Science Olympiad –Road Scholar B:

Row, Row, Row Your Boat

Description: This activity uses an Olympics rowing theme to focus on map interpretation, including scale, contour lines, rivers, cultural features, distances, directions, and more.

This 50-question activity was originally created for the Science Olympiad, but it can be used for general geography classes at the secondary and undergraduate levels. Separate files exist for the answer key and the student worksheet.

Materials needed: USGS US Base Map, USGS 1:24,000-scale map of Ellisville, Mississippi, and USGS Topographic Map Symbols Sheet. All of these are available via http://store.usgs.gov or by calling 1 888 ASK USGS. Alternatively, USGS maps from http://www.topozone.com or http://terraserver-usa.com or other sources could be used instead of paper maps.

This activity can be easily modified to focus on other areas of the country and on other physical and cultural features.

When the announcements were made that selected the final members for the US Olympic Rowing Team, they were ecstatic. Rowing is one of the original sports in the modern Olympic Games and is fiercely competitive. Their excitement quickly gave way to concern, though, that they needed to do some intensive training before the 2008 Summer Olympics in Beijing. Their goal was to locate a lake that they could rent to be able to take their boats out and practice. Boat shells with 8 oars are about 60 feet long, so the lake had to be of adequate size. Also, they wanted to find a lake that was in a remote location so they could conduct their training in private, without distractions of reporters and spectators.

The team took out the **USGS US Base Map**.

1) What is the scale of this map?

2) What 2 states are omitted from this map?

The first thing they noticed was the five large lakes in the north-central part of the map.

3) What is the popular name for these lakes as a group?

4) How many of those lakes lie partly in Canada?

They wondered if they could row across them, and measured the distance from Duluth on the western edge of Lake Superior to Sault Ste Marie on the Eastern edge.

5) How far is it between these two cities in miles?

6) The team can row at 30 miles per hour for two hours, but after that they can row at 20 miles per hour. How long would it take them to cross the lake from Duluth to Sault Ste Marie?

After computing this value, the team realized that these lakes were really **too** large for their rowing practice.

They started to look in the southwest part of the map, but then noticed how few lakes and rivers existed there.

7) Why are there so few lakes and rivers in the southwest part of the USA?

8) What is the name of the largest lake in the west-central part of the country?
The team began looking at the direction that the rivers drain in the west-central part of the country.

9) What is name of the line that divides rivers that drain into the Atlantic Ocean from ones that drain into the Pacific Ocean?

10) What 5 states does this line cross?

The team focused on Colorado, site of the Olympic Training headquarters.

11) What four major rivers do all the rivers in Colorado drain into?

One of the team members thought about rowing all the way from Denver to the Gulf of Mexico.

12) Through which 4 major rivers, beginning in Denver, would the team have to row through to reach the Gulf of Mexico?

After further discussion, though, the team determined that the rivers near the beginning of this route would be too shallow to effectively row through. They then focused on the eastern USA, where rivers and lakes were more numerous.

13) What USA coastline would you say is longer—the Atlantic or the Pacific?

They then focused on the state whose western boundary is the Mississippi River and whose southern boundary is the Gulf of Mexico.

14) What is the name of this state?

15) What two directions do most of the rivers in this state flow toward?

The team agreed that this might make a good state to select for their training site. They thought that Hattiesburg, Mississippi, looked like an excellent place to train.

16) What body of water do the rivers near Hattiesburg drain into?

The team needed a map that showed more detail. They brought out the **USGS map of Ellisville, Mississippi**, along with a **topographic map symbols sheet.**
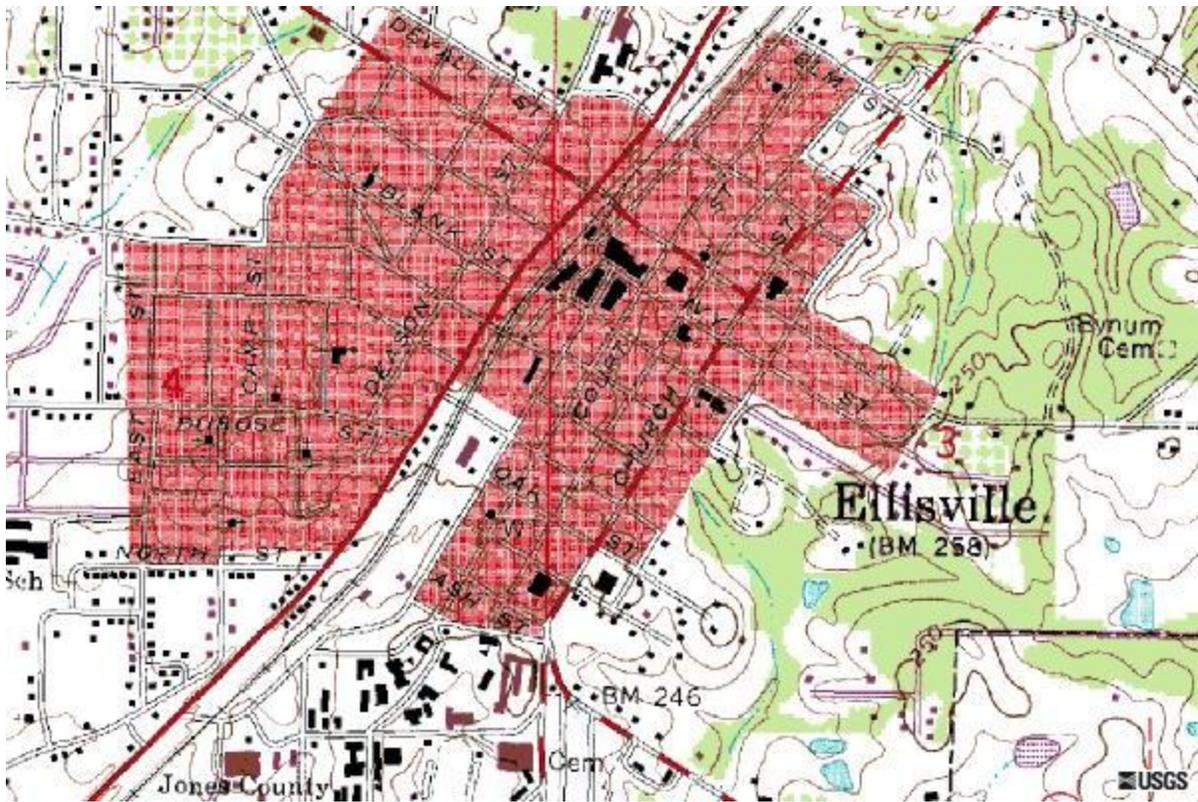
The team agreed to fly into Hattiesburg, west of Ellisville, and drive to the potential site at Ellisville via the interstate highway.

17) How far is it from Hattiesburg to Ellisville via this interstate highway?

The team flew to Hattiesburg and drove to Ellisville to put their plan into motion. They had their boat driven to Ellisville in a semi-truck.   They investigated town and started inquiring about nearby lakes and rivers to practice on. They learned about Tallahala Creek and Rocky Creek.

18) What would you estimate the population of Ellisville, based on the streets you see on the map? Choose from one of the following:

A   500
B   5,000
C   50,000
D   500,000
E   5,000,000

They could definitely see things in better detail with the Ellisville map.

19) What is the scale of this map?

20) Is this a larger scale map than the USA base map or a smaller scale map than the USA base map?

Examine the latitudes indicated in the map margins.

21) Is Ellisville closer to the Equator or to the North Pole?

22) Indicate how you found your answer to the previous question.

Examine the longitudes indicated in the map margins.

23) Is Ellisville closer to the Prime Meridian or the International Date Line?

24) Indicate how you found your answer to the previous question.

A degree of latitude and longitude is divided into 60 minutes. Each minute is divided into 60 seconds. Degrees, minutes, and seconds on a map measure distance, not heat or time. This map covers 7.5 minutes of latitude and 7.5 minutes of longitude.

25) If that is the case, why is the map a rectangle and not a square?

26) Where is the only place on the Earth where a 7.5-minute map would be a perfect square?

27) What are the names of the two most major rivers on this map?

28) What are the names of the two most major highways on this map?

29) Does Tallahala Creek flow all year long?

Find Basie Branch, a creek that flows out of Ellisville to the south.

30) Does Basie Branch flow all year long?

Examine the contour lines on the map and refer back to the USA base map if necessary to answer the following questions.

31) What type of landscape did the Olympic team see here? Choose one of the following:

A   Mountainous
B   Hilly with some flatlands
C   Flat with a few hills
D   Completely flat

32) What direction does Tallahala Creek flow?

33) What direction does Rocky Creek flow?

The team drove south from Ellisville to Jones County Junior College and exercised at the place symbolized by the dashed oval on the map on the college campus.

34) What was the place at which they exercised?

The team drove south to Tula Rosa Church. They then drove east southeast to the end of the road, at elevation 217 feet above sea level.

35) What was growing at this spot?

The team drove back to Tula Rosa Church and then traveled to the point where Rocky Creek flows into Tallahala Creek for further investigation.

36) What was their predominant bearing as they traveled to this spot from Tula Rosa Church?

37) Could they drive all the way to this spot?

38) In what section, township, and range does Rocky Creek flow into the Tallahala Creek?

When the team reached the spot, they found a human-built feature 500 feet to the north of the river confluence.

39) What was the feature they found?

The team looked up.
40) Could they see trees overhead?

41) Approximately what distance (in horizontal feet) does Tallahala Creek travel through over the course of this map?

42) How many vertical feet does Tallahala Creek descend over the course of this map?

43) What is the slope, in percent, of Tallahala Creek over the course of this map?

44) Do you think that the Olympic Team would find this creek to be steeper or flatter than rowing on a creek in central Colorado?

45) Give the reason for your answer to the previous question.
The team rowed upstream along Rocky Creek until they crossed US Highway 11. They then carried their boat southwest to the lake at Ellisville State School.
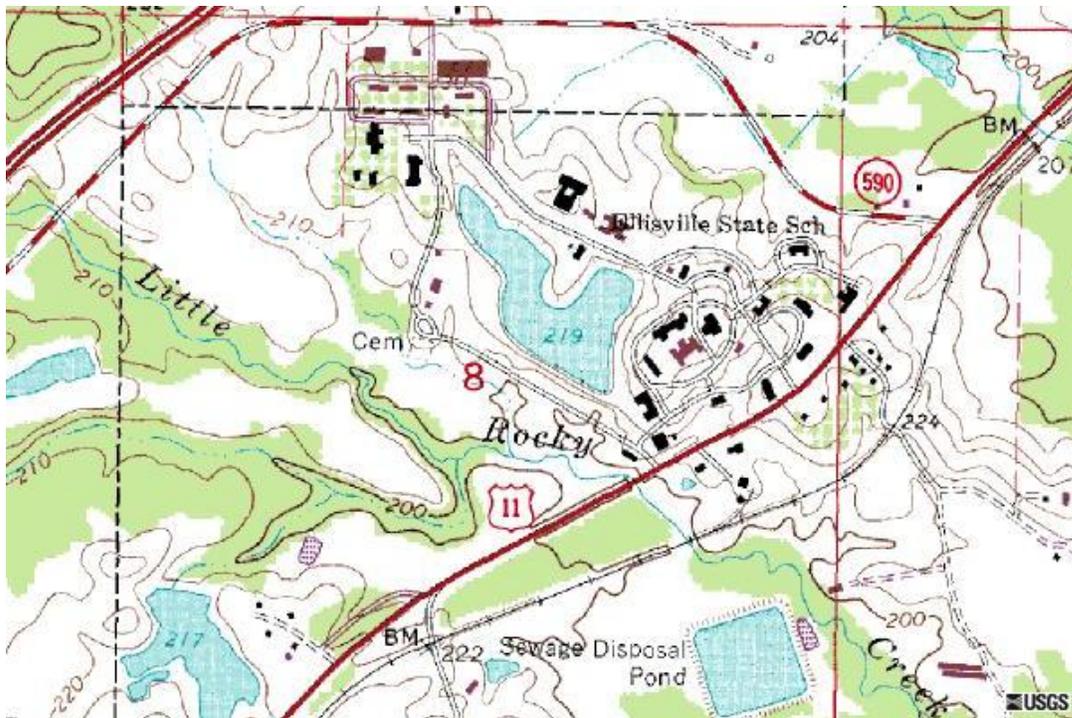
46) What is the elevation of this lake? Include the **units** in your answer.

The only other body of water large enough in section 8 was in the southeast part of this section.

47) Is this body of water natural or artificial?

48) How do you know?

This water body obviously wouldn't do for the training site.

49) What is the number of the state highway that forms the northern boundary of the Ellisville State School?

The team noticed some old buildings on campus, and some newer ones.

50) Between what years were the newer buildings, shown in purple on the map, constructed?

The team felt quite at home on the state school grounds with its lake in the center of campus. They decided to make it their training grounds until the Olympics.