Lesson Plan

Text: Cord
Unit number and title: Unit 6-Lines & Angles

Short Description: Students will be working to angles as it applies latitudes below or above the equator to find the latitude of the North/South Pole.

Developed by: Tim Haskin
Contact Information: HaskinL@comcast.net

Date: June 23, 2010

Latitude Calculations from Angles

LESSON PLAN

TEACHER: Teacher Prep/ Lesson Plan

1. **Lesson Objective**
   To help students understand the importance of understanding why we have a latitude and where a latitude is in relation to the equator, North and South Pole.
2. **Statement of pre-requisite skills needed**. Students will need to have basic understanding of angles as they apply to the radius of a circle.
3. **Vocabulary**
   Angle, Equator, Latitude, Longitude, North Pole, South Pole, Northern & Southern Hemisphere.
4. **Materials List**
   8.5x11 paper, Compass, Protractor.
5. **State Standards addressed**
   Math: G.2.B Know, prove, and apply theorems about angles, including angles that arise from parallel lines intersected by a transversal
   Reading: Grade 10. 1.2.2. Apply strategies to comprehend words and ideas.
   Writing: Grade 10. 3.3. Knows and applies writing conventions appropriate for the grade level.
6. **Set-up information (Remind students to follow these basic rules.)**
   The students will work in groups of 4 at their desks and the instructions to completing the lab will be placed on the overhead.
   a. The students will form groups of 4 students per group. The teacher will randomly select a student from each group to be group leader.
   b. The group will be required to complete their activity, having each group leader delegate who will be responsible for recording/writing the assignment.
   c. The group leader will be responsible for ensuring that all the names are on the lab paper and it is turned in on time.
   d. The leader will be re3sponsible for selecting each delegate from their group to place the answers to the lab questions on the board and ensure that person is prepared to discuss it with the class if called answer on by the teacher.

7. **Teacher Assessment of student learning (scoring guide, rubric)**
   The teacher will conduct ongoing assessments with the class you walk around the classroom evaluating the group effort. The teacher will engage the class in a general discussion about the answer to the lab problems and then the answers posted on the board and worksheet turned in for each group.
   Grading Rubrics.
   4 Questions, 15% possible for each questions & 40% for Group effort
   A. 15% --- 5, 10, 15 Points
   B. 15% --- 5, 10, 15 Points
   C. 15% --- 1, 10, 15 Points
   D. 15% --- 5, 10, 15 Points
   _____ Point sub-total
   Group Effort/Participation
   20% ---- Teacher evaluation 5, 10, 15, 20 Points
   20% ---- Student evaluation 5, 10, 15, 20 Points
   _____ Points sub-total

   Total points for the Lab _____/ 100 = _____%

8. **Summary of learning** Their will be a general call/group discussion of how they feel this lab applies to the real world and how it effects them, business and the food supply of the world.
9. **Career Applications.** This lab is great in showing students where they live in relation to the Northern & Southern Hemisphere and when seeds are planted for food in the two hemispheres. It shows them how calculating angels from the Equator and North and South Pole helps to determine when to start planting seeds for growing can take place.

Lab Framework

Text: Cord

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LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

1. **Lab Objective**
   To help students understand the importance of understanding why we have a latitude and where a latitude is in relation to the equator, North and South Pole.
2. **Statement of pre-requisite skills needed**. Students will need to have basic understanding of angles as they apply to the radius of a circle.
3. **Vocabulary**
   Angle, Equator, Latitude, Longitude, North Pole, South Pole, Northern & Southern Hemisphere.
4. **Materials List**
   8.5x11 paper, Compass, Protractor.
5. **State Standards addressed**
   Math: G.2.B Know, prove, and apply theorems about angles, including angles that arise from parallel lines intersected by a transversal
   Reading: Grade 10. 1.2.2. Apply strategies to comprehend words and ideas.
   Writing: Grade 10. 3.3. Knows and applies writing conventions appropriate for the grade level.
6. **Leadership Skills**
   Basic Skills
   A. Locates, understands, and interprets written information prose and documents – including manuals, graphs and schedules – to perform tasks
   B. Learns from text by determining the main idea or essential message
   C. Identifies relevant details, facts and specifications
   D. Infers vocabulary, and judges the accuracy, appropriateness, style and plausibility Of reports, proposals, or theories of other writers.
7. **SCAN Skills/Workplace Skills**
   Real world application in working with angles and knowledge of when it is the best time of the year to grow plants at different locations on earth
8. **Set-up information**
   The students will work in groups of 4 at their desks and the instructions to completing the lab will be placed on the overhead.
9. **Lab organization -**45 min.
   a. The students will form groups of 4 students per group. The teacher will randomly select a student from each group to be group leader.
   b. The group will be required to complete their activity, having each group leader delegate who will be responsible for recording/writing the assignment.
   c. The group leader will be responsible for ensuring that all the names are on the lab paper and it is turned in on time.
   d. The leader will be responsible for selecting each delegate from their group to place the answers to the lab questions on the board and ensure that person is prepared to discuss it with the class if called answer on by the teacher.
10. **Teacher Assessment of student learning**
    The teacher will conduct ongoing assessments with the class you walk around the classroom evaluating the group effort. The teacher will engage the class in a general discussion about the answer to the lab problems and then the

answers posted on the board and worksheet turned in for each group.

11. **Summary of learning** (to be finished after student completes lab)
Their will be a general call/group discussion of how they feel this lab applies to the real world and how it effects them, business and the food supply of the world.

12. Career Applications
This lab is great in showing students where they live in relation to the Northern & Southern Hemisphere and when seeds are planted for food in the two hemispheres. It shows them how calculating angels from the Equator and North and South Pole helps to determine when to start planting seeds for growing can take place.

LAB TITLE: Unit 6-Lines & Angles

STUDENT INSTRUCTIONS:

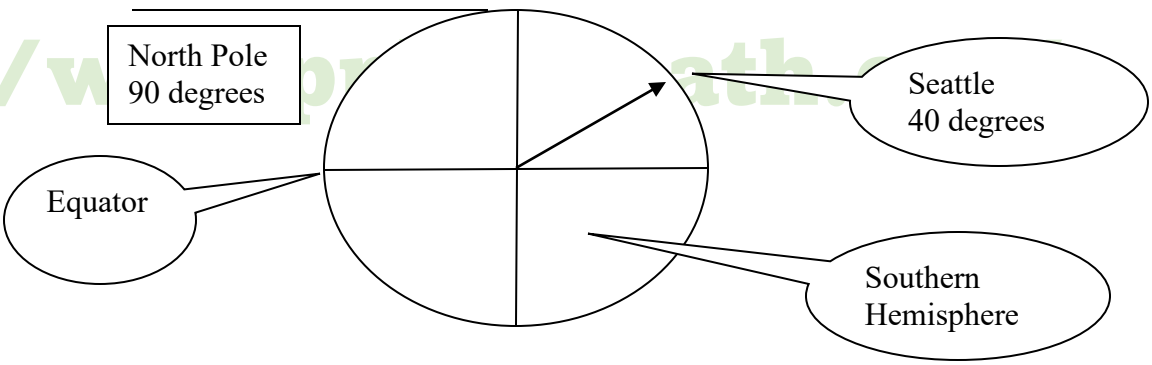
1. Statement of problem addressed by lab
Within this lab, you will taking what you have learned about parallel lines and angles and apply it to the real world be learning about the Northern and Southern Hemispheres so that you can learn when seeds are planted for growing seasons. e

2. Grouping instructions and roles

a. You will form groups of 4 students per group. The teacher will randomly select a student from each group to be group leader.
b. The group will be required to complete their activity, having each group leader delegate who will be responsible for recording/writing the assignment.
c. The group leader will be responsible for ensuring that all the names are on the lab paper and it is turned in on time.
d. The leader will be re3sponsible for selecting each delegate from their group to place the answers to the lab questions on the board and ensure that person is prepared to discuss it with the class if called answer on by the teacher.

3. **Procedures** (worksheet)
The students will work in groups of 4 at their desks and the instructions to completing the lab will be placed on the overhead.

1. Latitude in the Northern Hemisphere is measured by the angle from the center of the equator, as shown below:
   E. When Portland has a latitude of 30 degrees and Seattle has a latitude of 40 degrees. Is Seattle north of Portland?
   F. If you are below the equator, which hemisphere are you in?
   G. If you are planting seeds for growing plants in Seattle (40degree). If seeding is delayed in planting in Seattle by for days for each 1 degree above the 40 degree latitude, how many days should you delay planting located at 48 degrees.



H. As shown above, the latitude of the North Pole is 90 degree, what do you think the latitude of the South Pole in the Southern Hemisphere would be?

9 **Outcome instructions**

The leader from each group will select a person to write the answer (a-d) on the board and be prepared to discuss the findings with the class if randomly called upon.

10 **Assessment instructions** (peer-teacher)

The teacher will conduct ongoing assessments with the class you walk around the classroom evaluating the group effort. The teacher will engage the class in a general discussion about the answer to the lab problems and then the answers posted on the board and worksheet turned in for each group.

Grading Rubrics.

4 Questions, 15% possible for each questions & 40% for Group effort

A. 15% --- 5, 10, 15 Points
B. 15% --- 5, 10, 15 Points
C. 15% --- 1, 10, 15 Points
D. 15% --- 5, 10, 15 Points

_____ Point sub-total

Group Effort/Participation

20% ---- Teacher evaluation 5, 10, 15, 20 Points
20% ---- Student evaluation 5, 10, 15, 20 Points

_____ Points sub-total

Total points for the Lab _____/ 100 = _____%

Lab Data Collection

Student: _____ **Date:** _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)