

Exploring the Hudson in 1609

Using a portion of Robert Juet's journal, students will integrate geography, English language arts, and mathematics skills in tracing a portion of the Half Moon's voyage.

Objectives: Students will:

- learn how maps serve as representations of a geographic region;
- listen for information and understanding to text read aloud;
- convert units of measurement;
- plot the *Half Moon's* progress on a map.

Grade level: Elementary (Grades 4-6)

Subject Area: Social Studies, English Language Arts, Mathematics

Standards:

Social Studies Standard 1, 3

English Language Arts Standard 1

Mathematics, Science, & Technology Standard 3

Skills:

- Listen to acquire facts and ideas from text.
- Use multiplication skills to convert units of measurement.
- Use a map scale and addition skills to measure distance.

Duration: Preparation time: 10 minutes

Activity time: 60 minutes

Materials: Each student should have:

- Pencil and eraser
- Text if necessary (see **Activity** below)
- Scrap paper for doing calculations
- Map: Exploring the Hudson in 1609 (pdf, 2.7 MB)

Note: *The map is set up for 8.5" x 14" (legal) paper, but will work on 8.5" x 11" (letter) paper as well. You may need to use options in your computer's print menu to specify legal-sized printout.*

Suggestion: *Create one long map by having students carefully cut out the piece on the left, including the legend, and then overlap and tape it to the bottom of the piece on the right.*

Background:

In 1609 the Dutch East India Company hired Henry Hudson to find a Northeast Passage to the rich spice lands of Asia. Hudson believed, however, that the legendary Northwest Passage held more promise. So when ice blocked his way east around Russia, the explorer sailed west to North America to search for the Northwest Passage. He brought the *Half Moon* into the Lower Bay of New York Harbor on September 3. After exploring the harbor, he entered the river now named for him on September 12, traveled north past Albany, and then retraced his route back to the Atlantic Ocean, leaving the river on October 4.

Only fragments of Hudson's logbook survive; the journal kept by crew member Robert Juet is the main source of information about the voyage. It describes navigation on the river, encounters with Native Americans, and features of the landscape, documenting the natural resources which attracted further Dutch exploration and settlement.

This lesson barely scratches the surface of the journal, covering just September 14-16 and focusing mainly on math and map skills. There is much more to learn from this text—the first written description of the Hudson Valley. Experiencing this landscape every day, we often take our surroundings for granted. As they listen, have students imagine themselves to be on the *Half Moon*, seeing this region for the first time, just as Robert Juet did.

Today, distances on the Hudson are often measured in Hudson River Miles. Hudson River Miles start at the southern tip of Manhattan. This spot, called The Battery, is River Mile 0. The estuary part of the Hudson ends at the dam in Troy at River Mile 153. The *Half Moon's* starting point for the three days covered here - River Mile 5 - is an approximation.

Activity:

Three variations are offered for students at different skill levels. For all three versions students may work alone or in groups of 3-4 children. They should have pencils, erasers, and scrap paper for arithmetic problems. Provide background information about Juet's journal and its vocabulary. Write the conversions on the board for reference: one league equals three miles; one fathom equals six feet. Refer to the teacher's copy of the map (pdf, 2.7 MB).

Most challenging: Students listen without being able to refer to written text.

1. Hand out copies of the map. Point out the 5-mile indicators and the compass rose.
2. Explain that you will read the journal excerpt out loud. Students should listen for the distances traveled during each leg of the journey, convert them into miles as necessary, and mark the *Half Moon's* position on the map at the end of each leg.
3. Read Juet's journal to the class. Pause where indicated in the text to allow the students to do the conversions and mark the ship's location.
4. Juet's distances are estimates. Where possible, have students use his descriptions of the landscape and compass directions to more precisely locate the ship on the map.
5. Commentary alongside the reading (on the teacher's copy) interprets the text and suggests questions to ask the class. Some questions are answered by labels on the map. Discuss Juet's observations of the landscape and its inhabitants as appropriate.

Moderately challenging: Students listen while reading along in the text.

1. Hand out copies of the map and text included with this teacher section. Point out the 5-mile indicators and the compass rose.
2. The teacher may read the journal or have children read sections of it aloud. Students should listen for the distances traveled during each leg of the journey, convert them into miles as necessary, and mark the *Half Moon's* position on the map at the end of each leg.
3. When reading the journal to the class, pause where indicated in the text to allow the students to do the conversions and mark the ship's location.
4. Juet's distances are estimates. Where possible, have students use his descriptions of the landscape and compass directions to more precisely locate the ship on the map.
5. Commentary alongside the reading (on the teacher's copy) interprets the text and suggests questions to ask the class. Some questions are answered by labels on the map. Discuss Juet's observations of the landscape and its inhabitants as appropriate.

Least challenging: Students listen while reading along in a text broken up into short sections.

1. Hand out copies of the map and the student text (pdf, 179 KB) broken into sections. Point out the 5-mile indicators and the compass rose on the map.
2. Have individual children read each section of the text out loud. At the end of each section, have students convert leagues to miles, mark the *Half Moon's* position on the map, and respond to teacher questions as appropriate.
3. Juet's distances are estimates. Where possible, have students use his descriptions of the landscape and compass directions to more precisely locate the ship on the map.
4. Commentary alongside the reading (on the teacher's copy) interprets the text. Some questions are answered by labels on the map. Discuss Juet's observations of the landscape and its inhabitants as appropriate.

Assessment:

- Have students sign the map and hand it in.

Vocabulary:

compass rose: on a map, a design that shows directions

fathom: a unit of depth equal to 6 feet

league: a unit of distance equal to 3 miles

legend: a list explaining symbols used on a map

ride: to float anchored in one place

scale: on a map, a marking that shows distance

weigh: to raise a ship's anchor

Resources:

Robert Juet's journal has been transcribed for the New Netherland Museum and its replica ship *Half Moon* and posted online at www.halfmoonreplica.org/. An excellent subject for document-based inquiry into this region's history, the transcription maintains the spellings, punctuation, etc. of the original published in 1625 and includes background on the voyage and the journal's publishing history. The website also describes curriculum materials available from the museum for Grades 4-7.

Excerpt from Robert Juet's Journal for September 14-16, 1609: Teacher's Copy

For ease of reading, punctuation and spelling have been modernized (see referenced transcription for entire text in original style. [Pause] indicates place where students must mark ship's location.

The fourteenth, in the morning being very fair weather, the wind southeast, we sailed up the river twelve leagues, and had five fathoms and five fathoms and a quarter less, and came to a *strait* between two points, and had eight, nine and ten fathoms [Pause], and it trended northeast by north one league, and we had twelve, thirteen and fourteen fathoms. The river is a mile broad; there is very high land on both sides [Pause]. Then we went up northwest, a league and a half deep water [Pause], then northeast by north five miles [Pause], then northwest by north two leagues and anchored. The land grew very high and mountainous. The river is full of fish [Pause].

The fifteenth, in the morning was misty until the sun arose, then it cleared. So we weighed with the wind at south, and ran up into the river twenty leagues, passing by high mountains. We had a very good depth, as six, seven, eight, nine, ten, twelve, and thirteen fathoms, and great store of salmons in the river. This morning our two savages got out of a port and swam away. After we were under sail they called to us in scorn. At night we came to other mountains, which lie from the river's side. There we found very loving people, and very old men, where we were well used. Our boat went to fish, and caught great store of very good fish [Pause].

The sixteenth, fair and very hot weather. In the morning our boat went again to fishing, but could catch but few, by reason their canoes had been there all night. This morning the people came aboard, and brought us ears of Indian corn and *pompions* and tobacco, which we bought for trifles. We rode still all day, and filled fresh water; at night we weighed and went two leagues higher, and had shoaled water so we anchored till day [Pause].

Do the first conversions as examples:

12 leagues=36 miles, 5 fathoms=30 feet

*A **strait** is a narrow place in a waterway, as between Verplanck Point and Stony Point. Note the compass heading of this **3 mile** stretch to Peekskill.*

Is the river getting deeper or shallower?

*How deep does it get? **Deeper: 84 feet***

*At Peekskill the river goes northwest **4-5 miles** to the Bear Mt. Bridge, then **5 miles** northeast to West Point. There it turns northwest again; a **6 mile** leg goes almost to Newburgh. Juet notes the mountains here; what do we call them today?*

Hudson Highlands

*The south wind was ideal for sailing north; the ship covered **60 miles** today, past the **Marlboro Mts** opposite Poughkeepsie.*

*What was the greatest depth found (in feet)? **78 feet***

The two native Americans had been taken hostage after earlier hostilities. See Sept. 6-9 in the referenced transcription.

*The mountains "from the river's side" were the **Catskills**. By evening, the ship would have been in the vicinity of Catskill and Hudson.*

Encounters with native Americans here were more consistently friendly than those downriver. There is much more about such encounters in earlier and later parts of Juet's journal.

*What are *pompions*? **pumpkins or squash**
Do you think that Hudson still believed this river was the Northwest Passage? Note mention of fresh water and shoaled water - shallows - at the end of this **6 mile** sail.*

To read all of Robert Juet's journal, visit the replica ship Half Moon's website: www.halfmoonreplica.org/.

**Excerpt from
Robert Juet's Journal
for
September 14-16, 1609**

[Pause] means to take a break from reading while the class marks the Half Moon's position on the map.

The fourteenth, in the morning being very fair weather, the wind southeast, we sailed up the river twelve leagues, and had five fathoms and five fathoms and a quarter less, and came to a strait between two points, and had eight, nine and ten fathoms [Pause], and it trended northeast by north one league, and we had twelve, thirteen and fourteen fathoms. The river is a mile broad; there is very high land on both sides [Pause]. Then we went up northwest, a league and a half deep water [Pause], then northeast by north five miles [Pause], then northwest by north two leagues and anchored. The land grew very high and mountainous. The river is full of fish [Pause].

The fifteenth, in the morning was misty until the sun arose, then it cleared. So we weighed with the wind at south, and ran up into the river twenty leagues, passing by high mountains. We had a very good depth, as six, seven, eight, nine, ten, twelve, and thirteen fathoms, and great store of salmons in the river. This morning our two savages got out of a port and swam away. After we were under sail they called to us in scorn. At night we came to other mountains, which lie from the river's side. There we found very loving people, and very old men, where we were well used. Our boat went to fish, and caught great store of very good fish [Pause].



Henry Hudson entering New York Bay, September 11, 1609. From a painting by Edward Moran. NYS Archives.

The sixteenth, fair and very hot weather. In the morning our boat went again to fishing, but could catch but few, by reason their canoes had been there all night. This morning the people came aboard, and brought us ears of Indian corn and pompions and tobacco, which we bought for trifles. We rode still all day, and filled fresh water; at night we weighed and went two leagues higher, and had shoaled water so we anchored till day [Pause].

To read all of Robert Juet's journal, visit the replica ship Half Moon's website: www.halfmoonreplica.org/.

Exploring the Hudson in 1609 ANSWER KEY

Excerpt from Robert Juet's Journal for September 14-16, 1609

Follow along as sections of Robert Juet's journal of the *Half Moon's* voyage are read. At the end of each section, mark the ship's position on the map **Exploring the Hudson in 1609**. The first section below shows how. Use scrap paper to do the arithmetic.



Henry Hudson entering New York Bay, September 11, 1609. From a painting by Edward Moran. NYS Archives.

1. "The fourteenth, in the morning being very fair weather, the wind southeast, we sailed up the river twelve leagues, and had five fathoms and five fathoms and a quarter less, and came to a *strait* between two points, and had eight, nine and ten fathoms, ... "

A **strait** is a narrow place in a waterway. The two points Juet mentions are today called Verplanck Point (on the east) and Stony Point (on the west).

To mark the *Half Moon's* position on your map:

a. Change leagues to miles. If one league equals three miles, then twelve leagues equals twelve times three miles, which is thirty six miles.

$$1 \text{ league} = 3 \text{ miles}$$

$$12 \text{ leagues} = 12 \times 3 \text{ miles}$$

$$12 \text{ leagues} = 36 \text{ miles}$$

b. Add the number of miles the *Half Moon* sailed to the number of miles at the point where the ship started.

$$36 \text{ miles} + 5 \text{ miles} = 41 \text{ miles}$$

c. There are lines across the river map every five miles. Use them to find where 41 miles should be. Put an X there. Check this position using Juet's description. Your mark should be close to two points of land sticking out into the river.

To find depth in feet:

Change fathoms to feet. If one fathom equals six feet, then five fathoms equals five times six feet.

$$1 \text{ fathom} = 6 \text{ feet}$$

$$5 \text{ fathoms} = 5 \times 6 \text{ feet}$$

$$5 \text{ fathoms} = 30 \text{ feet}$$

2. "... it trended northeast by north one league, and we had twelve, thirteen and fourteen fathoms. The river is a mile broad; there is very high land on both sides. "

For sections 2 to 5, use Juet's compass directions to help you mark the *Half Moon's* position more precisely.

a. One league equals how many miles? 3 miles

Add these miles to the miles at the *Half Moon's* last marked location. Put an X on your map at the ship's new position.

b. Is the river getting deeper or shallower? **deeper**

c. How deep does it get (in feet)? **84 feet**

3. "Then we went up northwest, a league and a half deep water, ..."

How many miles did the *Half Moon* sail in this section? 4 - 5 miles

Add these miles to the miles at the *Half Moon's* last marked location. Put an X on your map at the ship's new position.

Add these five miles to the miles at the *Half Moon's* last marked location. Put an X

4. "...then northeast by north five miles, ..."

on your map at the ship's new position.

The Half Moon sailed through this part of the Hudson Valley on September 14, 1609.



5. "...then northwest by north two leagues and anchored. The land grew very high and mountainous. The river is full of fish."

a. How many miles did the *Half Moon* sail in this section? 6 miles

Add these miles to the miles at the *Half Moon's* last marked location. Put an X on your map at the ship's new position.

b. Juet says the land grew mountainous. What do we call these mountains today?
the Hudson Highlands

6. "The fifteenth, in the morning was misty until the sun arose, then it cleared. So we weighed with the wind at south, and ran up into the river twenty leagues, passing by high mountains. We had a very good depth, as six, seven, eight, nine, ten, twelve, and thirteen fathoms, and great store of salmons in the river. This morning our two savages got out of a *port* and swam away. After we were under sail they called to us in scorn. At night we came to other mountains, which lie from the river's side. There we found very loving people, and very old men, where we were well used. Our boat went to fish, and caught great store of very good fish."

Relations between the *Half Moon's* crew and native Americans were sometimes friendly, sometimes not. The two whom Juet calls "savages" were hostages, taken after an earlier fight on what is today New York Harbor. They escaped through a **port** - an opening in the ship's side. You can learn more about relations between the *Half Moon's* crew and native Americans by reading other parts of Juet's journal.

a. How many miles did the *Half Moon* sail today? 60 miles

Put an X on your map at the ship's new position.

b. Juet tells of coming to mountains "which lie from the river's side" - they are not right along the river but some distance away. Today, what do we call these mountains, shown in this photo?
the Catskill Mountains



7. "The sixteenth, fair and very hot weather. In the morning our boat went again to fishing, but could catch but few, by reason their canoes had been there all night. This morning the people came aboard, and brought us ears of Indian corn and *pompions* and tobacco, which we bought for trifles. We rode still all day, and filled fresh water; at night we weighed and went two leagues higher, and had *shoaled* water so we anchored till day."

Shoal means shallow; "shoaled water" is shallow water.

a. How many miles did the *Half Moon* sail today? 6 miles

Add these miles to the miles at the *Half Moon's* last marked location. Put an X on your map at the ship's new position.

b. What are **pompions**? [Hint: One of the "three sister" crops grown by the native Americans, we see many of these in farm fields during the fall.]

pumpkins or squash

c. Do you think that Hudson still believed this river was the Northwest Passage leading to China? Why or why not? Use examples from the reading.

It's unlikely that Hudson still believed that this river was the Northwest Passage. Mention of fresh water and shallows suggests that the Half Moon is getting nearer to the river's source on land rather than approaching the ocean near China.



The replica Half Moon sailing north at Poughkeepsie.