

# Lesson Plan: The Legacy of Early Surveyors in British Columbia

**Grade Level:** High School (Grades 10–12)

**Subject:** Social Studies, Geography, History

**Duration:** 1 class period (50–60 minutes)

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## Learning Objectives

By the end of this lesson, students will:

1. Understand the historical role of surveyors in shaping British Columbia’s urban planning and land use.
  2. Analyze the measurement systems introduced by Edmund Gunter and their impact on urban and rural landscapes.
  3. Understand the contribution of Ramsden’s Chain through the Canadian Pacific Railway.
  4. Understand the Surveyor’s Hierarchy of Evidence for determining boundaries and how this affects US border and our streets and blocks.
  5. Explore the contributions of Colonel Moody and other early planners to the development of British Columbia.
  6. Reflect on how historical land measurement systems influence modern urban and rural life.
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## Materials Needed

1. Video called Gunter’s Chain and the Legacy of Early Surveyors.
  2. Video Script and Supplemental Video Notes.
  3. Visual aids:
    - A map of British Columbia showing major streets and urban planning features (e.g., the Coast Meridian, Fraser River cities, CPR land grants).
    - Diagrams of Gunter’s Chain, furlongs, and acre subdivisions.
  4. Handouts with key terminology and historical context.
  5. Whiteboard or Smartboard for brainstorming and mapping.
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## Lesson Outline

### 1. Introduction (10 minutes)

- **Hook Question:** *“Have you ever wondered why streets in cities are laid out the way they are? Or why some cities have wide streets, narrow streets, or perfectly straight roads?”*
  - Discuss briefly to engage curiosity.

- Provide a brief overview of the role of surveyors like Edmund Gunter, Jesse Ramsden and Colonel Moody in shaping urban planning in British Columbia.
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## 2. Storytelling: The Surveyor's Legacy (15 minutes)

- **Video/Reading:** Show the video and share additional insights from Video Supplemental Notes. Highlight:
    - The significance of Gunter's Chain and its standardization of land measurement.
    - Colonel Moody's urban planning efforts, including the establishment of New Westminster, North Road, and Kingsway.
    - The relationship between land measurement, urban planning, and historical defense strategies (e.g., cities north of the Fraser River).
  - Use maps and diagrams to illustrate concepts like chains, furlongs, and townships.
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## 3. Group Activity: Mapping the Past (15 minutes)

- Divide students into small groups. Provide each group with:
    - A simplified map of the local neighbourhood or well-known area of British Columbia.
    - Key features to identify or recreate (e.g., base lines, range lines, roads, townships).
  - **Task:** Each group analyzes how historical survey systems influenced modern city layouts. They annotate the map with key historical and urban planning features.
  - **Extension for Advanced Students:** Groups propose a modification to the existing layout to address modern urban challenges (e.g., traffic flow, green spaces).
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## 4. Class Discussion: How Surveyors Shape Our Lives (10 minutes)

- Facilitate a discussion with guiding questions:
    - How do early land measurement systems like Gunter's Chain still affect our daily lives?
    - What challenges arise from using historical systems in modern urban planning?
    - How do Colonel Moody's contributions reflect the needs of his time (e.g., defense, trade)?
    - Can these historical systems be adapted to meet contemporary urban needs?
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## 5. Reflection and Wrap-Up (10 minutes)

- **Reflection Prompt:** Students write a short response to the question: “*How does the work of early surveyors both limit and liberate us today?*”
  - Volunteers share their reflections, emphasizing the lasting legacy of historical measurement and planning.
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## Assessment

1. **Participation:** Evaluate engagement in group mapping and discussions.
  2. **Annotated Maps:** Assess the depth of analysis and creativity in identifying historical influences.
  3. **Reflection Responses:** Use a rubric to evaluate critical thinking and connections to the lesson objectives.
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## Key Terms and Concepts

- **Gunter’s Chain**
  - **Furlong, Acre, and Township**
  - **Colonel Moody**
  - **Coast Meridian and Base Lines**
  - **CPR Land Grants**
  - **Urban Planning vs. Rural Layouts**
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## Extension Activities

1. **Research Project:** Investigate a specific street or neighborhood in British Columbia to uncover its historical layout and its connection to early surveying practices.
  2. **Creative Writing:** Write a journal entry from the perspective of an early surveyor or planner.
  3. **Debate:** Should cities adapt historical measurement systems to modern needs, or should they be preserved for their historical value?
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## Conclusion

This lesson encourages students to explore the fascinating history of urban planning and land measurement in British Columbia. By understanding the contributions of surveyors like Edmund Gunter, Jesse Ramsden and Colonel Moody, students gain insights into how history shapes the spaces they live in and consider the ongoing relationship between the past and the future of urban development.

## **Video Script of Gunter's Chain and the Legacy of Early Surveyors.**

We live in a world created by the early surveyors. Where they placed their posts were final. Even mistakes made on the US border remain legally binding. Once established, street systems are resilient; they have survived nuclear bombs and catastrophic fires.

Edmund Gunter standardized the measurement of land. Gunter's 66 foot Chain became the measure of our urban world. Vancouver roads are 1 or 1 1/2 chains wide. Our blocks are 2 chains wide and 6 or 8 chains long. Our homes often have 1/2 or 1 chain of frontage. An exception is the 100 foot Chain used on CPR properties.

Royal Engineer Colonel Moody anchored our region on the Coast Meridian, where the ocean meets the 49th parallel. He insisted cities be north of the Fraser River to defend against the US. He built New Westminster as the Capital, then North Road and Kingsway to supply it. He set aside military reserves, which became UBC, Stanley Park, Jericho Park, Central Park. He laid out Hastings Townsite to Nanaimo Street; Fraser Street connected the Fraser River. His Granville Government Reserve became the CPR land grant to entice the railway west and anchor the new Vancouver.

Six square mile townships created Base Lines and Range Lines that form borders of our cities, like North Road and Boundary Road. Colonel Moody laid out the skeleton of the region and was the first of many important Vancouver planners.

Gunter had reconciled the ancient measures based on four with the newer ones based on 10. In Gunter's world, each chain has 4 rods, but also 100 links. Ten chains make a furlong, which an ox could plow before resting. Eight furlongs make a mile. An acre is one furlong by one chain, which an ox could plow in one day. Col. Moody made each Street and Avenue in the Fraser Valley 1 furlong; every eighth makes one mile. In Richmond, he made the distance between No. 1 Road and No. 2 Road 1 mile. Throughout Western Canada, six square mile townships make 36 Sections of 640 acres, four Quarter Sections of 160 acres, 40 acre Legal Subdivisions and 10 acre Quarter Legal Subdivisions creating a street system great for farming but difficult to build a city on.

We live in the world these early measurers created. They both limit and liberate us to live our urban lives.

## **Video Supplemental Class Notes.**

After playing the video in class or assigning the class to view the video on their own time, these notes could provide additional insights.

The US border is a good example of the Hierarchy of Evidence. According to the Treaties of 1818 and 1846, the US/Canada border in the west is supposed to be at the 49<sup>th</sup> parallel. Unfortunately, the surveyors made numerous mistakes, and the posts that they set in the ground are incorrect. But there is a universally accepted Hierarchy of Evidence that makes the Surveyor's Posts the legally valid boundary.

Some examples of the resilience of street systems are when large areas of the City of London burned down in 1666 destroying over 13,000 houses, when Dresden Germany was bombed in

World War Two and Nagasaki was destroyed by an atomic bomb. All of these cities were rebuilt based on the previous street systems.

Edmund Gunter was a priest and mathematician. At that time, universities were religious institutions.

Colonel Moody was focussed on military issues and was mostly concerned about an attack from the US. The Fraser River was a natural barrier against the US Army. It has two arms, the North Arm and the South Arm. They come together at New Westminster, which also has high ground that could observe approaching armies from the south.

In many cities of the British Empire, points of land jutting into the Sea were important militarily against Navy ships. This is why this land was often made into a military reserve, like UBC and Stanley Park.

When flying in an airplane over Western Canada, one can see the land divided up into the 6 mi.<sup>2</sup> townships.

Students should be encouraged to be aware of the dimensions of streets, lots and blocks in their neighbourhoods.