and succeeding section. A section will never end up next to a confusingly numbered section in an adjoining township.

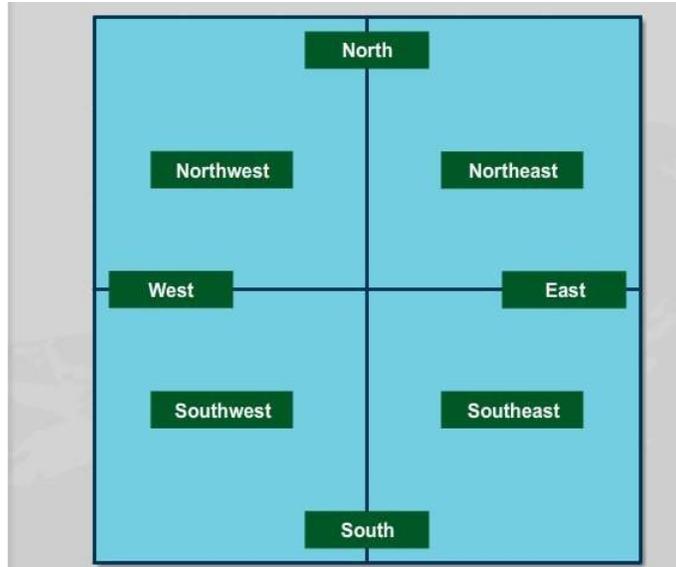
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Each township is subdivided into 36 sections of one square nominal mile each.

Section numbering begins at number one in the upper right northeast.

Sections are numbered right to left and left to right down the rows until reaching the lower right southeast section.

When describing portions of regular sections, **aliquot** parts, or exact divisions of the whole are used. Quarters are described in their relative position within the section.



When describing portions of regular sections, aliquot parts, or exact divisions of the whole are used. In other words, quarters are described in their relative position within the section. Any parcel listed as northeast, northwest, southwest, or southeast is a quarter part. A combination of aliquot parts, for example two equal quarters, can be described as half of a section. A parcel reading north, south, east, or west is a half part. Later you will learn the use of “half of a half” descriptions that must be avoided in writing descriptions of land.

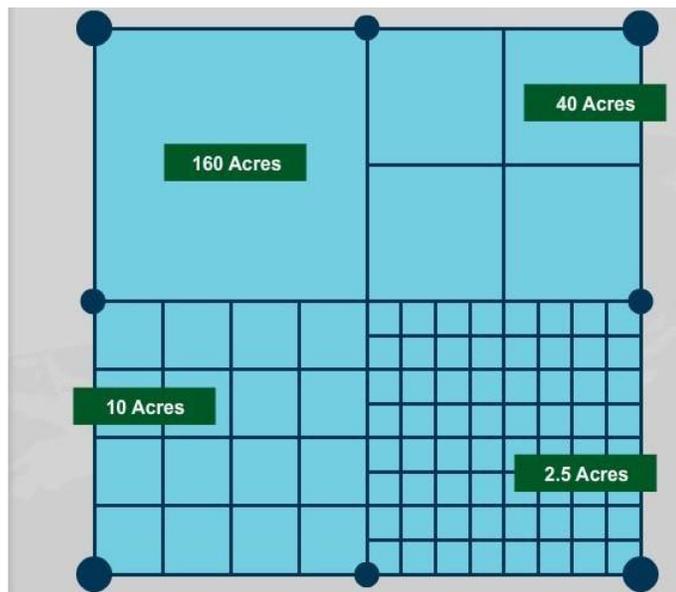
Along the township and range lines, **corner monuments** are set every nominal mile at all **section corners**.

Monuments, called **quarter corners**, are set at mid-point between each mile marker.

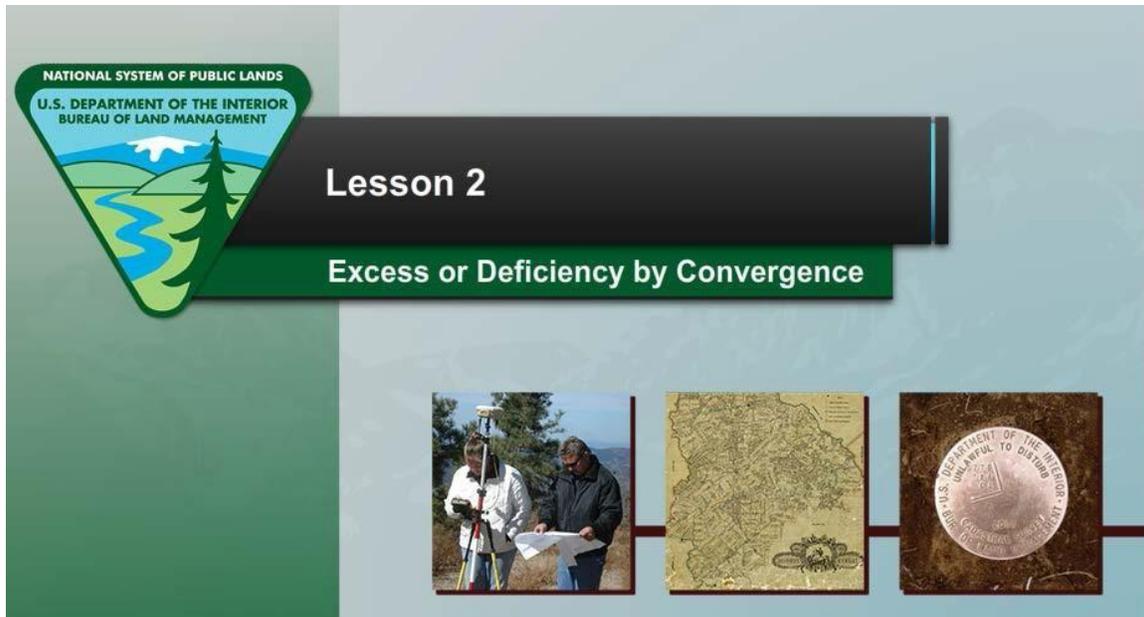
These monuments are called quarter corners because when connected, they form the legal boundaries that divide each section into quarters.

Quarter parts can be subdivided into quarters equal to 40 acres each. The 40 acre quarter-quarter is considered the standard land unit.

Quarters can then be subdivided into quarters equal to 10 acres each. These 10 acre quarters can be subdivided into quarters equal to 2 ½ acres each.



Along the township and range lines, corner monuments are set every nominal mile at all section corners. Monuments, called quarter corners, are set at mid-point between each mile marker. These monuments are called quarter corners because when connected, they form the legal boundaries that divide each section into quarters. Quarter parts can be further subdivided into quarters and each quarter equal to 40 acres. The 40 acre quarter-quarter is considered by BLM as the standard land unit for management purposes. However, these quarters can then be further subdivided into quarters and each quarter equals to 10 acres. These 10 acre quarters can then be further subdivided into quarters and each of these quarters is equal to 2 ½ acres.



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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Lesson 2

Excess or Deficiency by Convergence



Lesson 2: Excess or Deficiency by Convergence

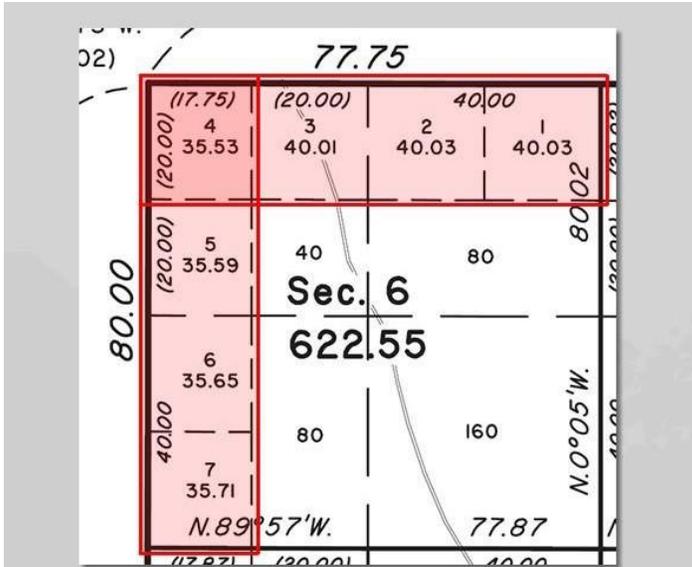
Objectives

After completing this lesson, you should be able to:

- Explain the principle of creating lots within the rectangular survey system due to excess or deficiency in land areas with a township or section.



After completing this lesson, you should be able to: Explain the principle of creating lots within the rectangular survey system due to excess or deficiency in land areas with a township or section.



Not all sections contain 640 acres contrary to the plan of the rectangular system shown.

Sections along the north tier and west range of a regular township are often **irregular sections** and contain lots.

- Lots:**
- Designated by section
 - Given a lot number
 - May contain more or less than 40 acres
 - Considered a subdivision unit of a section

For various reasons, not all sections contain 640 acres, which is contrary to the plan of the rectangular system as shown here. The sections along the north tier and the west range of a regular township are often irregular sections and contain lots. These non-aliquot parts are designated by section and given a lot number. Though lots may contain more or less than 40 acres, they are considered a subdivision unit of a section.



Range lines do not continue in a straight line because of the curvature of the Earth's surface.

If not corrected, the township on the baseline would contain more area than one further north.

As a surveyor works north from the initial point, range lines do not continue in a straight line because of the curvature of the Earth's surface. If not corrected, the township on the baseline would contain more area than one further north.

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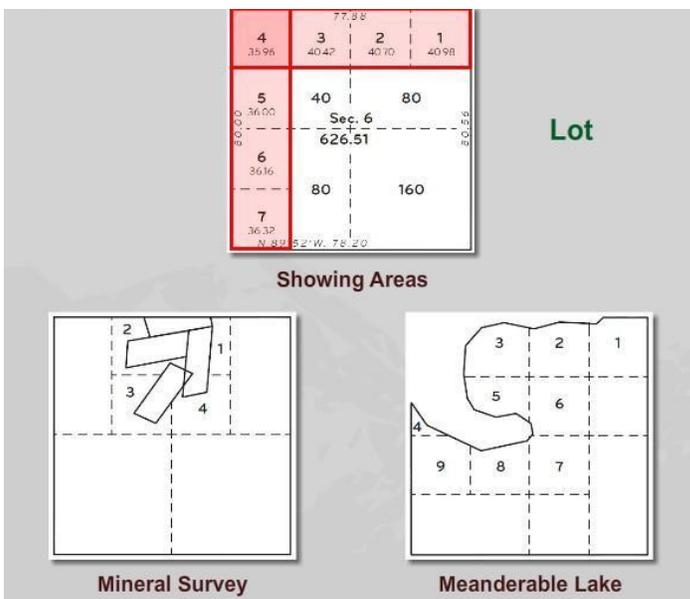


Range lines do not continue in a straight line because of the curvature of the Earth's surface.

If not corrected, the township on the baseline would contain more area than one further north.

To correct for this convergence, surveyors establish *guide meridians* and *standard parallels* every 24 miles in each direction from the initial point.

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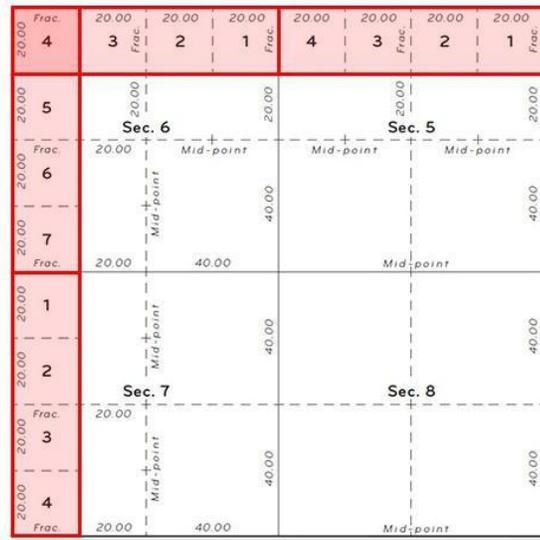
A land unit called *lots* was created.

- Lotting** usually occurs in the north and west of each township due to:
- Excess and deficiency created by convergence
 - Abutting a previously surveyed township
 - Mineral surveys
 - **Meandering** of rivers and lakes

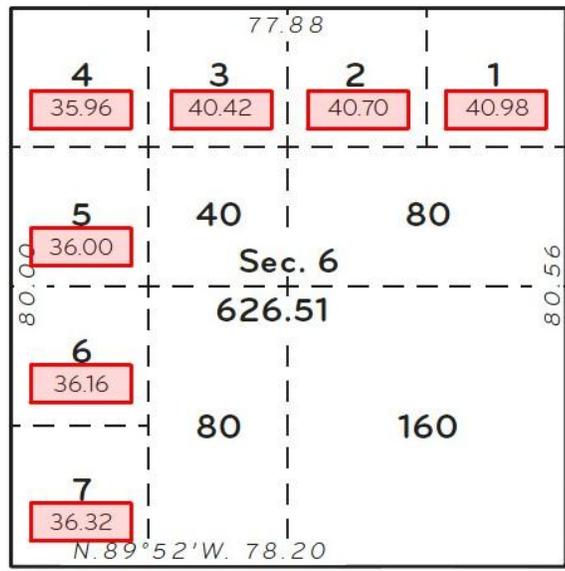
Reference: 2009 Manual of Survey Instructions Reference: Chapter 3, Subdivision of Sections

To compensate for loss in acreage to the convergence a land unit called lots was created. Lotting usually occurs in the north and west of each township. This is due to excess and deficiency in area created by convergence or because the township is abutting a previously surveyed township. Lotting also occurs when special surveys such as mineral surveys, and the meandering of rivers and lakes because the reduced land area around them cannot be described in aliquot parts. Lots are numbered similar to the 36 sections of a township. Lots are normally numbered starting in the northeast corner of the section in a counterclockwise direction but because of irregularities of land features lot numbering systems do vary. Following are visual examples of how a lotting scheme is portrayed on plats. Additional details can be found in Chapter 3, Subdivision of Sections in the 2009 Manual of Survey Instructions.

Aliquot Parts

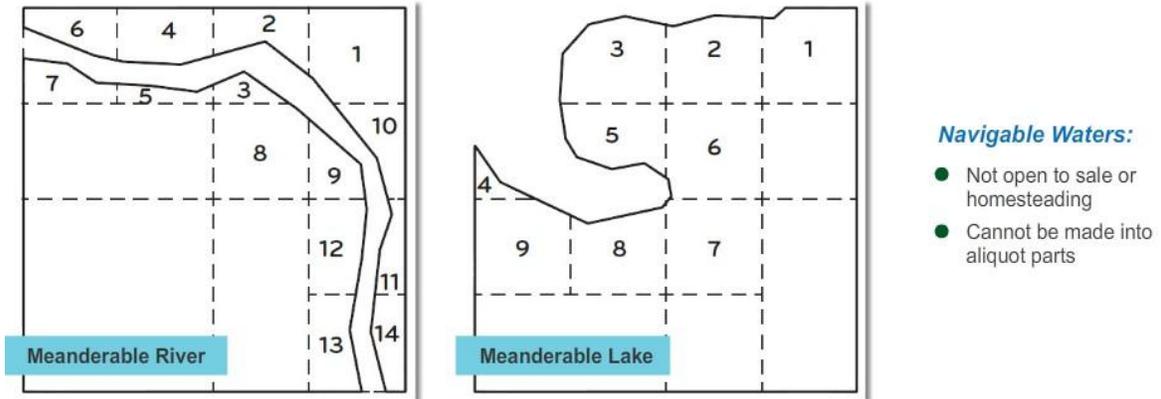


Displayed here is an example of typical lotting. Notice all quarters are aliquot parts. The lots displayed here are equal. Also, notice how the lots are numbered. In the northeast quarter, the lots are numbered right to left across the top. In the southwest quarter, the lots are numbered top to bottom. In the northwest quarter, the lots are numbered right to left across the top and then from the top down.



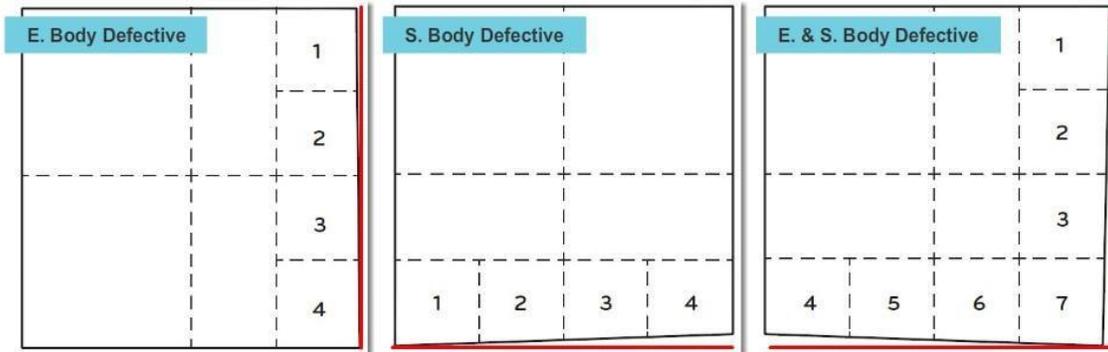
Again, you must consider the Earth curves moving north. To adjust for this, the boundary lines along the north and west sides of a township do not make a perfect square. Notice here each lot includes a differing acreage. Starting at lot seven and moving up to lot four, you will notice the acreage decreases as does lot one to lot four.

Numbering Varies from State to State



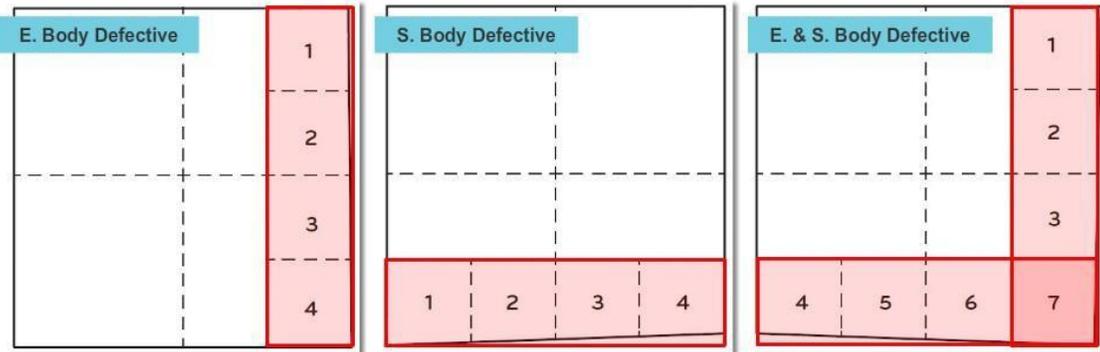
When navigable bodies of water are involved, such as a meandered river or lake, lots are used to define those areas. The beds of those waters are not open to sale or homesteading and cannot be made into aliquot parts within the section. It is important to note lot numbering procedures vary from state to state.

Runs into Previously Surveyed Area Surveyed under 2009 Manual of Survey Instructions



In these examples, the borders have been exaggerated so that you can see the defects in border alignment. These are cases where the township runs into a previously surveyed area or have been resurveyed under the rules set forth in the 2009 Manual of Survey Instructions. In the first example, the east border is defective, in the second the south, and in the third both the east and south borders.

Lots Identified by Unique Number



With few exceptions, lots are identified and described by the unique number it is assigned within the section. You will learn how to reference lots in writing land descriptions in the next lesson, Preferred Order and Preferred Writing Method.

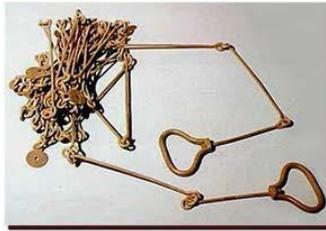
SkillCheck

True or False: Like aliquot parts, lots within a section contain equal acreage.

- A. True
- B. False

Correct Answer: B. False.

Chain Unit



- Invention of Edmund Gunter
- 100 links measure 66 feet

Various Units of Measures:

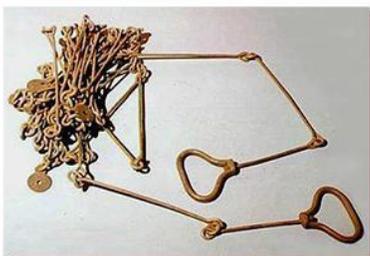
- Linear
- Area

Referenced on Plats and Maps Today



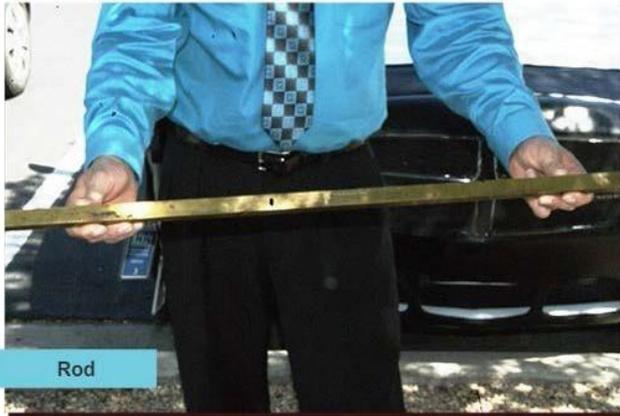
When reading from a map or plat, you will notice various units of measures: units of linear measure and units of area measure. These will most likely be represented by the terminology used at the time the plat was created. During the early growth of our nation, the United States adopted the use of a linear measurement called the chain unit. It was the 17th-century invention of Edmund Gunter, an English astronomer. Gunter's link chain was 66 feet long and divided into 100 equal links. The chain unit term and measurement is still referenced on plats and maps today.

Units of Linear Measure	Units of Area
1 chain = 100 links = 66 feet (U.S. Survey Foot)	1 acre = 43,560 square feet (U.S. Survey Foot)
1 mile = 80 chains = 5,280 feet (U.S. Survey Foot)	1 square mile = 640 acres = 80 chains by 80 chains



As you see here in the chart, the chain measurement is used both in linear and area measures. Regarding linear measure, a chain includes 100 links with each link being 7.92 inches. The 100 links measure 66 feet with 1 mile being equivalent to 80 chains when strung end to end. Regarding area measure, one acre is equivalent to 43,560 square feet formed into a square. One square mile equates to 640 acres or 80 chains by 80 chains.

16.5 Feet



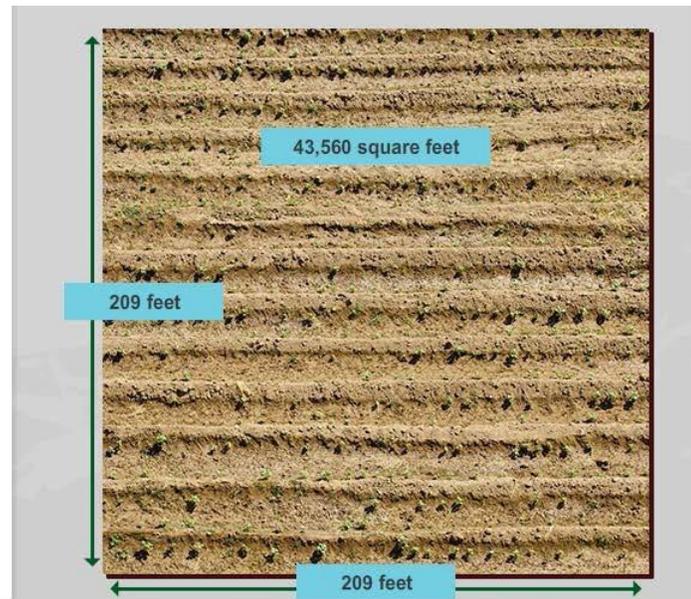
Arizona BLM Standard Yard - courtesy Az. State Office

Colonial Unit of Measure:

- Pole or rod
- Can be used as a standard unit of measure
- Perch
- Derived from Latin meaning pole or staff

Another historic unit of measure was the pole or rod or perch. Like the acre, common units of linear measure were brought to the American Colonies from Europe. A pole or rod of an exact length can be used as the “standard” like other identical forms measuring tools can be copied. The word perch is derived from the Latin word meaning a pole or staff.

The quantity of land within the bounds of a description is most commonly expressed in “acres.”

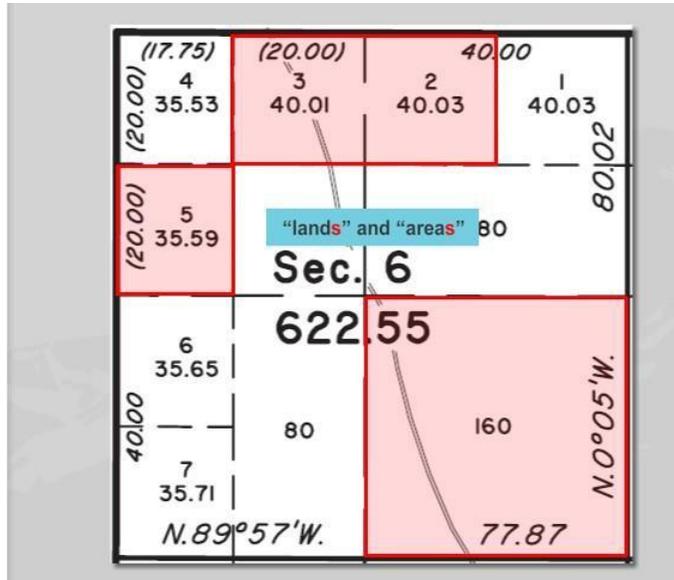


The quantity of land within the bounds of a description is most commonly expressed in “acres.” It is said that during the Middle Ages, an acre was the amount of land that could be ploughed in one day with a yoke of oxen. One acre equals 43,560 square feet, and is approximately the land contained in a 209 foot by 209 foot square.

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The quantity of land within the bounds of a description is most commonly expressed in "acres."

The terms "land" and "area" are used when referring to a group of parcels that have common boundaries.



When preparing land descriptions in accordance to the "Specifications," the terms "land" and "area" are used when referring to a group of parcels that have common boundaries. The terms "lands" and "areas" are used when referring to a group of parcels being described that do not have common boundaries.

Where **unsurveyed land** is included, the acreage as shown upon the official **protraction diagrams** of the township will be used.

Where land is not returned on an official survey plat and there is no official protraction diagram, an approximate area will be given in even acres.



If the lands described are entirely surveyed, the legal acreage as shown upon the official plats of survey is used. Where unsurveyed land is included, the acreage as shown upon the official protraction diagrams of the township will be used. Where land is not returned on an official survey plat and there is no official protraction diagram, an approximate area will be given in even acres.

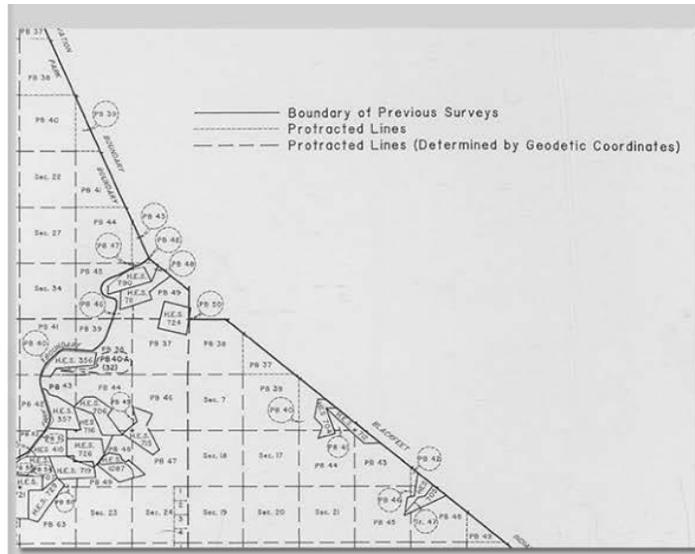
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Where **unsurveyed land** is included, the acreage as shown upon the official **protraction diagrams** of the township will be used.

Where land is not returned on an official survey plat and there is no official protraction diagram, an approximate area will be given in even acres.

Protraction diagrams serve as a plan of survey for if an Official Cadastral Survey were to be performed over unsurveyed land.

Specifications Reference: Area, Chapter II



Protraction diagrams serve as a plan of survey for if an Official Cadastral Survey were to be performed over unsurveyed land. See Area in Chapter II of the Specifications for more information.

SkillCheck

One chain unit is equivalent to how many feet?

- A. 66 feet
- B. 80 feet
- C. 100 feet
- D. 5,280 feet

Correct Answer: A. 66 feet

SkillCheck

BLM considers how many acres to be the standard land unit for management purposes?

- A. 160 acres
- B. 40 acres
- C. 10 acres
- D. 2.5 acres

Correct Answer: 40 acres

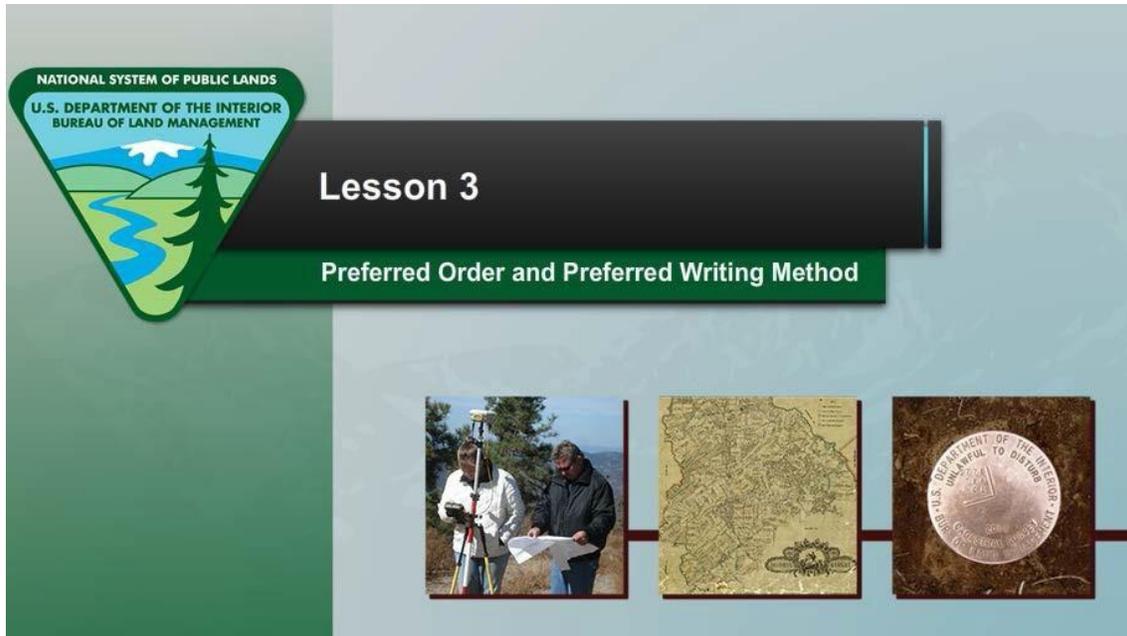
SkillCheck

Using the example plat measurements, what is the width and length in feet?

- A. 1,055 feet x 1,320 feet
- B. 1,155 feet x 1,220 feet
- C. 1,255 feet x 1,220 feet
- D. 1,155 feet x 1,320 feet
- E. 1,055 feet x 1,220 feet



Correct Answer: D. 1,155 feet x 1,320 feet



The slide features the Bureau of Land Management logo on the left, which includes the text "NATIONAL SYSTEM OF PUBLIC LANDS", "U.S. DEPARTMENT OF THE INTERIOR", and "BUREAU OF LAND MANAGEMENT" above a stylized landscape with a mountain, river, and tree. To the right of the logo, the text "Lesson 3" is displayed in a large white font on a dark grey background, with "Preferred Order and Preferred Writing Method" in a smaller white font on a green background below it. At the bottom of the slide, three small images are arranged horizontally: a modern surveyor using a tripod-mounted instrument, a historical map, and a 50-cent coin with the text "U.S. DEPARTMENT OF THE INTERIOR" and "UNLAWFUL TO DISTURB" around a central emblem.

Lesson 3: Preferred Order and Preferred Writing Method

Objectives

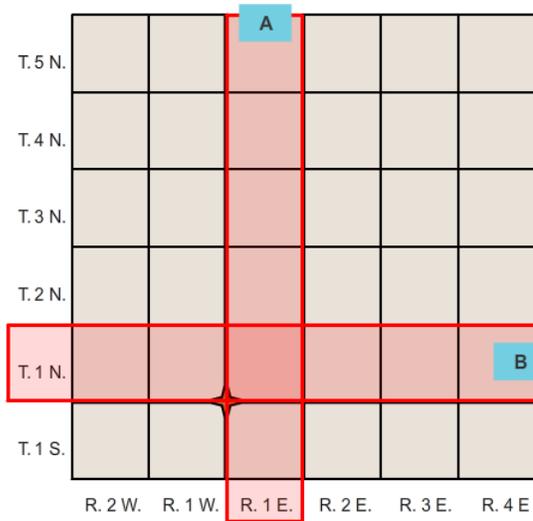
After completing this lesson, you should be able to:

- Explain the preferred order and preferred writing method for a description of land
- Describe the importance of proper punctuation and how improper punctuation can adversely affect written descriptions



After completing this lesson, you should be able to: explain the preferred order and preferred writing method for a description of land and describe the importance of proper punctuation and how improper punctuation can adversely affect written descriptions.

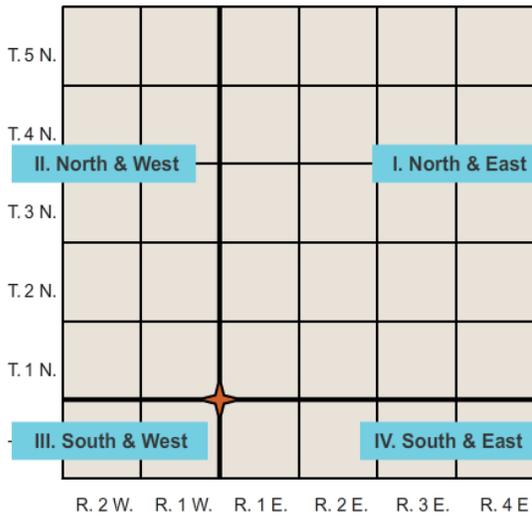
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Preferred (Numerical) Order:

- A. Lowest Range number
- B. Lowest Township number

The preferred numerical order of listing of a land description is to begin with the lowest range number. Also start with the lowest number within each range by the township numbers.



Preferred (Numerical) Order:

- A. Lowest Range number
- B. Lowest Township number
- C. Principal Meridian/Base Line
- I. North & East
- II. North & West
- III. South & West
- IV. South & East

Where townships east and west of the principal meridian or north and south of the base line or both are involved, first list those north and east of the initial point, followed by those north and west, south and west, and finally south and east. Describe all the parts of each township and range before proceeding to the next township and range.

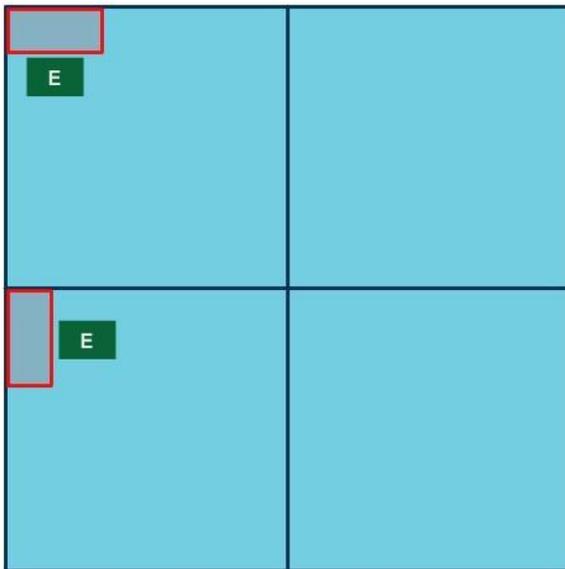
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6	5	4	3	2	1
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30	29	28	27	26	25
31	32	33	34	35	36

Preferred (Numerical) Order:

- A. Lowest Range number
- B. Lowest Township number
- C. Principal Meridian/Base Line
 - I. North & East
 - II. North & West
 - III. South & West
 - IV. South & East
- D. Lowest Section number

For sections, begin with the lowest-numbered section in each township.

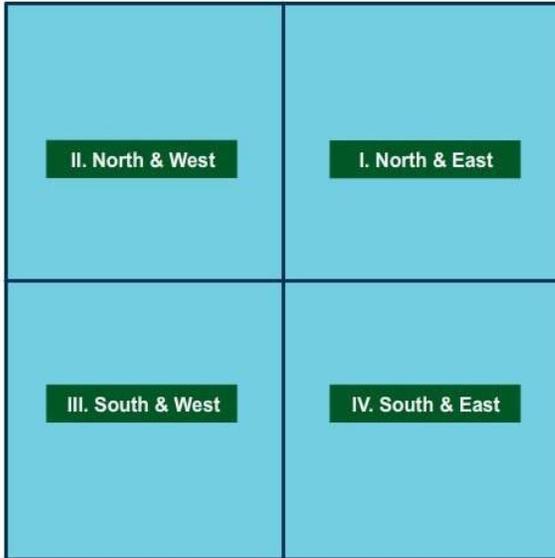


Preferred (Numerical) Order:

- A. Lowest Range number
- B. Lowest Township number
- C. Principal Meridian/Base Line
 - I. North & East
 - II. North & West
 - III. South & West
 - IV. South & East
- D. Lowest Section number
- E. Lot numbers

First, give the lot numbers in order.

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Preferred (Numerical) Order:

- A. Lowest Range number
- B. Lowest Township number
- C. Principal Meridian/Base Line
 - I. North & East
 - II. North & West
 - III. South & West
 - IV. South & East
- D. Lowest Section number
- E. Lot numbers
- F. Subdivisions
 - I. North & East
 - II. North & West
 - III. South & West
 - IV. South & East

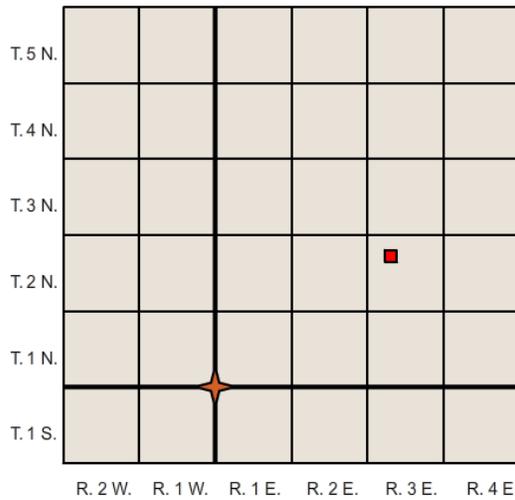
Then list the subdivisions within each quarter section in the order NE, NW, SW, and SE. If parts of the quarter-sections are to be described, follow the same order and describe all the parts of each quarter section before proceeding to the next quarter-section.



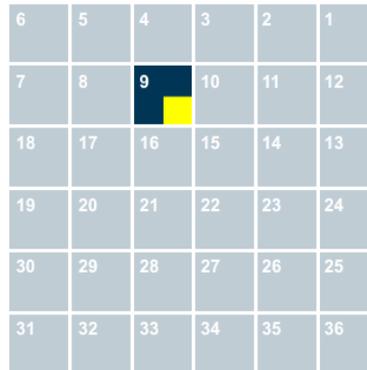
Preferred (Numerical) Order:

- A. Lowest Range number
- B. Lowest Township number
- C. Principal Meridian/Base Line
 - I. North & East
 - II. North & West
 - III. South & West
 - IV. South & East
- D. Lowest Section number
- E. Lot numbers
- F. Subdivisions
 - I. North & East
 - II. North & West
 - III. South & West
 - IV. South & East
- G. *Tracts*

Tracts should follow the sections because a tract is part of a township, as is a section. It is numbered the same as a section, beginning with 37 or the next highest unused numerical designation to avoid confusion with section numbers. Tracts should be listed before nonrectangular surveys, such as mineral surveys or donation land claims.



**BLM Meridian, (State)
T. 2 N., R. 3 E.,
sec. 9, SE1/4**
The area described contains 160 acres.

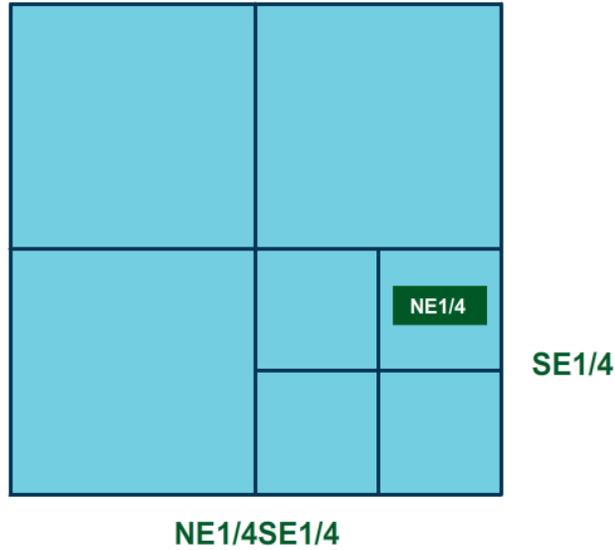


Specifications Reference: Preferred Writing Method, Chapter II

Before you can write a description of land, you must first understand what the references mean. A proper aliquot part description should contain all of the reference elements within it: principal meridian, the state the land is in, township and range, section, and lots or aliquot parts. In this lesson, you will learn some of the basic abbreviations and the order in which a description of land is written. In this example, we begin with the fictitious Bureau of Land Management Principal Meridian or BLM Meridian, (the State the land is in). Next, comes the township and range. This is written as T. 2 N., R. 3 E.. and pronounced township two north, range three east. Next is the section and any subdivision. Continuing with our example, this is written as sec. 9, SE1/4 and pronounced as section nine, the southeast quarter. Finally, the area in acres is described. This happens to be a quarter of one section and therefore is equivalent to 160 acres. See Preferred Writing Method in Chapter II of the Specifications for more information.

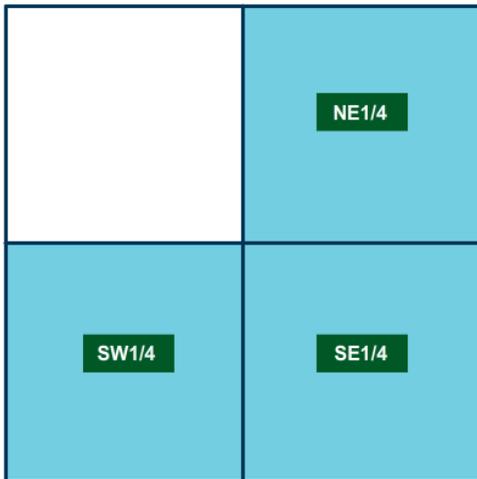
Land Description Part	Abbreviation	Example
Township(s)	T. or Tps.	T. 3 N.
Range(s)	R. or Rs.	R. 2 W.
Section(s)	sec. or secs.	sec. 19
North South East West	N. S. E. W.	T. 3 N., R. 2 W.
Northeast Southeast Northwest Southwest	NE SE NW SW	NE1/4
Lot(s)	lot or lots	lot 1 or lots 1, 2, and 4
Tract(s)	tract or tracts	tract 43 or tracts 43, 44, and 46

Please take a few moments now and review the abbreviations with their references.

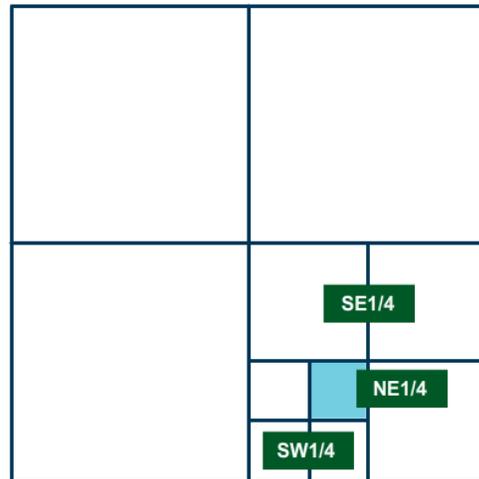


The usual punctuation is omitted in the aliquot part description. The period is omitted after N, NE, S, SE, etc., within the aliquot parts description, and there is no comma and no space between symbols indicating a quarter-quarter section (NE1/4SE1/4).

Comma Means AND THE
NE1/4, SW1/4, SE1/4 = 480 Acres

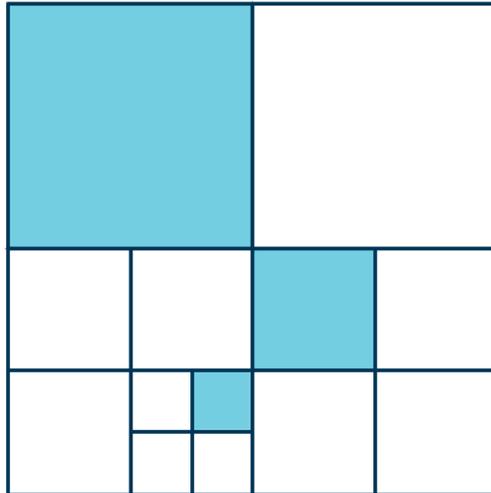


No Comma Means OF THE
NE1/4SW1/4SE1/4 = 10 Acres



The use of a comma is significant in writing the descriptions of the subdivisions of a section. A comma means AND THE and the absence of a comma means OF THE. The improper use or placement of a comma could drastically change an aliquot description and the intended acreage to be described. For example, given the description NE1/4SW1/4SE1/4 without a comma describes an aliquot part of 10 acres. With a comma, as such NE1/4, SW1/4, SE1/4 describes three aliquot parts totaling 480 acres.

NW1/4, NE1/4SE1/4SW1/4, NW1/4SE1/4 = 210 Acres



The proper use of the comma in an aliquot description is as follows: The NW1/4, NE1/4SE1/4SW1/4, NW1/4SE1/4, describes three aliquot parts containing 210 acres.

SkillCheck

Which of the following should you begin with when writing a land description in the preferred numerical order?

- A. Highest tract number
- B. Lowest range number
- C. Highest township number
- D. Lowest township number

Correct Answer: B. Lowest range number.

SkillCheck

True or False: The use of a comma is significant in writing the descriptions of the subdivision of a section. A comma means OF THE and the absence of a comma means AND THE.

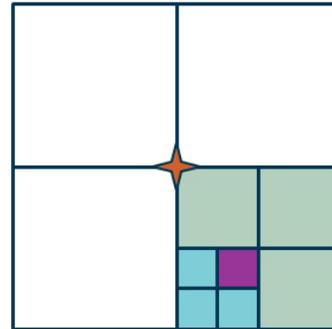
- A. True
- B. False

Correct Answer: B. False

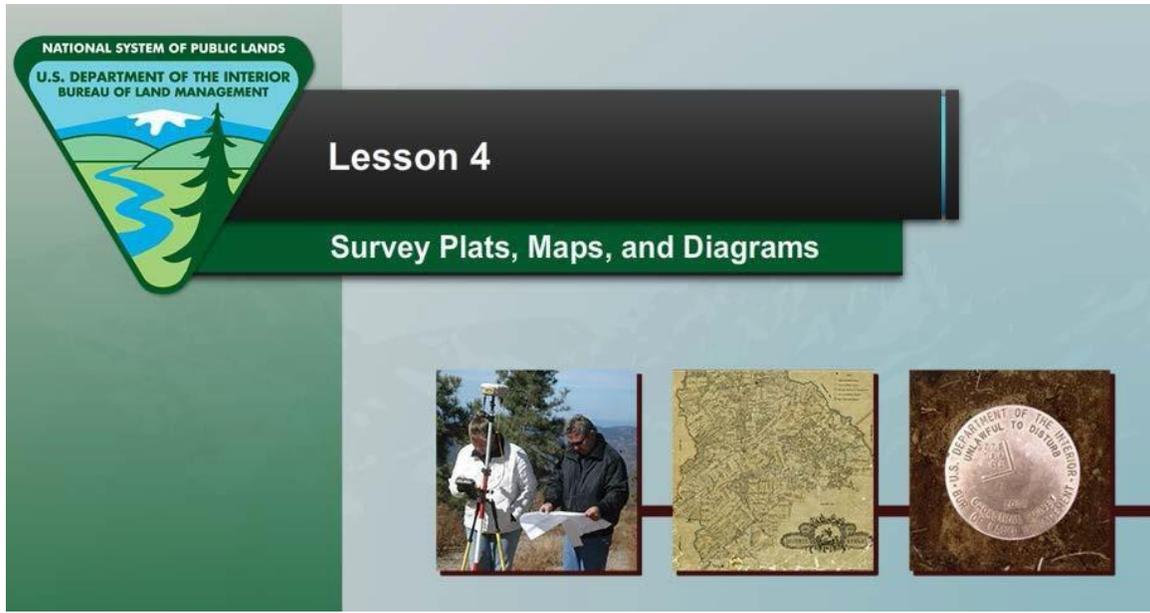
SkillCheck

Which of the following descriptions is written correctly based on the graphic displayed?

- A. NE 1/4, SW 1/4, SE 1/4
- B. NE1/4SW1/4SE1/4
- C. N.E. 1/4 of the S.W. 1/4 of the S.E. 1/4
- D. E 1/4 SW 1/4 SE 1/4
- E. NE1/4SE1/4SW1/4



Correct Answer: B. NE1/4SW1/4SE1/4



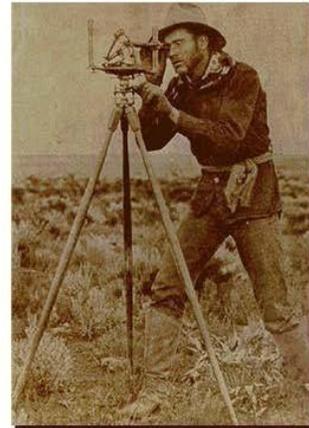
The slide features the Bureau of Land Management logo on the left, which includes the text "NATIONAL SYSTEM OF PUBLIC LANDS", "U.S. DEPARTMENT OF THE INTERIOR", and "BUREAU OF LAND MANAGEMENT" above a stylized landscape of a river, mountains, and a tree. To the right of the logo, the text "Lesson 4" is displayed in white on a dark grey background, and "Survey Plats, Maps, and Diagrams" is displayed in white on a green background. Below the title, three small images are arranged horizontally: a modern surveyor using a tripod-mounted instrument, a historical survey map, and a circular seal with the text "U.S. DEPARTMENT OF THE INTERIOR" and "UNLAWFUL TO DISTURB" around a central emblem.

Lesson 4: Survey Plats, Maps, and Diagrams

Objectives

After completing this lesson, you should be able to:

- List the four most commonly used map types
- Define their use for land descriptions

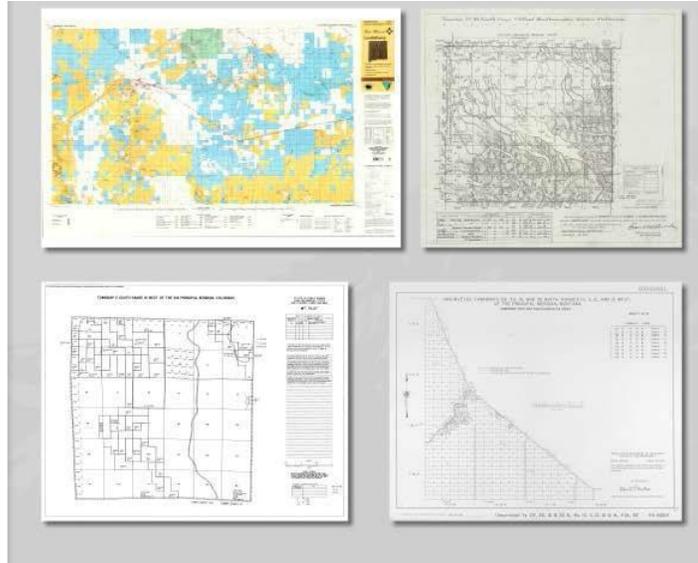


After completing this lesson, you should be able to: list the four most commonly used map types and define their use for land descriptions.

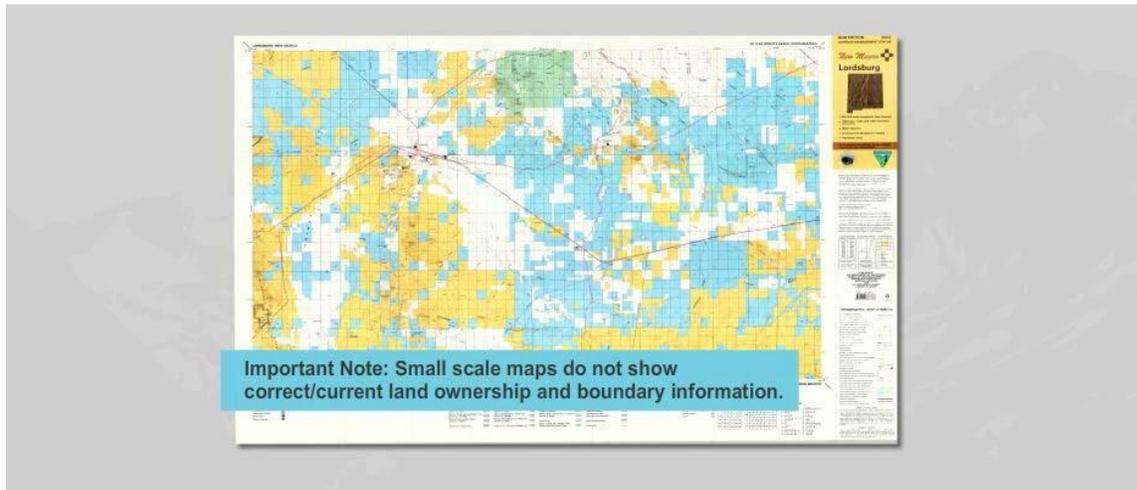
BLM Module 2: The Public Land Survey System Study Guide

Four most common *map* types:

- The Surface Management Areas Map
- Official Plat of Survey
- The Master Title Plat or MTP
- Protraction Diagram

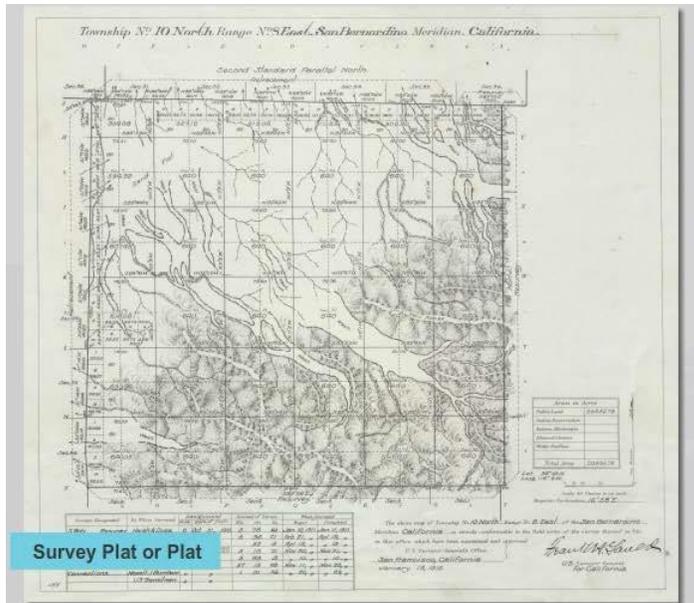


In this lesson, you will be introduced to the four most common map types you will use when interpreting and writing descriptions of land. These are: the Surface Management Areas Map, Official Plat of Survey, the Master Title Plat or MTP, and Protraction Diagram. Please note that there is a legal distinction between the terms of map and plat. Official surveys are always referred to as a plat. Let's begin with an overview of the Surface Management Areas map.



The small scale map, BLM Surface Management Map, can be used to find the general area of a parcel of land and its relation to major landmarks and transportation routes. Small scale maps also are a handy way to find a location using the PLSS grid. But it is important to know that small scale maps DO NOT necessarily show the correct and current land ownership and boundary information! Displayed here is an example of a Surface Management Map.

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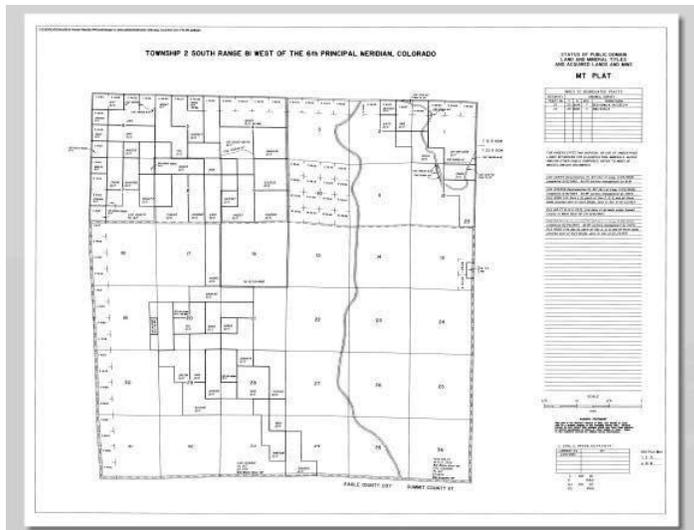
Record of Official Government Survey:

- Survey measurements
- Calculated acreage
- Land parcels that do not conform to rectangular survey system

Plats Found at:

- BLM State Office Public rooms
- BLM State Office web sites
- GLO Records Automation web site

The Official Plat of Survey is commonly called a survey plat or plat. This is the record of official government survey and includes the survey measurements and calculated acreage. It also displays land parcels that do not conform to the rectangular survey system. These plats can be found at BLM State Office Public rooms, online at some BLM State Office web sites or General Land Office (GLO) Records Automation web site (The Official Federal Land Records Site). An example of a survey plat is shown here.



Master Title Plat (MTP):

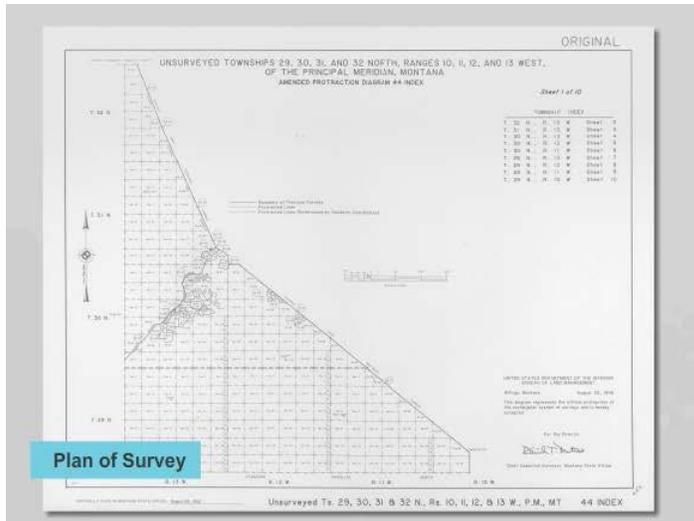
- Federal land ownership information
- Rights and reservations (patented) to private individuals

Plats Found at:

- BLM State Office Public rooms
- BLM State Office web sites
- GLO Records Automation web site

The Master Title Plat or MTP shows Federal land ownership information, including rights and reservations the Government retained on lands convey (patented) to private individuals. These plats can be found at BLM State Office Public rooms, online at some BLM State Office web sites or General Land Office (GLO) Records Automation web site (The Official Federal Land Records Site). An example of an MTP is shown here.

BLM Module 2: The Public Land Survey System Study Guide



Protraction Diagram:

- Describes un-surveyed land areas
- Governs until an official survey is performed

Where to access:

- Respective State Offices of the BLM

A Protraction Diagram is prepared for the purpose of describing unsurveyed land areas. In essence, the protraction diagram can be considered a “plan of survey” for if and when an on-the-ground survey was performed (i.e. it governs until an official survey is performed). The diagram is approved for the Director by the Chief, Division of Cadastral Survey, and filed in the respective state offices of the BLM. An example of a Protraction Diagram is shown here.

SkillCheck

Match the map type to its description.

<input type="checkbox"/> ▼	Surface Management Map	A. Used to find the initial reference area of the parcel of land in question.
<input type="checkbox"/> ▼	Official Plat of Survey	B. Used to find the survey measurements and calculated acreage and is commonly referred to as a survey plat or plat.
<input type="checkbox"/> ▼	Master Title Plat	C. Used to find Federal land ownership information.
<input type="checkbox"/> ▼	Protraction Diagram	D. Prepared for the purpose of describing un-surveyed land areas.

Correct Answers: A. Surface Management Map, B. Official Plat of Survey, C. Master Plat Title, and D. Protraction Diagram.

Summary

Having completed this module, you should now be able to:

- Explain key land description terminology
- Apply principles of Rectangular Survey System
- Interpret Subdivisions of Sections (aliquot parts)
- Explain excess or deficiency due to convergence
- Explain why lots were created
- Describe the Preferred Writing Method elements and proper use
- List the four most commonly used map types and define their use for land descriptions



Having completed this module, you should now be able to: explain key land description terminology, apply principles of Rectangular Survey System, interpret subdivisions of sections (aliquot parts), explain excess or deficiency due to convergence, explain why lots were created, describe the preferred writing method elements and proper use, and list the four most commonly used map types and define their use for land descriptions.

Quiz Answer Key

1. Review the graphic. Match the letter to its corresponding part on the image.

<input type="text"/>	T. 2 S., R. 3 E.	
<input type="text"/>	T. 1 N., R. 2 W.	
<input type="text"/>	T. 1 N., R. 2 E.	
<input type="text"/>	T. 1 S., R. 1 E.	
<input type="text"/>	T. 2 S., R. 2 W.	

Correct Answers: A. T. 1 N., R. 2 W.; B. T. 1 N., R. 2 E.; C. T. 1 S., R. 1 E.; D. T. 2 S., R. 2 W.; and E. T. 2 S., R. 3 E.

2. Match the letter to its term.

<input type="text"/>	Section	
<input type="text"/>	Aliquot Part	
<input type="text"/>	Section Corner	
<input type="text"/>	Quarter Corner	
<input type="text"/>	40-acre Quarter-Quarter	

Correct Answers: A. Aliquot Part, B. 40- acre Quarter-Quarter, C. Quarter Corner, D. Section, and E. Section Corner.

3. How many nominal miles wide and high is a Township versus a Section?

- A. Township: 1 mile and Section: 6 miles
- B. Township: 10 miles and Section: 4 miles
- C. Township: 5 miles and Section: 1 mile
- D. Township: 10 miles and Section: 5 miles
- E. Township: 6 miles and Section: 1 mile

Correct answer: E. Township: 6 miles and Section: 1 mile

4. True or False: For management purposes, BLM considers 160 acres to be the standard land unit.

Correct Answer: False

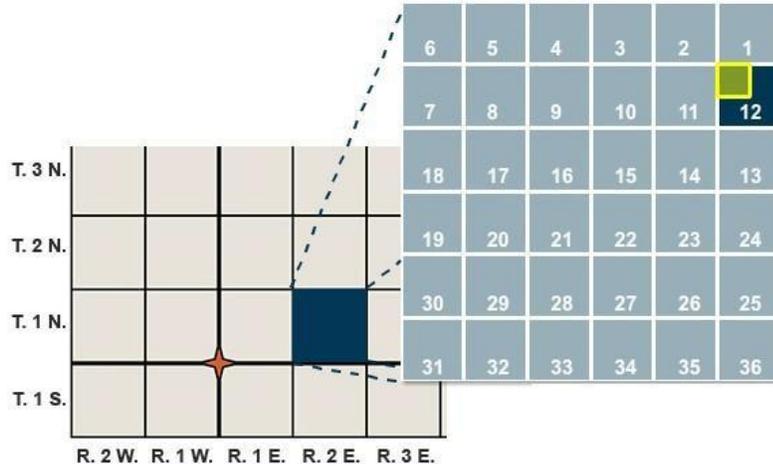
5. 132 feet is equivalent to how many chain units and how many feet is the equivalent of 5 chains?

- A. 2 chain units and 330 feet
- B. 4 chain units and 165 feet
- C. 3.3 chain units and 200 feet

Correct Answer: A. 2 chain units and 330 feet

6. Which written description of land is represented in the graphic?

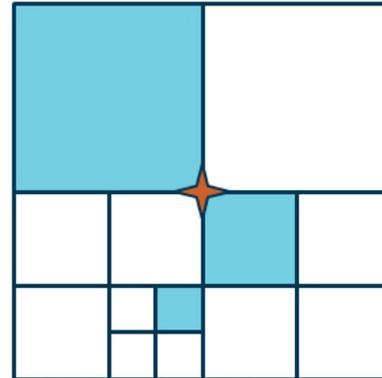
- A. BLM Meridian, Idaho
T. 3 N., R. 2 E.,
sec. 12, SW1/4
- B. BLM Meridian, Idaho
T. 1 S., R. 2 E.,
sec. 12, SW1/4
- C. BLM Meridian, Idaho
T. 1 N., R. 2 E.,
sec. 12, NW1/4



Correct Answer: C. BLM Meridian, Idaho T. 1 N., R. 2 E., sec. 12, NW1/4

7. Which is the correctly written description for aliquot parts displayed in the graphic?

- A. NW1/4, NE1/4SE1/4SW1/4, NW1/4SE1/4
- B. NW1/4, SW1/4SE1/4NE1/4, SE1/4NW1/4



Correct Answer: A. NW1/4, NE1/4SE1/4SW1/4, NW1/4SE1/4

8. What is used to find the initial reference area of the parcel of land in question?

- A. Surface Management Map
- B. Map of Official Survey
- C. Master Title Plat
- D. Protraction Diagram

Correct Answer: A. Surface Management Map

9. What is used to review the survey measurements and calculated acreage and is commonly referred to as a survey plat or plat?

- A. Surface Management Map**
- B. Official Survey**
- C. Master Title Plat**
- D. Protraction Diagram**

Correct Answer: B. Official Survey

10. What is used to review Federal land ownership information?

- A. Surface Management Map**
- B. Official Survey Plat**
- C. Master Title Plat**
- D. Protraction Diagram**

Correct Answer: C. Master Title Plat

11. How many miles in each direction from the initial point do surveyors establish guide meridians and standard parallels to correct for convergence?

- A. 1 mile**
- B. 6 miles**
- C. 24 miles**
- D. 36 miles**

Correct Answer: C. 24 miles

12. True or False: When bodies of water are involved, such as a meandered river or lake, lots are used to define those areas that cannot be made into aliquot parts.

Correct Answer: True