1.4.4 Practice: Modeling: The Rescue Ship

Geometry Honors Sem 2
Points Possible: 30

Practice

Name: _____

Date: _____

Your Assignment: Planning a Safe Passage

Use your knowledge of slope, along with the Map and Compass Tools on the landing page, to guide your boat out of the foggy strait.

1. What are the boat's coordinates? They are shown on the map and compass tools. (**2 points**)

2. Drag the point on the Map Tool up and down to move the boat's line of direction. (**2 points**)

    What happens to the point's *y*-coordinate as you move the point up toward the north?

    What happens to the point's *y*-coordinate as you move the point down toward the south?

3. Drag the blue dot on the Map Tool until it matches the coordinate pair (300, 260). Tell whether this point is on the North, Center, or South course through the strait. Repeat for (300, 274) and (300, 245). (**3 points:** 1 point for each coordinate pair)

(300, 260): _____
(300, 274): _____
(300, 245): _____

4. Circle the course (path) you want to use to guide the boat out of the strait. (**1 point**)

        North   Center   South

5. Use the slope formula to calculate the slope of the path you selected in question 4. Round your answer to the nearest hundredth. **Show your work.** Use the coordinates from question 1 and the pair in question 3 that matches the path you chose. Then use the Compass Tool to confirm your answer by dragging the point on the line that goes through the boat. (**5 points:** 3 points for a correctly written equation and work, 2 points for the slope)

Finding the Compass Heading

In the Compass Tool, first place the dot on the top line on the same coordinates as those from question 3 that match the path you chose for the boat. The bottom red line represents the needle of the compass. Move the blue dot on that line to point the needle in the same direction as the boat's path. Hint: The lines will have the same direction if they are parallel.

6. How will you know when the compass needle (the bottom red line) is pointing in the same direction as the path of your boat? (**3 points**)

7. What is the slope of the compass needle (the bottom red line)? (**2 points**)

8. Circle the compass heading for the line you will use to navigate the passage. (**2 points:** 1 point for a correct heading, 1 point for the direction)

52° SE

52° NE

50° NE

50° SE

57° NE

57° SE

To the Island

9. Find the distance from your initial point to the point you chose in question 4, when you picked your course. Give your answer in units to the nearest whole number. (We'll convert the units to a real-world measurement later.) What formula did you use to find this distance? (**3 points**: 2 points for the distance, 1 point for identifying the formula)

10. You want to reach the island at (550, 380). Based on the course you selected, what is the *total* distance you will travel to reach this point? Explain how you found your answer. (**3 points**: 2 points for the distance, 1 point for a complete explanation)

11. Each unit on the coordinate grid is equal to 500 feet. Convert your answer from question 10 to feet.

(**1 point**)

A Three-Hour Tour? A THREE-HOUR TOUR?

12. Boat speeds are usually given in knots (nautical miles per hour). One nautical mile is 6076 feet.

If the tour boat averages 25 knots and you use the same path to return to your starting point as you did to get to the island, will the tour be over in 3 hours? Explain how you reached your conclusion, and show your work. (**3 points**: 2 points for determining whether the tour will be over in 3 hours, 1 point for a complete explanation with all work shown)