

Shipping on the Hudson 2

Students will practice addition, subtraction, multiplication, and division skills by tracking the movements of ships, tugboats, and barges on the Hudson River estuary.

Objectives: Students will solve word problems that require them to:

- read and interpret data from a table;
- add and subtract to calculate distances;
- add and subtract using hours and minutes to determine how much time vessels require to move between river milepoints;
- multiply and divide with decimals to determine speeds of vessels.

Grade level: Intermediate (Grades 6-8)

Subject Area: Math, Geography

Standards: Mathematics, Science, & Technology Standards 1, 2, 3;
Social Studies Standard 3

Skills:

- Interpret data from a table.
- Use numbers to identify locations and measure distances.
- Add, subtract, multiply, and divide using decimals.
- Apply mathematics in real world settings.
- Reason mathematically.

Vocabulary: barge, gypsum, river mile, shipping, tugboat, vessel

Duration:

Preparation time: 5 minutes

Activity time: 30 minutes

Materials: Each student should have:

- ☐ Worksheet: Doing Math with Hudson River Shipping
- ☐ Hudson River Miles map
- ☐ Pencil



Hudson River Estuary Program
NYS Department of Environmental Conservation



Background:

The Hudson is a major shipping route for bulk commodities. Small units of these products have little worth; transporting huge loads by water minimizes shipping costs. In volume and value, petroleum products are the most important cargos on the river; tanker barges are the most common commercial vessels. Ships carry gypsum to wallboard factories in Rensselaer, Verplanck, and Haverstraw. Road salt also arrives by ship. Powdered cement goes downriver in barges. Stone quarried in Ulster, Dutchess, and Rockland Counties goes downriver in scows.

Scrap metal is shipped in and out of the Port of Albany, as is wood pulp. Heavy equipment leaves the port on heavy lift vessels. Containers are barged between Albany and New York. Food products are also carried on ships. Grain goes in and out of Albany while cocoa beans and molasses come in from points south. Raw sugar is barged from Florida to a refinery in Yonkers.

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 Federal Dam in Troy at River Mile 153.

Activity:

1. Using the map, explain Hudson River Miles.
2. Discuss the kinds of ships and cargoes seen on the Hudson.
3. Go over the worksheet with the class, or assign as in-class work or homework.

Assessment:

- Have students share answers to questions from worksheet, or collect and grade sheets.
- Make up similar elapsed time/distance problems for quiz.

Answers:

1. Gypsum Baron

- (a) HRM 18 to HRM 7; 11 miles
- (b) 9:45 AM to 10:45 PM, 1 hour
- (c) 11 miles per hour

2. RTC 120

- (a) HRM 115 to HRM 87, 28 miles
- (b) 9:00 AM to 11:17 AM; 137 minutes
- (c) $28 \div 137$; 0.2 miles per minute
- (d) 0.2×60 ; 12 miles per hour

3. Bouchard B#35

- (a) Yes, longer than football field by 38 feet
- (b) HRM 124 to HRM 61, 63 miles
- (c) 11:29 am to 4:45 PM; 315 minutes
- (d) $63 \div 315 \times 60$; 0.2 miles per minute, 12 miles per hour

4. Alice Oldendorff

- (a) HRM 124 to HRM 115, 9 miles
- (b) 1:02 pm to 1:35 PM; 33 minutes
- (c) $9 \div 33 \times 60$; 0.3 miles per minute, 18 miles per hour
- (d) $108 \div 18$; 6 hours
- (e) 1:35 pm + 6 hrs; 7:35 PM

Resources:

Photos and dimensions of the barges described in this activity, as well as many tugboats commonly seen on the Hudson, can be viewed at the websites of the Bouchard Transportation Company <http://www.bouchardtransport.com/HomePage.htm> and the Reinauer Transportation Company <http://www.reinauer.com/RTCWeb/DesktopDefault.aspx?tabindex=4&tabid=3>.



Hudson River Estuary Program
NYS Department of Environmental Conservation

