

## U.S.C.G. Merchant Marine Exam

Mate Less than 500-1600 Gross Registered Tons

Q138 Navigation General – Near Coastal

(Sample Examination)

**Choose the best answer to the following Multiple-Choice questions.**

1. The datum from which the predicted heights of tides are reckoned in the tide tables is \_\_\_\_\_.
- A. the same as that used for the charts of the locality
  - B. given in table three of the tide tables
  - C. the highest possible level
  - D. mean low water

Correct answer: A

2. What does the expression "the air is saturated" mean?
- A. The relative humidity is 100%
  - B. The precipitation has commenced
  - C. The vapor pressure is at its maximum for the prevailing temperature
  - D. The cloud cover is 100%

Correct answer: A

3. You are steaming eastward in the North Atlantic in an extratropical cyclonic storm and the wind is dead ahead. According to the law of Buys Ballot, where does the center of the low pressure lie?
- A. To the south
  - B. To the north
  - C. Astern of you
  - D. Directly ahead of you

Correct answer: A

4. Which term is used to describe a generally circular low-pressure area?
- A. A cyclone
  - B. An occluded front
  - C. A cold front
  - D. An anticyclone

Correct answer: A

5. What is the standard atmospheric pressure in millibars?
- A. 760.0
  - B. 938.9
  - C. 1000.0
  - D. 1013.2

Correct answer: D

6. Which condition(s) is(are) necessary for the formation of dew?
- A. Clear skies
  - B. Available nuclei in the air
  - C. A surface warmer than the dew point of the air
  - D. Moderate winds

Correct answer: A

7. In illustration D044NG below, what type of buoy is indicated by the letter A?

- A. Can
- B. Nun
- C. Spar
- D. Pillar

Correct answer: A

8. Which term is given to a light that has a light period shorter than its dark period?

- A. Occulting
- B. Flashing
- C. Alternating
- D. Pulsating

Correct answer: B

9. Which weather element cannot be measured accurately while on board a moving vessel?

- A. Visibility
- B. Atmospheric pressure
- C. Wind direction
- D. Temperature

Correct answer: A

10. Vessels should maintain a sharp lookout, especially during December through March, when navigating the Northern Right Whale's only known calving grounds. Where are the calving grounds located?

- A. Georgia and NE Florida
- B. California and Mexico
- C. Maine and Massachusetts
- D. Nova Scotia

Correct answer: A

11. Which is TRUE for the directive force acting on a gyrocompass?

- A. The force remains the same at all latitudes
- B. The force is greatest when a vessel is near the Earth's magnetic equator
- C. The force increases as the latitude decreases, being maximum at the geographic equator
- D. The force increases as the latitude increases, being maximum at the geographic poles

Correct answer: C

12. When utilizing a Pacific Coast chart, which is the reference plane of soundings?

- A. Mean low water springs
- B. Lowest normal low water
- C. Mean lower low water
- D. Mean lowest water

Correct answer: C

13. When you are steering on a pair of range lights and find the upper light is in line above the lower light, you should take which action?
- A. Come left
  - B. Continue on the present course
  - C. Come right
  - D. Wait until the lights are no longer in a vertical line

Correct answer: B

14. The depth of water on a chart is indicated as 23 meters. What does that depth convert to?
- A. 11.5 fathoms
  - B. 12.6 fathoms
  - C. 69.0 feet
  - D. 78.6 feet

Correct answer: B

15. If you are the Master of a towing vessel whose only working radar no longer functions, what must you do?
- A. Notify the Officer in Charge of Marine Inspection (OCMI) if you cannot repair it within 48 hours.
  - B. Anchor the vessel until it is repaired.
  - C. Notify the Captain of the Port (COTP) if you cannot repair it within 96 hours.
  - D. Moor the vessel until it is repaired.

Correct answer: C

16. Which of the following must the electronic chart of an ECDIS display, as required by IMO/IHO?
- A. Ferry routes
  - B. Hydrography
  - C. Regulatory boundaries
  - D. All of the above

Correct answer: D

17. Which symbol represents a 10-fathom curve?
- A. \_\_\_\_\_ · \_\_\_\_\_ · \_\_\_\_\_ · \_\_\_\_\_
  - B. \_\_\_\_\_ ——— ———
  - C. .....
  - D. ... \_\_\_\_\_ ... \_\_\_\_\_

Correct answer: A

18. What daymark has NO lateral significance?
- A. Green and white diamond
  - B. Green square
  - C. Red triangle with a green horizontal stripe
  - D. Red triangle

Correct answer: A

19. You wish to measure the distance on a Mercator chart between a point in latitude  $43^{\circ}30'N$  and a point in latitude  $40^{\circ}30'N$ . To measure 30 miles at a time, where should you set the points of the dividers to obtain the most accurate measurement?
- A.  $41^{\circ}30'$  and  $42^{\circ}00'$
  - B.  $41^{\circ}45'$  and  $42^{\circ}15'$
  - C.  $42^{\circ}00'$  and  $42^{\circ}30'$
  - D.  $42^{\circ}15'$  and  $42^{\circ}45'$

Correct answer: B

20. The velocity of the apparent wind can be less than the true wind and from the same direction, if certain conditions are present. One condition is that the \_\_\_\_\_.
- A. true wind is from dead ahead
  - B. true wind is from dead astern
  - C. true wind is on the beam
  - D. ship's speed is more than the true wind velocity

Correct answer: B

21. Your vessel is on course  $180^{\circ}T$  speed 22 knots. The apparent wind is from  $70^{\circ}$  off the port bow, speed 20 knots. What are the true direction and speed of the wind?
- A.  $45^{\circ}T$ , 21.0 knots
  - B.  $51^{\circ}T$ , 24.0 knots
  - C.  $58^{\circ}T$ , 21.2 knots
  - D.  $64^{\circ}T$ , 26.0 knots

Correct answer: B

22. What does a buoy with a composite group-flashing light indicate?
- A. Fish net area
  - B. Dredging area
  - C. Bifurcation (channel junction)
  - D. Anchorage area

Correct answer: C

23. Barometer readings in weather reports are given in terms of pressure at which reference location?
- A. Washington, D.C.
  - B. Sea level
  - C. The weather station
  - D. The broadcasting station

Correct answer: B

24. Which instrument is designed to maintain a continuous record of atmospheric pressure?
- A. A thermograph
  - B. An aneroid barometer
  - C. A barograph
  - D. A mercurial barometer

Correct answer: C

25. How many high waters usually occur each day on the East Coast of the United States?

- A. One
- B. Two
- C. Three
- D. Four

Correct answer: B

26. The hurricane season in the North Atlantic Ocean reaches its peak during which month?

- A. September
- B. November
- C. July
- D. June

Correct answer: A

27. Considering the general circulation of the atmosphere, what is the name given to the wind system between latitudes 30°N and 60°N?

- A. Northeast Trades
- B. Prevailing Westerlies
- C. Trade winds
- D. Southeasterlies

Correct answer: B

28. You are inbound in a channel marked by a range. The range line is 309°T. You are steering 306°T and have the range in sight as shown in illustration D047NG below. The range continues to open. What action should you take?

- A. Alter course to the left to close the range, then alter course to 309°T.
- B. Maintain course as it is normal for the range to open as you get close.
- C. Alter course to the left until the range closes, then steer to the left of 306°T.
- D. Alter course to the right to 309°T or more to bring the range in line.

Correct answer: C

29. What is the gyrocompass error resulting from your vessel's movement in OTHER than an east-west direction?

- A. Damping error
- B. Speed error
- C. Quadrantal error
- D. Ballistic deflection

Correct answer: B

30. What do the numbers on isobars indicate?

- A. Rain in inches
- B. Temperature
- C. Barometric pressure
- D. Wind speed

Correct answer: C

31. To avoid error, how should you read the scale of an aneroid barometer?

- A. With your eye slightly above the meniscus
- B. With your eye to the right of the pointer
- C. With your eye to the left of the pointer
- D. With your eye directly in front of the pointer

Correct answer: D

32. The climate of the eastern coast of the Gulf of America \_\_\_\_\_.

- A. varies from warm to subtropical
- B. is humid and subtropical throughout the year
- C. has an east coast marine type of climate
- D. has a Mediterranean type of climate

Correct answer: A

33. You are underway on course 050°T and your maximum speed is 12 knots. The eye of a hurricane bears 080°T, 100 miles from your position. The hurricane is moving towards 265°T at 22 knots. What course should you steer at 12 knots to have the maximum CPA?

- A. 190°
- B. 199°
- C. 208°
- D. 219°

Correct answer: C

34. A ship is on course 195° at a speed of 15 knots. The apparent wind is from 40° on the port bow, speed 30 knots. What are the direction and speed of the true wind?

- A. 068°T, 30 knots
- B. 127°T, 21 knots
- C. 263°T, 42 knots
- D. 292°T, 42 knots

Correct answer: B

35. Which list of clouds is in sequence, from highest to lowest in the sky?

- A. Stratus, cirrostratus, altostratus
- B. Altostratus, cirrostratus, stratus
- C. Cirrostratus, altostratus, stratus
- D. Altostratus, stratus, cirrostratus

Correct answer: C

36. Which fog is produced by warm moist air passing over a cold surface?

- A. Radiation fog
- B. Conduction fog
- C. Frontal fog
- D. Advection fog

Correct answer: D

37. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's fog horn 3 seconds after the signal was sounded. What is the distance to the shore?
- A. 872 yards
  - B. 550 yards
  - C. 792 yards
  - D. 1100 yards

Correct answer: B

38. A line of position is \_\_\_\_\_.
- A. the position of your vessel
  - B. not used in a running fix
  - C. a line on some point of which the vessel may be presumed to be located
  - D. a line connecting two charted objects

Correct answer: C

39. In a tropical cyclone in the Northern Hemisphere, a vessel hove to with the wind shifting counterclockwise would be in which location?
- A. In the dangerous semicircle
  - B. Directly in the path of the center
  - C. Ahead of the storm
  - D. In the navigable semicircle

Correct answer: D

40. What is a lighted safe water mark fitted with to aid in its identification?
- A. Red and white retroreflective material
  - B. A sequential number
  - C. A spherical topmark
  - D. A red and white octagon

Correct answer: C

41. Which defines a light's luminous range?
- A. The maximum distance at which a light may be seen under existing visibility conditions
  - B. The maximum distance at which a light may be seen in clear weather
  - C. The maximum distance at which a light may be seen considering the height of the light and the height of the observer
  - D. The average distance of visibility of the light

Correct answer: A

42. Charts should be corrected by using information published in which text?
- A. American Practical Navigator
  - B. Coast Pilot
  - C. Notice to Mariners
  - D. Light List

Correct answer: C



43. What causes compass deviation?

- A. Misalignment of the compass
- B. Magnetism within the vessel
- C. A dirty compass housing
- D. Magnetism from the earth's magnetic field

Correct answer: B

44. In the North Sea area, you sight a buoy showing a quick white light with 6 flashes, followed by one long flash at 15 second intervals. Which of the four topmarks shown in illustration D030NG below would be fitted to this buoy?

- A. A
- B. B
- C. C
- D. D

Correct answer: A

45. In shallow water, waves that are too steep to be stable, causing the crests to move forward faster than the rest of the wave. This occurrence describes which term?

- A. Surfers
- B. Breakers
- C. White caps
- D. Rollers

Correct answer: B

46. On a working copy of a weather map, a cold front is represented by what color line?

- A. Red
- B. Purple
- C. Alternating red and blue
- D. Blue

Correct answer: D

47. The owner or Master of a towing vessel shall ensure that each person that directs and controls the movement of the vessel can accomplish all of the following EXCEPT \_\_\_\_\_.

- A. adjust speed with due regard for the weather and visibility
- B. evaluate the danger of each closing visual or radar contact
- C. reduce speed only where local speed limits are posted
- D. enter all required test and inspection results in the vessel's log or other record carried on board

Correct answer: C

48. Which is TRUE concerning Hot air?

- A. The moisture content of air is independent of air temperature
- B. Hot air retains the same amount of moisture as cold air
- C. Hot air holds more moisture than cold air
- D. Hot air holds less moisture than cold air

Correct answer: C

49. In the Northern Hemisphere, an observer at point II in illustration D014NG below, should experience a wind shift from what direction?
- A. northeast, clockwise to west-southwest
  - B. southwest, clockwise to northwest
  - C. east, counterclockwise to south-southwest
  - D. northeast, counterclockwise to northwest

Correct answer: B

50. The survey information upon which a chart is based is found at which location?
- A. At the top center of the next line
  - B. At the lower left corner
  - C. Near the chart title
  - D. At any convenient location

Correct answer: C

51. While on a course of 216°pgc, a light bears 12° on the port bow at a distance of 11.2 miles. Which course should you steer to pass 2 miles abeam of the light leaving it to port?
- A. 208°pgc
  - B. 210°pgc
  - C. 212°pgc
  - D. 214°pgc

Correct answer: D

52. You have been observing your radar screen and notice that a contact on the screen has remained in the same position, relative to you, for several minutes. Your vessel is making 10 knots through the water. Which statement is TRUE?
- A. The contact is on a reciprocal course at the same speed as your vessel.
  - B. The contact is dead in the water.
  - C. The contact is on the same course and speed as your vessel.
  - D. The radar is showing false echoes and is probably defective.

Correct answer: C

53. You are inbound in a channel marked by a range. The range line is 040°T. You are steering 036°T. The range is in sight as shown in illustration D047NG below, and is closing. Which action should you take?
- A. Immediately alter course to 040°T.
  - B. Continue on the present heading until the range is in line then alter course to the left.
  - C. Continue on course until the range is closed, then alter course to the right.
  - D. Immediately alter course to the right to bring the range in line.

Correct answer: C

54. You take a bearing of  $356^\circ$  of a lighthouse. What bearing of another object would give the best fix?
- A.  $013^\circ$
  - B.  $201^\circ$
  - C.  $082^\circ$
  - D.  $176^\circ$

Correct answer: C

55. In the IALA Maritime Buoyage System, what is a red and white vertically-striped buoy used to indicate?
- A. Isolated danger
  - B. A special mark not primarily used for navigation
  - C. Preferred channel
  - D. Safe water

Correct answer: D

56. What is the approximate geographic range of Southwest Ledge Light, Connecticut, if your height of eye is 32 feet (9.8 meters)? Refer to "Reprints from the LIGHT LISTS AND COAST PILOTS".
- A. 15.5nm
  - B. 13.4nm
  - C. 8.7nm
  - D. 6.9nm

Correct answer: A

57. Which line connects the points of zero magnetic dip?
- A. An agonic line
  - B. The magnetic equator
  - C. A magnetic meridian
  - D. The terrestrial equator

Correct answer: B

58. When trying to sight a lighthouse you notice a glare from a town in the background. How does this affect the range at which the light may be sighted?
- A. Increased slightly due to extra lighting
  - B. Considerably reduced and difficult to distinguish
  - C. Unchanged
  - D. Increased if the light is red or green due to contrast with the glare

Correct answer: B

59. Where can information about the direction and velocity of rotary tidal currents be found?
- A. Mariner's Guide
  - B. Tide Tables
  - C. Nautical Almanac
  - D. Tidal Current Tables

Correct answer: D

60. A List of Lights entry (LFI) is a single flashing light which shows a long flash of not less than which duration?
- A. 1.0 second duration
  - B. 1.5 seconds duration
  - C. 2.0 seconds duration
  - D. 3.0 seconds duration

Correct answer: C

61. With respect to failure warnings and status indications, GPS receivers should provide, at a minimum, \_\_\_\_\_.
- A. a warning of loss of position
  - B. an alarm if engine speed is suddenly reduced
  - C. a cross-track error alarm
  - D. an indication of a change in satellite configuration

Correct answer: A

62. The Light List indicates that a dayboard is a type TR-SY. Which action should you take?
- A. Expect a daymark with no lateral significance
  - B. Pass it close aboard on either side
  - C. Leave it to port when southbound on the Atlantic portions of the ICW
  - D. Look for a dayboard of type TR-TY to form a range

Correct answer: C

63. Which scale is used to estimate wind speed by observing sea conditions?
- A. Beaufort scale
  - B. Coriolis scale
  - C. Metric scale
  - D. Wind scale

Correct answer: A

64. Two beacons form a range in the direction of 221.5°T. The range is seen in line from your vessel bearing 223° per gyrocompass. The variation in the area is 4°E. What is the error of your gyrocompass?
- A. 1.5°W
  - B. 2.5°W
  - C. 5.5°W
  - D. 2.5°E

Correct answer: A

65. How can you follow the approach of a dangerous cyclonic storm?
- A. By monitoring the change in the sea temperature
  - B. Review the Coast Pilot or Sailing Directions
  - C. Utilizing the National Weather Service Observing Handbook No.1, Marine Surface Observations
  - D. By a newspaper, a weather map, a weather fax, or a weather forecast

Correct answer: D

66. Which is TRUE of a dead reckoning (DR) plot?

- A. A dead reckoning (DR) plot should be started each time the vessel's position is fixed
- B. A dead reckoning (DR) plot should be replotted hourly
- C. A dead reckoning (DR) plot must utilize magnetic courses
- D. A dead reckoning (DR) plot must take set and drift into account

Correct answer: A

67. You are in a buoyed channel at night and pass a lighted buoy with an irregular characteristic. Who should you report this to?

- A. The National Ocean Service
- B. The Corps of Engineers
- C. The harbor master
- D. The Coast Guard

Correct answer: D

68. When does a Doppler speed log indicate speed over ground?

- A. The unit can only sense speed over ground when there is no current
- B. When sensing the bottom in depths of less than 600 feet
- C. At all times
- D. When the unit is in the volume reverberation mode

Correct answer: B

69. You are sailing south on the Intracoastal Waterway (ICW) when you sight a red nun buoy with a yellow triangle painted on it. Which statement is TRUE?

- A. Geometric symbols such as squares and triangles replace letters and numbers on ICW aids to navigation.
- B. The ICW and another waterway coincide in this geographical area.
- C. The yellow triangle identifies a sharp turn (over 60°) in the channel.
- D. This is an information or regulatory buoy that also has lateral significance.

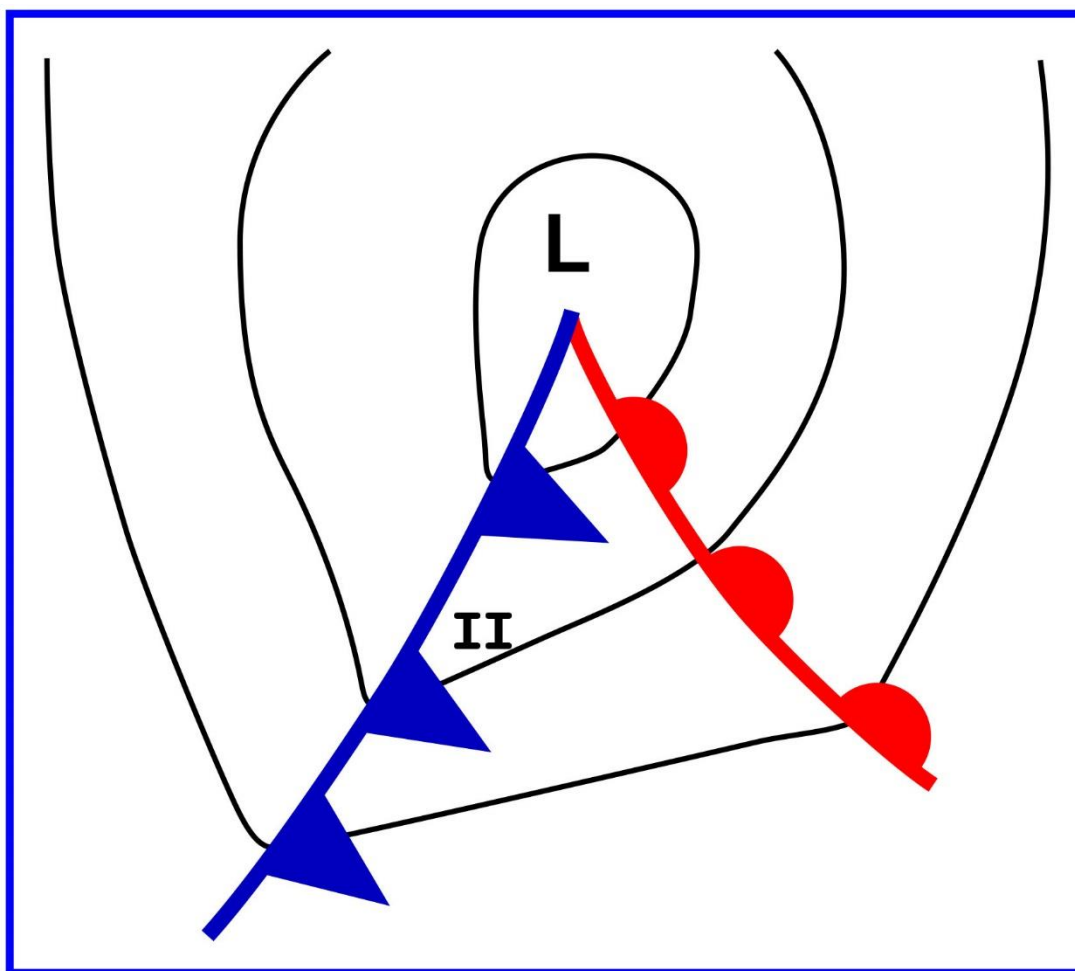
Correct answer: B

70. You are taking bearings on two known objects ashore. The BEST fix is obtained when the angle between the lines of position is \_\_\_\_\_.

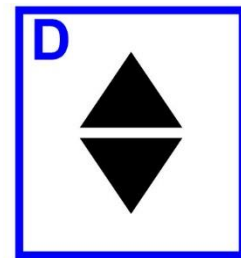
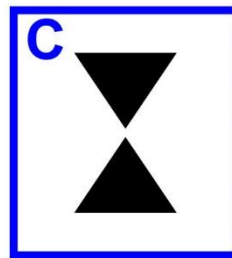
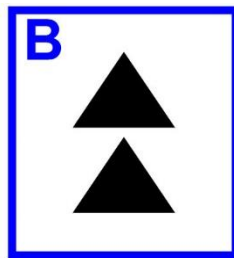
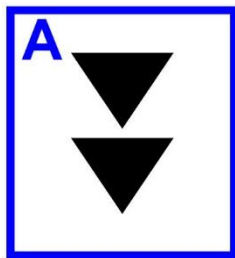
- A. 45°
- B. 60°
- C. 90°
- D. 30°

Correct answer: C

## D014NG

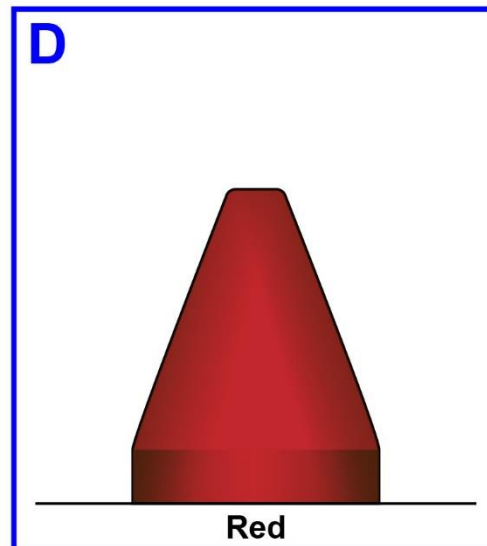
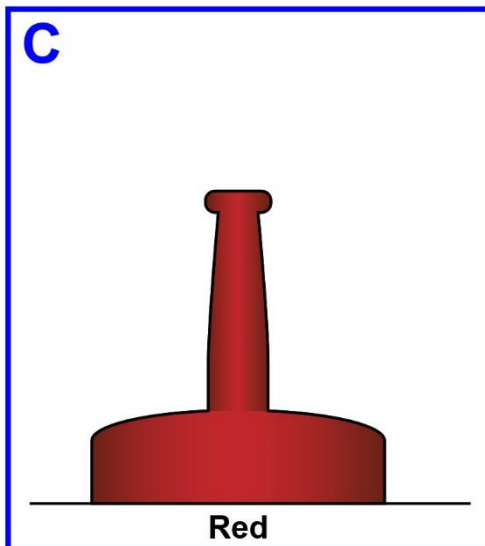
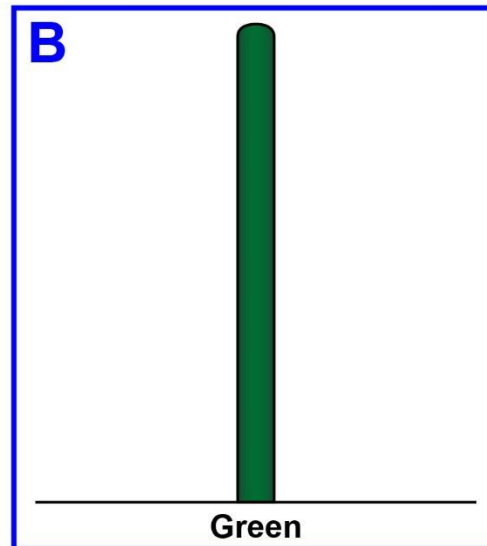
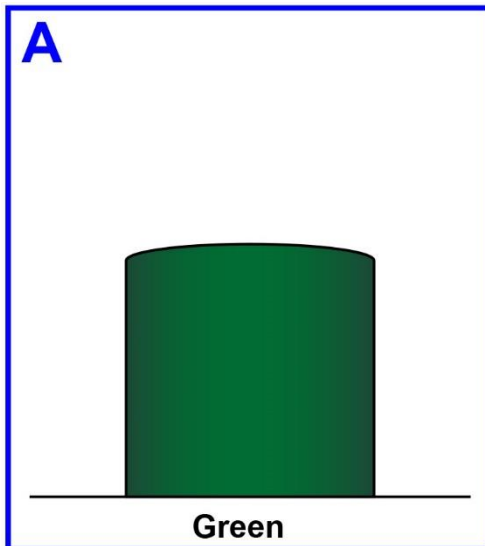


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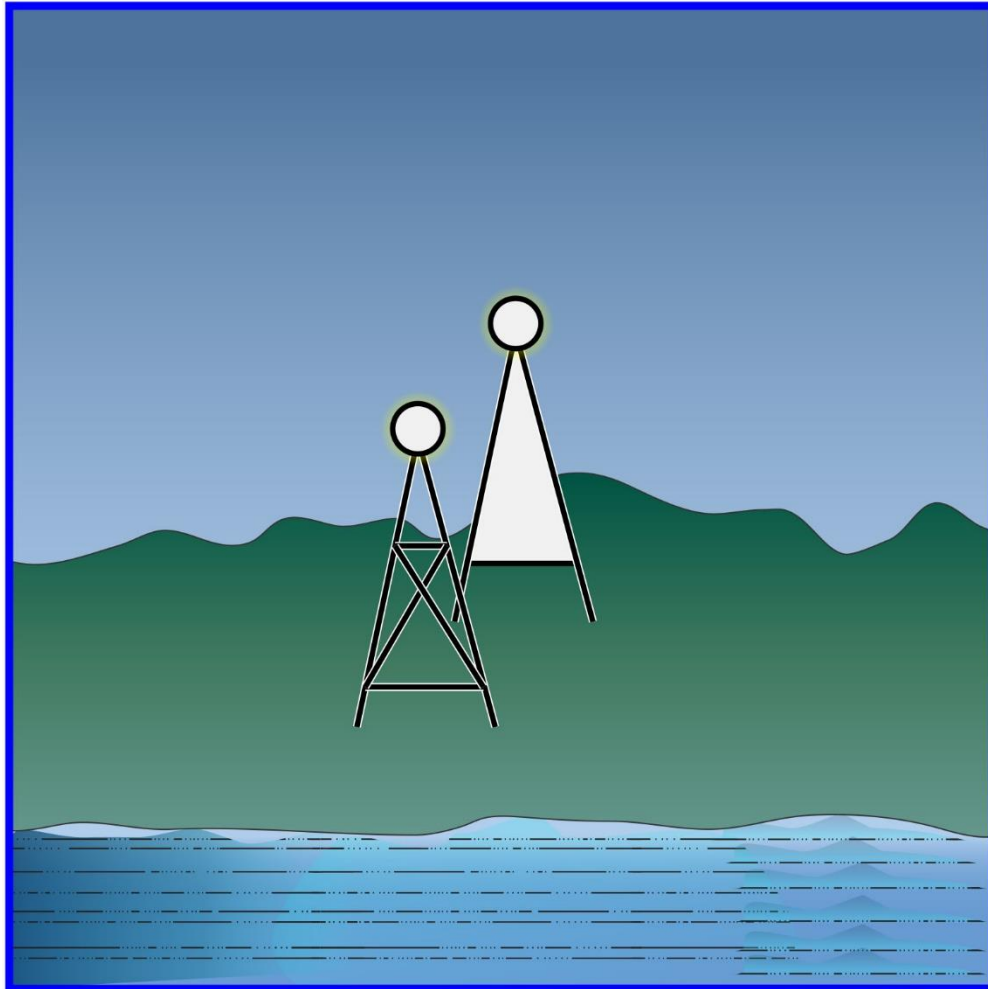
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