Round: Sample
Time: 5 minutes

At 0800 on November 10, 2008, the first mate of the *M/V Edwin H. Gott*, has just taken charge of the ship for her first of two four-hour watches. The boat is on a course of 010 degrees True from southern Lake Michigan to the Straits of Mackinac. At 0830 the first mate observes that NOAA weather buoy # 45007 is directly abeam of the *M/V Gott* about one-quarter mile away. She notes that she should expect to see weather buoy # 45002 during her second watch of the day. The distance between the two buoys is 144 nautical miles (nm).

1. The *M/V Gott* is traveling at a steady 12 knots (12 nm/hr). At what time does the first mate expect to see buoy # 45002? (4 pts)

2. During her second watch, the first mate realizes that buoy # 45002 should be directly abeam of the boat, but it's not there. She consults the RADAR display and finds that the buoy is still 9 nm away and almost directly ahead. After checking the logs and finding that the boat's speed through the water has remained constant, she realizes that the current is affecting the boat's speed over the lake.
    a. Assuming constant conditions throughout the voyage so far, what is the net speed of the current? (2 pts)

    b. What is its set (compass direction in which it is flowing)? (2 pts)

3. As the *M/V Gott* passes buoy #45002 at 2120, the first mate notes in the ship's log that a sister ship, the *M/V Edgar B. Speer*, is passing buoy # 45002 headed south toward buoy #45007 at 12 knots. Assuming that conditions remain constant, at what date and time will the *M/V Speer* reach buoy # 45007? (4 pts)

4. At 0800 on 11/10/08, the skipper of the *M/V Fisher King*, a 38-foot trawler-style motor vessel, sets out from Milwaukee for Holland, MI on the eastern side of Lake Michigan, 72 nautical miles distant. He sets the throttles for a speed of 9 knots and sets the autopilot to steer a course of 100 degrees True. At what time can he expect to arrive at Holland? (4 pts)

5. As the *M/V Fisher King* approaches the Michigan shore at the expected time, the skipper discovers that he is actually approaching Saugatuck, MI. The *M/V Fisher King* encountered the same conditions as the *Gott*. In which direction, north or south, is Saugatuck from Holland, and how far (4 pts)?

ANSWER **ANSWER** **ANSWER**

Round: Sample
Category: Technology
Time: 5 minutes

At 0800 on November 10, 2008, the first mate of the *M/V Edwin H. Gott*, has just taken charge of the ship for her first of two four-hour watches. The boat is on a course of 010 degrees True from southern Lake Michigan to the Straits of Mackinac. At 0830 the first mate observes that NOAA weather buoy # 45007 is directly abeam of the *M/V Gott* about one-quarter mile away. She notes that she should expect to see weather buoy # 45002 during her second watch of the day. The distance between the two buoys is 144 nautical miles (nm).

1. The *M/V Gott* is traveling at a steady 12 knots (12 nm/hr). At what time does the first mate expect to see buoy # 45002?
   2030 or 8:30 pm (4 pts)

2. During her second watch, the first mate realizes that buoy # 45002 should be directly abeam of the boat, but it's not there. She consults the RADAR display and finds that the buoy is still 9 nm away and almost directly ahead. After checking the logs and finding that the boat's speed through the water has remained constant, she realizes that the current is affecting the boat's speed over the lake.
   a. Assuming constant conditions throughout the voyage so far, what is the net speed of the current?
      0.75 knots (2 pts)

   b. What is its set (compass direction in which it is flowing)?
      190 degrees True (2 pts)

3. As the *M/V Gott* passes buoy #45002 at 2120, the first mate notes in the ship's log that a sister ship, the *M/V Edgar B. Speer*, is passing buoy # 45002 headed south toward buoy #45007 at 12 knots. Assuming that conditions remain constant, at what date and time will the *M/V Speer* reach buoy # 45007?
   Date: <u>November 11, 2008</u> (2 pts) Time: <u>0838</u> OR <u>8:38 am</u> (0835-0840 OK) (2 pts)

4. At 0800 on 11/10/08, the skipper of the *M/V Fisher King*, a 38-foot trawler-style motor vessel, sets out from Milwaukee for winter layup at a marina in Holland, MI on the eastern side of Lake Michigan, 72 nautical miles distant. He sets the throttles for a speed of 9 knots and sets the autopilot to steer a course of 100 degrees True. At what time can he expect to arrive at Holland?
   1600 OR 4:00 pm (4 pts)

5. As the *M/V Fisher King* approaches the Michigan shore at the expected time, the skipper discovers that he is actually approaching Saugatuck, MI. The *M/V Fisher King* encountered the same conditions as the *Gott*. In which direction, north or south, is Saugatuck from Holland, and how far?
   Direction: <u>south</u> (2 pts) Distance: <u>6 nm</u> (2 pts)