Watersheds of Virginia

Lesson Summary Students will identify the local watersheds of Virginia and measure and calculate the distance from Amelia to rivers and streams associated with those watersheds.

Major Topic and SOL

Science SOL (2009)	6.7.a, 6.7.b, 6.7.c, 4.11.a, 5.11.a, 6.9.a
Math SOL (2009)	6.9

Length of Unit 2-50 minute classes

Student Objectives

In Mathematics the student will be able to:

- Measure length, using actual measuring devices, and describe the results in both metric and US Customary units, including part of an inch (1/2,1/4, and 1/8), inches, miles, centimeters, and kilometers
- Choose an appropriate measuring device and unit of measure to solve problems involving measurement of length - part of an inch (1/2,1/4, and 1/8), inches, miles, centimeters, and kilometers
- Compare and convert units of measure for length and the metric system for length - part of an inch (1/2,1/4, and 1/8), inches, miles, centimeters, and kilometers

In Science the student will be able to:

- Comprehend and apply basic terminology related to watersheds
- Use topographic maps to determine the location (and size) of Virginia's regional watershed systems
- Locate their own local watershed and the rivers and streams associated with it

21st Century Skills

- Critical-thinking and problem solving
- Communication
- Collaboration
- Contextual learning

Assessment Evidence

- Collect maps and charts to check for computation accuracy, use of rules, and completion of labeling and coloring each watershed

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Supplies/Materials/Technology

- Laptops
- Metric/English Rulers
- Topography maps of Virginia
- Maps of Virginia's watersheds and river systems
- Scratch paper
- Colored pencils
- Calculators
- Students maps
- Websites:
  - http://www.dcr.virginia.gov
  - http://www.mapsofworld.com/usa/states/virginia/virginia-river-map.html
  - http://geology.com/lakes-rivers-water/virginia.shtml

Lesson Plan

Motivation & Building Background:

- **Background:** The students have studied the common use of fractions and decimals and their meanings. They have used and identified the metric measures of various items using a metric ruler or meter stick
- **Motivation:**
  - The teacher will ask students a series of questions:
    - Did you ever wonder where rain goes when it falls?
    - What natural process keeps water clean?
    - In what nearby bodies of water might our rainwater flow?
    - What is the name of the nearest and largest body of water near here?
  - The students will then define watershed in their own words, and write definitions on large chart paper on the board.
  - The teacher will use the definitions to construct a class definition, and have students record the definitions in their notebooks.

Presentation

- Show the students the topographic map of Virginia. Show the maps that the students will use to identify their county, watersheds in Virginia, and the rivers. Pass out the *Virginia's Watersheds* maps. Have the students identify their county on the map. Outline and color the county.
- Using the *Virginia's Watersheds* maps, students will find and name the major rivers that flow through Virginia's watersheds. They will color each river blue and write the name of that river (beside the river) in red.

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- Once the major rivers in each watershed has been identified, students will use the metric and English ruler to measure and record the distance in inches (miles) and in centimeters (kilometers) from the center of their county to identified counties. Identify the name of the watershed in which the county is located. The county must have the major river running through it. Students will be directed as to what counties to measure to record the distances. (It helps to identify a specific point on the map in each county so that students measure that location in the county. Usually have students measure three to five distances.)
- The teacher will use the ruler to draw a line from the location in their county to the identified location in the specified counties. Then use the metric ruler to find the length in centimeters and the English ruler to find the length in inches. Set up the proportion to convert the measures to kilometers and miles. The scale to use to convert is **7.9 cm = 1.5 km** and **3 ¼ in = 1 mi**. Record data in table.
- **Differentiated Instruction:**
    - **Below average students:** Students will be directed by [collaborative teacher] step-by-step on converting fractions and how to read and the use of the ruler for measuring. They will only have to identify and measure from their county to three locations and do all conversions and calculations with teacher assistance. May use calculator for conversions.
    - **Average Students:** Students will be expected to locate all watersheds in Virginia, draw lines from their county to seven watersheds that have their major rivers running through them, and record those measures. They will be expected to follow all guidelines. May use calculators for conversions.
    - **Above Average Students:** Students will locate all watersheds in Virginia, draw a line from their county to the major river in each of those watersheds, estimate the length of the line, make accurate measures, compare their measures, and convert English and metric measures as indicated. Calculators may not be used and proportions must be set up. All work must be shown on block paper.

Practice/Application

- The teacher will distribute materials to the class, monitor student progress as they use the laptops to access the internet to identify rivers, watersheds, and location of specified counties.

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Name_____ Date_____ Class_____

Virginia's Watersheds

Directions: Given the name of the county, identify the watershed where it is located. At the bottom, show your proportions. Use the scale measurements to find the actual distance from Amelia to the specified county in the watershed. Be sure to transfer your data to the chart. Round kilometers to the nearest tenth. Be sure to simplify your miles.

County	Watershed	km	mi

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