

**Demo PDF file. This file includes questions: 10 from 388. 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**

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## **Q117 - Navigation Problems: Oceans**

**1. At 1423 you are on course 072°T at 12.2 knots, when you sight a rock awash bearing 070°T at a range of 3.6 miles. If you change course at 1427, what course would you steer to leave the rock 1.0 mile abeam to port?**

- 049°
- 054°
- 086°
- **091°**

Note:

*To avoid the rock 1.0 NM to port, steer a course of 091. This course creates a tangent from your position to a circle centered on the rock, ensuring the closest approach is 1.0 NM and the rock is on your port side.*

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**2. At 2221 your course is 222°pgc at a speed of 11.2 knots, when radar detects a buoy bearing 355° relative, at a range of 5.8 miles. The gyro error is 2°E. If you change course at 2226, what course should you steer to leave the buoy 1.0 mile abeam to port?**

- 210°pgc
- **228°pgc**
- 231°pgc
- 206°pgc

Note:

*Steering 228pgc results in a closest point of approach of 1.0 NM with the buoy exactly abeam to port, requiring true course correction accounting for gyro error and ship movement.*

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**3. While on a course of 019°pgc, a light bears 14° on the port bow at a distance of 15.3 miles. What course should you steer to pass 1.5 miles abeam of the light, leaving it to port?**

- 015°pgc
- **011°pgc**
- 013°pgc
- 006°pgc

Note:

*To pass 1.5 nautical miles abeam of a light, steer a course that positions the light 5.6 degrees on the port bow. The light's true bearing is 005 degrees, so the required course is 011 degrees.*

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**4. While on a course of 066°pgc, a light bears 13° on the port bow at a distance of 12.3 miles. What course should you steer to pass 4 miles abeam of the light leaving it to port?**

- 079°pgc
- 067°pgc
- **072°pgc**
- 085°pgc

Note:

*To pass a fixed object at a specific distance, steer a course that makes a tangent to a circle centered on the object with a radius equal to the desired closest point of approach. The angle between your course and the object's bearing is calculated using the sine function:  $\sin(A) = CPA / Range$ , where CPA is the closest point of approach and Range is the initial distance to the object.*

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**5. You are on course 079°T, speed 11.2 knots. At 0904 you see a daymark bearing 078°T at a range of 4.6. If you change course at 0910 to leave the daymark abeam to starboard at 0.5 mile, at what time will the daymark be abeam?**

- **0928**
- 0935
- 0918
- 0923

Note:

*The daymark will be abeam at 0928. After changing course, the distance to the abeam point is approximately 3.44 NM, which requires about 18.5 minutes at 11.2 knots.*

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**6. You are on course 086°T, speed 11.7 knots. At 1013 you see a buoy bearing 088°T at a range of 4.8 miles. If you change course at 1019 to leave the buoy abeam to port at 1.0 mile, at what time will the buoy be abeam?**

- 1043
- 1052
- **1037**
- 1040

Note:

*After altering course, the buoy will be abeam 18 minutes later, resulting in a time of 1037.*

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**7. While on a course of 097°pgc, a light bears 8° on the port bow at a distance of 11.7 miles. What course should you steer to pass 3 miles abeam of the light leaving it to port?**

- **104°pgc**
- 082°pgc
- 091°pgc
- 112°pgc

Note:

*To pass 3 miles abeam of the light on the port side, steer a course of 104pgc. This requires a 15 adjustment to starboard of the light's bearing, calculated using the sine function and ensuring the light remains on the port side.*

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**8. While on a course of 138°T, a light bears 14° on the starboard bow at a distance of 8.6 miles. What course should you steer to pass 3 miles abeam of the light leaving it to starboard?**

- 138°T
- 135°T
- 141°T
- **132°T**

Note:

*To pass 3 nautical miles abeam of a light, steer a course that creates a tangent line to a circle with a 3-mile radius centered on the light, ensuring the light remains on your starboard side. The correct course is 132T, calculated by determining the angle using trigonometry ( $\sin \theta = \text{distance off} / \text{range}$ ) and adjusting the original course to achieve the desired tangent.*

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**9. While on a course of 159°T, a light bears 11° on the starboard bow at a distance of 10.6 miles. What course should you steer to pass 2 miles abeam of the light leaving it to starboard?**

- **159°T**
- 171°T
- 163°T
- 167°T

Note:

*The current course results in a closest approach of approximately 2 nautical miles to starboard of the light, fulfilling the requirement to pass 2 miles abeam while leaving the light to starboard; therefore, no course alteration is necessary.*

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**10. While on a course of 283°pgc, a light bears 10° on the port bow at a distance of 8.3 miles. What course should you steer to pass 3.5 miles abeam of the light leaving it to port?**

- 289°pgc
- 294°pgc
- **298°pgc**
- 302°pgc

Note:

*To pass 3.5 miles abeam of the light while keeping it to port, steer a course of 298pgc, which creates a tangent to a circle around the light with a radius of 3.5 miles.*

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