Racing Around Arizona: Using an Arizona Map to Create a Bicycle Tour Route in Arizona

Students will learn how to use an Arizona Road map to locate places, plan travel, and calculate distances in the context of planning a bicycle race through the state.

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<th>Author</th>
<th>Wayne Gorry</th>
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<td>Grade Level</td>
<td>2-3</td>
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<td>2 class periods</td>
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**National Geography Standards**

**CONCEPT 1 World in Spatial Terms**

**GRADE 2**

PO 2 Interpret political and physical maps using the following elements:

- a. alpha-numeric grids
- c. compass rose
- d. key(legend)
- e. symbols

**GRADE 3**

PO 2 Interpret political and physical maps using the following elements:

- a. alpha-numeric grids
- c. compass rose
- d. key(legend)
- e. symbols
- f. scale

**Math Common Core Standards**

**Number and Operations in Base Ten**

2.NBT.7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

3.NBT.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

**Standards for Mathematical Practice (MP)**

2.MP.1. and 3.MP.1. Make sense of problems and persevere in solving them.

2.MP.2. and 3.MP.2 Reason abstractly and quantitatively.

2.MP.8. and 2.MP.8 Look for and express regularity in repeated reasoning. since they are repeating this process several times.

**Overview**

This lesson uses the Tour de France Bicycle Race to interest students in creating a tour route in the state of Arizona. Using the Arizona Road Map students will create a route that could be raced over a one-week period. Students will select the route, calculate its distance, record the information on a table and highlight the route on their maps. Students will practice addition skills with two and three digit numbers and create word problems that can be solved using their map and table.

**Purpose**

The purpose of this lesson is to introduce students to some of the basic uses of road maps: location of places, route finding and calculating distances to destinations. The students should
also gain a greater appreciation for their personal location within the state of Arizona. An additional purpose is to allow students an opportunity to practice basic math skills in a relevant setting.

**Materials**
- Racing Around Arizona map, one for each student. (More detailed maps could be obtained from your Chamber of Commerce.)
- Tour de France Bicycle Route 2003 map
- Guidelines for Route Selection, one for each student.
- Table: PROPOSED ROUTE FOR TOUR DE ARIZONA, one for each student.
- Using Your Table to Solve Problems, one for each student.
- Assessment for Racing Across Arizona
- Answer Key for Assessment for Racing Across Arizona
- Pencils
- Highlighters

**Objectives**
The student will be able to:

1. Locate cities and towns, plan a trip connecting various towns, and calculate distances for the trip when given an Arizona Road map.

2. Write and solve word problems using two-to-three digit addition and subtraction problems after compiling their trips based on the Arizona Road Map.

**Procedures**
1. Show the map of the Route of the Tour de France bicycle race and share some basic information about the race. A map of the route can be found at: [http://www.cyclingnews.com/road/2004/tour04/?id=map](http://www.cyclingnews.com/road/2004/tour04/?id=map) (The map is found near the bottom of the page. Click in it for a bigger image.) Racers travel about 2000 miles during the three-week race. Each stage takes the racers from one city in France to another. A typical stage is about 100 or more miles in length, but the longest stage in 2003 was 140 miles.

2. Distribute the Arizona Road Maps and show the students how to locate a city on the map using the grid system. Demonstrate how to use the grid coordinates by looking along the top/bottom and sides of the map for the appropriate number or letter. Have them find a few cities to check their understanding of this step.

3. Distribute the handouts: “Guidelines for Route Selection” and “Proposed Route for Tour de Arizona.” Have the students work in pairs to plan a 7-day race using the guidelines and the table. The teacher should model the steps of selecting the route for the first day and filling in an overhead chart with the appropriate information. Each cell of the table should be completed to provide details of their tour. For the start and finish for each day, students should provide the grid location. Students will use the map to calculate the mileage for each day and then add it to the previous day’s total to come up with the total cumulative mileage.

4. Distribute the “Using Your Table to Solve Problems” page and have the students create addition and subtraction word problems using the data in their table.

**Assessment**
The table can be evaluated as an assessment. Each student's table will need to be evaluated individually as each route will be unique. A checklist is included to guide evaluation. Mastery is 75% or six of eight checklist items.

The Racing Across Arizona Assessment can be
Racing Around Arizona: Math, Maps and Bicycle Tour Routes

used separately to evaluate both geography and math skills. Item one tests ability to locate map grids for a given place, but both of the items test geography skills. Item 2 evaluates both math and geography skills. Mastery for geography is 80% for all items on the test. Mastery for math is 80% of the items in question 2.

Extensions
The Tour de France consists of both flat and mountain stages. Many of the cities and towns have their elevation listed on Arizona highway maps. Students can be provided with such maps and asked to identify the elevation of each starting and ending point for their tour and calculate the difference in elevation.

Sources
Cycling News website: http://www.cyclingnews.com
Click on “LeTour 04” for links to comprehensive information about the Tour de France for 2004 or the current year.

Convert-Me.com website: http://www.convert-me.com/en/. All of the route information on the Cycling News website is in metric units. Convert-Me.com provides metric conversion tools useful for converting kilometers to miles for distance and meters to feet for elevation.