Solar Lesson Plan Format
Heritage Center Teach

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Age Level: 4th Grade
Subject(s) Area: Social Studies
Materials Needed: Survey equipment: chain link for measuring, painters tape, masking tape
Standards**:**
Code and description: **4.5.6 Describe ways geography has affected the development (e.g., the development of transportation, communication, industry, and land use) of the state over time**
Objectives**:**

What will the students know or be able to do?
Driving Question: We need to survey the land so the government can sell it to homesteaders
The students will be the surveyors, rodman, and chainman
Cognitive Level of Lesson (Bloom's Taxonomy):

Learning Activities:

Opening Element: (Anticipatory set, setting a purpose for learning, assessment of background knowledge, Review, Etc.)

Welcome: Respect the speaker, raise your hand if you have something to say, attention before we move, Give me 5

Ask them a series of questions to introduce the lesson/topic

(Sitting, looking towards the large doors with the prairie view)

How do you know where our yard starts and your neighbor's yard starts?

How do you know where Burleigh County starts and McLean County end?

When settlers came to North Dakota, how did they know what land was claimed and what land was available to purchase or squat on?

Introduction to lesson:

A. What is surveying? Surveying is measuring and mapping the land to be able to make a map or plan. They used math and equipment to get the most accurate map. This is public land, which the government owns and wants to sell.

B. What does a surveyor do? A surveyor is the person who does the surveying and creates the map.

C. Driving Question: We need to survey the land so the government can sell it to homesteaders.

D. Government needed the land surveyed so they could sell it to Homesteaders and Railroad companies.

During the lesson, introduce vocabulary words where they fit in
We will talk about how we laid out the township grid that they see when they enter our area.

1. Found North/South Line with a compass. A compass finds magnetic north; the pointer is always pointing to north.

2. We found a boundary marker from a previous surveyor, and made a point to start our 6x6 grid

3. Along the N/S line. We used the N/S line to find our E/W line, set the transit down on our point, had a rodman out in the distance, and used the compass to find the perfect E/W line.

- Transit sat on a tripod and had a level to keep it straight, use a plumb bob to make sure we are on top of the corner marker

-Direct Katie left and right to find perfect E/W line

- We dropped a corner point or chain pin into the ground, under the transit, to keep track of our line. Then we ran the chain from the transit to the rodman.

4. The chainmen measured every six feet (Miles), using a surveyor's chain (66 links/66 feet) and dropped a point, and went 6 more feet (Miles) and dropped a point, always making sure they had a true E/W measurement.

5. From these lines, they created this township grid. These lines represented the boundary lines. This (displayed) boundary marker is called an International Boundary Marker, because it designated the US/Canada borderline. Many times they used large rocks and etched the township and range numbers and a crosshair with section numbers that it divides. The boundary markers were placed every ½ mile.

6. Each of these 6x6 squares is a township; each 6x6 foot township is a smaller version of the 6x6 mile township that a true surveyor would have marked.

We need your help. We need to survey township into sections, which is 36 sections.

These 4 points equals a township and we need your help to section off this township.

Expectations- Working together and taking turns.

Students will: 4 groups of students will work on each edge using a measuring device and they will create points along the boundary

2nd group will layout the tape grid connecting the points.

Hold compass while marking the line.

We set up transit, rodmen

Technology: variety of technology used in the lesson No Technology, hands on activities

Required Vocabulary: surveyors, squatters, surveying, boundary line, township, chainmen, compass, topographic map, public land, transit, tape measure, chaining pin, surveyors chain,

Instructional Methods: Large group discussion at the beginning facing the windows with the prairie landscape picture, put into groups of 4 and each of the 4 students in a group will have a job

Guided Practice Strategies: Levels of scaffolding, various elements broken into parts, etc.

Discuss vocabulary throughout the lesson

Independent Concrete Practice/Application: The students will be mapping out the section grid for their township.

Differentiation:???

Wrap-Up: "Look at what you, as surveyors, of this new land, have accomplished. You have surveyed this new land so that homesteaders can build their homes and start new lives."

- Fun Fact- the 16th section was for the schoolhouse

- If you were a group of chainmen in the 1850, this is what you would have looked like (show picture)

- Point out that all the little squares on the map (wall) are the large townships that covered the state.

-Show the items in the case and compare them to what we are using now- surveyors chain, chaining pins, transit=theodolite=telescope on top

Assessment:

Formative: We will be watching the students' grid out their township and discuss the reasoning behind it.