

GRADE LEVEL EXPECTATION: 5-7

BIKE AROUND COLORADO

CONTENT AREAS: SOCIAL STUDIES, MATHEMATICS, READING, WRITING AND COMMUNICATING

LESSON TIME: 6-7 lessons

MATERIALS:

1. Bicycle Route Maps for students to write on.

2. Other appropriate maps of Colorado and informational literature from sites around the region.

3. Internet access

4. Worksheet - "What Supplies does your group need to bring?"

5. Worksheet – "Track your Trip"

6. Hyperlinks to hotel chain websites or travel websites such as Expedia.com

7. Markers, colored pencils

8. Paper or notebook

9. Rubric (in Reference section

OBJECTIVE:

Students will plan a multi-day trip around some part of Colorado. They will be responsible for calculating the daily mileage, determining where to stop for the night, evaluating the necessary supplies to take, and reporting on physical characteristics of the towns and land that they will visit on their trip. (This lesson can be adapted to include a smaller or larger area of Colorado to meet the needs of your lesson or grade level.)

1. Students will calculate the distance on a map using a map scale.
2. Students will generate a list of supplies needed for a bicycle trip.
3. Students will evaluate the importance of supplies needed to survive a multi—day trip when space and weight load is limited.
4. Students will create a report on the physical features of the land they will travel and the towns they will visit.

Adapted from Planning a multi-day trip in the Northwest Region of Illinois, Greg Noack, <http://iga.illinoisstate.edu/2005%20SI%20Illinois%20Studies/05GN.pdf>.

STANDARDS:

5TH GRADE STANDARDS:

CONTENT AREA: SOCIAL STUDIES

2. Geography

Use various geographic tools and sources to answer questions about the geography of the United States.

CONTENT AREA: MATHEMATICS:

1: Number Sense, properties and operations

4. The concepts of multiplication and division can be applied to multiply and divide fractions.

CONTENT AREA: READING, WRITING AND COMMUNICATING

1. Oral Expression and Listening

1. Effective communication requires speakers to express an opinion, provide information, describe a process, and persuade an audience.

4: Research and Reasoning

3. Quality reasoning requires asking questions and analyzing and evaluating viewpoints.

PROCEDURE:

Day One: Set Purpose for Learning, Build Background Knowledge, Model Learning

1. Tell students that they will be planning a multi-day bicycle trip around Colorado during the next week. They will be placed into groups and asked to plan the trip. If possible have a guest speaker visit who has done a multi-day bicycle trip to talk about their experiences or visit an online diary of someone's experience.

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2. Tell students they will be expected to do the following:
 - Choose places of interest and explain why they chose them
 - Calculate distances between points of interest correctly
 - They will have to determine how far they want to travel each day,
 - Figure the cost of supplies after they have chosen what to take, and
 - Keep track of money spent, supplies needed, and sites they plan to visit.

3. Explain Evaluation/Assessment

4. Share rubric for grading written work and oral presentation. (See Resource section.)

5. Give steps of assignment: 1. become familiar with the map, 2. research places of interest, 3. plan the trip, 4. present to class

6. If time permits let students explore the map on their own, or play a game, "Who can find?" With various parts of the map, (Teacher asks students to quickly find a feature on the map. Make sure everyone has found it before going on).

Day Two: Map Skills, becoming familiar with the map.

1. Review learning from the day before, especially the requirements of the lesson and the rubric.

2. Pass out maps, go over features of map. Practice going over the legend features with the students; locate north/south, find scale, look for different features of the map. Have students measure the distance between two sites and calculate the time to bicycle that distance travelling 10 miles per hour. Discuss the different types of roads and which would be the best to travel on and which they would want to avoid.

3. If time permits, groups make a preliminary decision as to where they want to bike.

Students must visit at least five sites, but they can visit more.

4. Remind them that they are going to do research the next two days to determine where they want to go.

5. Collect students' maps and itineraries to spot check that they have realistic goals and have at least five sites to visit. Make suggestions if appropriate.

Day Three: Internet Literature Search

Students use the internet and any literature the teacher can find to research what they would expect to see on their trip. You may have a list of places that they must include or leave it up to them to identify the locations.

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Day Four: Plan the Trip

Students measure the mileage of the trip they have planned and break the trip up into days. Students must account for time spent site-seeing or overnight layovers at parks. Students should base their mileage on travelling about 10 mph, travelling six to eight hours a day. They may stay at campgrounds, with friends or relatives, or at hotels. Students use markers or colored pencils to mark on the map their route, layovers, and places of interest.

Day Five and Six: Finish Planning/Packing it up

Students should have their trip divided up into days; they now need to plan where they are going to stay each night and what supplies are needed. If they are going to stay in a hotel they must look up the cost of that expense. Pass out the handout of supplies. This is a mock grocery/dry goods sheet that list supplies they might need and their costs. Students must decide what they are going to take with them and how much it costs. You as the teacher can decide if funds are limited or not, however weight is limited. Students should at least keep track of money that is spent to connect to math.

Day Seven: Present to Class

Groups present to the class their trip itinerary and their supplies list. Students should explain to the class their trip, the sites they plan to visit and why they chose those sites, the mileage that they took, and the supplies they plan to take with them.

ADAPTATIONS:

Special Needs Students: Students with special needs would benefit from being placed in a group that will work well together. Large print maps or a map that has been enlarged on the photocopier might be appropriate. A classroom aide should be available if necessary to sit with students.

Gifted/Accelerated Learners: Gifted students or students who finish early could be asked to extend the project according to their interests. They might look for pictures on the internet of sites they want to visit, write a fictional log of their trip, or research animals or plants they might find on the trip.

ESL students: ESL students would need maps and literature in their language if possible, as well as having the handouts translated into their language.

EXTENSIONS:

Using topographical maps from the State Geological Survey, students could find the highest and lowest elevation on their trip, find the steepest grade they will climb or descend on their trip. This could be modelled by finding the highest and lowest point in the neighborhood around the school and then walking outside to explore the elevations.

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Use Bikely or Map my Ride to obtain roadway profiles- elevations and grades of the proposed routes. How would this impact speed and distance?

POTENTIAL PROBLEMS AND SUCCESSES:

Students may have trouble calculating the mileage and determining how far it is realistic to travel in a day. They may also have trouble understanding the limits of what they could take with them on the trip. Successes might have students extending the problem to visiting relatives and friends they have in the area, planning long trips to encompass a long period of time, or incorporating many cities in to their trip.

What Supplies Does Your Group Need to Bring?

Use the chart below to select what you will want to take with you on your trip. Each of you may only carry 20 lbs on your bicycle rack. You must bring food, equipment to camp with if you are planning on camping, emergency supplies, personal items, and other items to help you with your trip.

Calculate the amount of weight your group can take.

Number of Bikers X 20 lbs = total weight you may take:

_____ X 20 lbs = _____

| Item | Weight | Number Needed | Total Weight |
|--|----------|----------------|--------------|
| Tent to sleep two (must take if you are camping) | 10 lbs | | |
| Sleeping Bag (must take if you are camping) | 3lbs | | |
| 2 changes of clothes | 3lbs | | |
| First Aid Kit | 1lb | | |
| Water bottle filled | 2lbs | | |
| Maps | 1/2lbs | | |
| Compass | 1/5lbs | | |
| Flashlight | 1/2lbs | | |
| Personal Items | 1lb | | |
| Rain Gear | 2lbs | | |
| Emergency Supplies for 1 bicycle | 1lb | | |
| Change of shoes | 1 1/2lbs | | |
| Book to read | 1/5lbs | | |
| Bicycle helmet | 1lb | | |
| | | | |
| | | total weight = | |

