

Demo PDF file. This file includes questions: 10 from 70. Full version of file looks the same as demo, but full version includes all questions. You may download file with all questions by link on bottom of this page

Q421 - Navigation Problems: Chart Plot

1. The Light List indicates that a light has a nominal range of 20 miles and is 52 feet (16 meters) high. If the visibility is 20 miles and your height of eye is 20 feet (6 meters), at what approximate distance will you sight the light?

- 33.0 nm
- 20.0 nm
- **13.5 nm**
- 8.5 nm

Note:

The light will be sighted at approximately 13.5 nautical miles. The Earth's curvature, determined by the observer's and light's heights, limits visibility, as this geographic range is less than the light's nominal range.

2. The following questions are to be answered using chart 12221 TR, Chesapeake Bay Entrance, and supporting publications. Your vessel is enroute from New York, NY, to Baltimore, MD. Your vessel's draft is 29 feet, and your height of eye is 54 feet. Your present course is 206°T and your speed is 18 knots. Use 10°W variation where required. At 0705 your position is Latitude 37°20.8' N Longitude 75°29.9' W. If a northwesterly breeze is causing 3 degrees leeway what is the true course to steer in order to pass Hog Island Lighted Bell Buoy "12" at a distance abeam of two miles?

- 212°T
- **209°T**
- 206°T
- 203°T

Note:

To pass Hog Island Lighted Bell Buoy "12" two miles abeam, steer 209T to compensate for the northwesterly wind's 3 leeway to port, ensuring your actual track remains on the desired course of 206T.

3. At 0725 you determined your vessel's position to be 37°15.5'N, 75°33.2'W. Assuming that you make good your course of 206°T and a speed of 18 knots, at what time would you expect to be abeam of Cape Charles Lighted Bell Buoy "14"?

- 0750
- **0758**
- 0802
- 0754

Note:

The abeam point of Cape Charles Lighted Bell Buoy "14" is 9.9 NM along a course of 206T from your 0725 position, requiring 33 minutes at a speed of 18 knots, resulting in an estimated time of 0758.

4. (5.8.2.2B1-3) At about what time will you see Chesapeake Light if visibility is exceptionally clear?

- 0738
- **0729**
- 0733
- 0742

Note:

Chesapeake Light is first visible when your DR track reaches its geographic range, which is determined by the heights of eye and light and visibility conditions. Option B (0729) represents the time your track first intersects this range, making it the earliest possible sighting time; later times indicate your vessel is already within the visibility circle.

5. At 0741 you are still steering a course of 206° true, with a speed of 18 knots. At this time you observe Cape Charles Lighted Bell Buoy "14" bearing 222°T and Hog Island Lighted Bell Buoy "12" bearing 015°T. What were the set and drift experienced since 0725?

- 042°T at 3.3 knots
- 049°T at 2.5 knots
- **259°T at 3.2 knots**
- 240°T at 1.9 knots

Note:

The displacement from the dead reckoning position to the observed fix indicates a current set of 259 true at a drift of 3.2 knots.

6. From your 0741 position, you wish to change course in order to pass 2.2 miles easterly of Cape Charles Lighted Bell Buoy "14". Your engine speed is now 14.0 knots. You estimate the current to be 240°T at 1.8 knots. What is the true course to steer to make good the desired course?

- 179°T
- 185°T
- **190°T**
- 197°T

Note:

To reach a desired position while accounting for current, combine the ship's speed through the water with the current vector to determine the course made good; in this case, a true course of 190T is required.

7. At 0811 your vessel's position is 37°04.9'N, 75°39.7'W. You are steering a course of 220°T at a speed of 14.0 knots. At what time would you expect the buoys in the northeasterly traffic scheme to line up, if you do not correct for a southwesterly current of 1.8 knots?

- 0831
- 0826
- 0846
- **0841**

Note:

The buoys will line up at 0841. This is calculated by determining the distance to the buoys along your course (7 nautical miles) and dividing that distance by your speed (14 knots), resulting in a time of 30 minutes. Adding this time to your initial fix time of 0811 yields 0841, ignoring the effect of the current as instructed.

8. At 0841 Chesapeake Light bears 164°T, Cape Charles Light bears 312°T, and Cape Henry Light bears 247°T. What was your course made good since 0811?

- 226°T
- 230°T
- 233°T
- 237°T

Note:

The course made good is the true bearing from the 0811 fix to the 0841 fix, which is determined by plotting a line between those positions on the chart and reading its direction on the true compass rose; therefore, the course made good is 226T.

9. From your 0841 position, you are steering a course of 241°T to the northeasterly inbound channel entrance, your speed is now 15 knots. What is your ETA abeam of buoy "NCA" (LL#375)?

- 0911
- 0901
- 0850
- 0855

Note:

The distance to buoy NCA is approximately 3.5 nautical miles, and at a speed of 15 knots, this takes 14 minutes to travel. Therefore, the ETA abeam of buoy NCA is 0841 plus 14 minutes, resulting in 0855.

10. As you pass through the Chesapeake Bay Bridge and Tunnel, you take a bearing of 047°pgc along trestle C when it is in line. The helmsman reports the vessel's heading as 316° pgc and 329°psc. What is the deviation on that heading?

- 1°W
- 1°E
- 3°E
- 9°W

Note:

The gyro error is determined by comparing the observed bearing of a known true bearing. Gyro error is then used to correct the gyro heading to true heading. Compass error is calculated as the difference between true and standard compass heading. Finally, deviation is found using the equation $CE = Var + Dev$, resulting in a deviation of 1W.
