

# Geographic Educators of Nebraska

Advocating geographic education for all Nebraskans

## °Angles in Nebraska

**Angles in Nebraska provides students an opportunity to explore locations throughout the state and bordering states while creating, and identifying acute, right, and obtuse angles.**

Students will identify acute, right, and obtuse angles that are created by locations and landmarks in Nebraska.

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<b>Grade Level</b>	4th
<b>Class Period(s)</b>	1 (40 – 50 minutes)

### Nebraska Social Studies Standards

**SS 4.3.1**  
Students will explore where (spatial) and why people, places and environments are organized in the state.

SS 4.3.1.a Read local and state maps and atlases to locate physical and human features in Nebraska.

SS 4.3.1.b Apply map skills to analyze physical/political maps of the state.

SS 4.3.1.d Differentiate between cities, states, countries, and continents.

### Nebraska Science Standards

### Nebraska Language Arts Standards

### Nebraska Math Standards

**MA 4.3.1**  
Students will apply and describe geometric characteristics and create two and three - dimensional shapes.

MA 4.3.1.b. Classify an angle as acute, obtuse, or right.

MA 4.3.1.f. Measure angles in whole number degrees using a protractor.

## Overview

Angles in Nebraska provides students a unique cross-curricular opportunity to explore geography and math and how these areas relate to the state of Nebraska. Students will identify acute, right, and obtuse angles that are created by locations in Nebraska and neighboring states.

## Purpose

In this lesson students will identify acute, right, and obtuse angles that are created by locations in Nebraska and neighboring states.

## Key Vocabulary

Acute Angle– An angle that measures 1-89°

Right Angle – An angle that measures exactly 90°

Obtuse Angle – An angle that measures 91-179°

Protractor – An instrument used to measure angles.

## Materials

- Large Nebraska Map
- Protractors (Must be cut out)
- Small Blue Rope
- Teacher Activity Guide with Answer Key
- Student Activity Guide

## Objectives

The student will be able to:

1. Identify and classify angles as acute, right, or obtuse
2. Create a mental map of Nebraska locations and landmarks.

## Procedures

1. Review the identification and classification of angles (acute, right, & obtuse) with the students.
2. With the students around the Big Nebraska Map, divide them into groups of 3. Ensure that each group of students has the Student Activity Guide and two pieces of blue rope.
3. Choose one group to demonstrate the creation of angles using the two small blue ropes and the Nebraska Map. (Lincoln – Omaha – Fremont)
4. Students will use the **Student Guide** to navigate to different locations throughout the state to create, identify, and classify angles.
5. Each group will start on a different number and work through the provided cues on the Student Activity guide in numerical order.

## Assessment

An answer key has been provided and accompanies the **Teacher Activity Guide**. There are 10 angle challenges presented to the students. Once the students have completed all 10 angle challenges, use your classroom/district grading scale to assign the appropriate grade for the students.

## Extensions

Students may create their own Nebraska Angles once completed with the required 10 angle challenges.

Students may also create a Nebraska Angle Challenge for their classmates to complete.

Using a protractor, the students can measure the angles in each challenge.

## Sources

Protractor:

<http://thinkzone.wlonk.com/MathFun/Protractor.htm> (Keith Evevoldsen)

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## Angles in Nebraska Teacher Guide/Answer Key

1. Chadron	Scottsbluff	Lincoln
2. Kearney	Hastings	Grand Island
3. Beatrice	Lincoln	Columbus
4. Norfolk	Wayne	Yankton, SD
5. Wayne	Sioux City, IA	Vermillion, SD
6. Lincoln	Omaha	Wayne
7. Chadron	Kearney	Beatrice
8. Bassett	Chadron	Sterling, CO
9. Hastings	Norfolk	Columbus
10. Fremont	Columbus	Grand Island

1. Acute
2. Acute
3. Obtuse
4. Obtuse
5. Acute
6. Right
7. Obtuse
8. Right
9. Acute
10. Obtuse

# Angles in Nebraska

## Teacher Guide/Answer Key

### Lesson Procedures

1. Review the identification and classification of angles (acute, right, & obtuse) with the students.

- Acute angles are the smallest angles of measure. These angles measure less than  $90^\circ$ . What are some examples of acute angles in our classroom?
- Right angles are typically the most common angles. These angles measure exactly  $90^\circ$ . What are some examples of right angles in our classroom?
- Obtuse angles are larger angles. These angles measure greater than  $90^\circ$  but less than  $180^\circ$ . What are some examples of obtuse angles in our classroom?

Also, be sure that students understand where the vertex of an angle is located. When three places are named, it is assumed that the place named in the middle is the vertex of the angle. **For example**, in Angle ABC, point B is the vertex. If students are given Lincoln – Omaha – Fremont, then Omaha is the vertex.

2. With the students around the Big Nebraska Map, divide them into groups of 3. Ensure that each group of students has the Student Activity Guide and two pieces of blue rope.

3. Choose one group to demonstrate the creation of angles using the two small blue ropes and the Nebraska Map. (Lincoln – Omaha – Fremont which forms an acute angle).

- Invite a group of students to the Big Nebraska Map to demonstrate the process of identifying and classifying angles
- Demonstrate to students how to use the large protractor (must be cut out) when measuring the Nebraska location angles. The protractor will only be used to classify the angles. Generally, students should be able to classify them without actually measuring. An extension of this lesson would be to have the students record the measure of the angle as well as classifying.

4. Students will use the Student Guide to navigate to different locations throughout the state to create, identify, and classify angles.

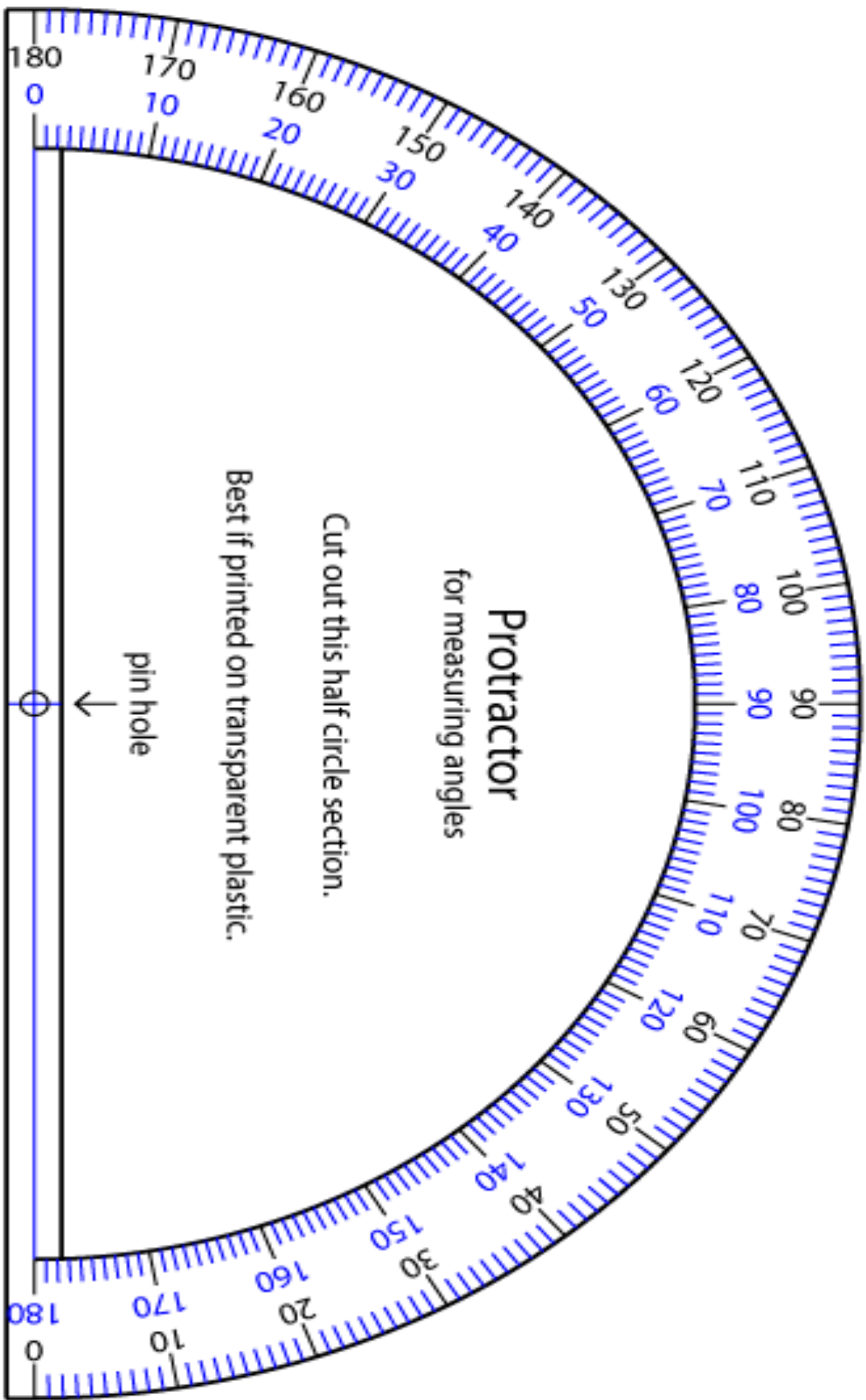
5. Each group will start on a different number and work through the provided cues on the Student Activity guide in numerical order.

6. Possible discussion questions to follow:

Would you be able to travel in a straight route from one place to the next as you did on the map? Why or why not?

Is there an advantage to traveling in such a way? Discuss the meaning of “the shortest distance between 2 points is a straight line” and the difference between ground travel and air travel when calculating mileage.





**Protractor**  
for measuring angles

Cut out this half circle section.

Best if printed on transparent plastic.

pin hole