

U.S.C.G. Merchant Marine Exam
Second/Third Mate of Unlimited Tonnage
Q113 Navigation General – Near Coastal
(Sample Examination)

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

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

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

Correct answer: D

2. Buoys which only mark the left or right side of the channel will never exhibit a light with which characteristic?

- A. Quick flashing
- B. Equal interval (isophase)
- C. Composite group flashing
- D. Flashing

Correct answer: C

3. In both regions of the IALA buoyage system, which topmark shown in illustration D022NG below is used on a special mark?

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

Correct answer: D

4. In the North Sea area, you sight a buoy with a quick light showing 3 flashes every 10 seconds. Which topmark in illustration D030NG below would be fitted to this buoy under the IALA Buoyage Systems?

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

Correct answer: D

5. Pressure gradient is a measure of _____.

- A. pressure difference over horizontal distance
- B. vertical pressure variation
- C. a high-pressure area
- D. pressure difference over time

Correct answer: A

6. You are underway on course 120°T and your maximum speed is 12 knots. The eye of a hurricane bears 150°T, 120 miles from your position. The hurricane is moving towards 295°T at 20 knots. If you maneuver at 12 knots to avoid the hurricane, what could be the maximum CPA?
- A. 89 miles
 - B. 96 miles
 - C. 105 miles
 - D. 117 miles

Correct answer: D

7. If you are caught in the left semicircle of a tropical storm, in the Southern Hemisphere, which action should you take?
- A. Place the wind on the port bow, and make as much way as possible
 - B. Place the wind on the starboard quarter, hold course and make as much way as possible
 - C. Place the wind 2 points on the port quarter, and make as much way as possible
 - D. Place the wind dead ahead and heave to

Correct answer: A

8. While proceeding up a channel on course 010° per gyrocompass, you notice a pair of range lights in alignment with the masts of your vessel when viewed forward. A check of the chart shows the range to be 009°T and the variation to be 15°W. If the ship's course is 026°psc, what is the deviation for the present heading?
- A. 2°W
 - B. 2°E
 - C. 1°W
 - D. 1°E

Correct answer: A

9. The shoreline shown on nautical charts of areas affected by large tidal fluctuations is usually the line of mean _____.
- A. high water
 - B. low water
 - C. lower low water
 - D. tide level

Correct answer: A

10. Safe water buoys may show ONLY which type of light?
- A. flashing green lights
 - B. yellow lights
 - C. white lights
 - D. flashing red lights

Correct answer: C

- 11.** On a chart, the characteristic of the light on a lighthouse is shown as flashing white with a red sector. Which is TRUE of the red sector?
- A. It indicates a danger area
 - B. It indicates the limits of the navigable channel
 - C. It is used to identify the characteristics of the light
 - D. It serves no significant purpose

Correct answer: A

- 12.** Two well-developed high-pressure areas may be separated by which item?
- A. A ridge of low pressure
 - B. A hill of low pressure
 - C. A valley of low pressure
 - D. A trough of low pressure

Correct answer: D

- 13.** Which term describes a light, feathery deposit of ice by sublimation of water vapor directly into the crystalline form on objects whose temperatures are below freezing?
- A. Snow
 - B. Frost
 - C. Glaze
 - D. Dew

Correct answer: B

- 14.** What do red sectors of navigation lights warn mariners of?
- A. Shoals or nearby land
 - B. Floating debris
 - C. Heavily trafficked areas
 - D. Recently sunken vessels

Correct answer: A

- 15.** 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. Increased if the light is red or green due to contrast with the glare
 - D. Unchanged

Correct answer: B

16. What is the purpose of the "reference hand" on an aneroid barometer?

- A. To adjust the barometer
- B. To provide a correction for height above sea level
- C. To provide a correction for temperature changes
- D. To indicate any change in the reading of the barometer

Correct answer: D

17. In which country would you expect the channels to be marked with the IALA-B Buoyage System?

- A. Peru
- B. Poland
- C. Saudi Arabia
- D. Morocco

Correct answer: A

18. A green buoy has a yellow triangle on it. What type of buoy is this?

- A. It is a dual-purpose marker used where the ICW and other waterways coincide
- B. This is an information or regulatory buoy that has lateral significance
- C. It is a buoy that was set in error and will be replaced with a red nun buoy
- D. This buoy that is off-station and is marked to warn mariners of its wrong position

Correct answer: A

19. You take a bearing of 176° of a lighthouse. Which bearing of another object would give the best fix?

- A. 079°
- B. 151°
- C. 176°
- D. 292°

Correct answer: A

20. You are inbound in a channel marked by a range. The range line is 133°T . You are steering 129°T and have the range in sight as shown in illustration D048NG below. Which action should you take?

- A. Immediately alter course to the right to bring the range in line.
- B. Immediately alter course to the left to bring the range in line.
- C. Immediately alter course to 133°T if the range is closing.
- D. Continue on the present heading until the range is in line then alter course to the right.

Correct answer: A

21. Which position includes the effects of wind and current?

- A. Estimated position
- B. Dead reckoning position
- C. Leeway position
- D. Set position

Correct answer: A

22. Barometer readings in weather reports are given in terms of pressure at which reference location?

- A. Washington, D.C.
- B. The broadcasting station
- C. Sea level
- D. The weather station

Correct answer: C

23. Which is TRUE concerning the occurrence of Spring tides?

- A. They occur only when the Sun and Moon are on the same side of the Earth and nearly in line
- B. They occur when the Sun, Moon, and Earth are nearly in line, in any order
- C. They commence at the start of spring, when the Sun is nearly over the equator
- D. They occur when the Sun and Moon are at approximately 90° to each other as seen from the Earth

Correct answer: B

24. By convention, what color is the south pole of a magnet painted?

- A. Red
- B. White
- C. Blue
- D. Black

Correct answer: C

25. On a working copy of a weather map what color is the line that represents a stationary front?

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

Correct answer: A

26. Which theoretical minimum number of measurements from satellites does a GPS receiver need in order to provide an exact three-dimensional position?

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

Correct answer: B

27. What does the lubber's line on a magnetic compass indicate?

- A. Compass north
- B. The vessel's compass heading
- C. Magnetic north
- D. A relative bearing taken with an azimuth circle

Correct answer: B

28. The southeast trade winds actually blow in which direction?

- A. Southeast
- B. South
- C. East
- D. Northwest

Correct answer: D

29. Which is TRUE concerning air masses near the earth's surface?

- A. They are not deflected by the earth's rotation
- B. They move from areas of high pressure to areas of low pressure
- C. Air masses are not affected by the earth's gravity
- D. In North America the air masses move from east to west

Correct answer: B

30. Which is the reference datum used in determining the heights of land features on most charts?

- A. Mean high water
- B. Mean low water
- C. Half-tide level
- D. Mean sea level

Correct answer: A

31. Plain language is usually used on marine weather _____.

- A. observations
- B. forecasts
- C. synoptic chart
- D. analyses

Correct answer: B

32. Your vessel is on a course of 221°T at 15 knots.

At 0319 a light bears 198.5°T, and at 0353 the light bears 176°T.

At what time and distance off will your vessel be when abeam of the light?

- A. 0410, 5.2 miles
- B. 0417, 6.0 miles
- C. 0427, 7.4 miles
- D. 0407, 4.3 miles

Correct answer: B

- 33.** The owner or Master of a towing vessel must ensure that each person that directs and controls the movement of the vessel knows all of the following EXCEPT _____.
- A. the effects of maneuvering on the vessel and its tow
 - B. the ownership of the vessel(s) being towed
 - C. how to apply variation and deviation to readings from a magnetic compass
 - D. the speed and direction of any current for the area being transited

Correct answer: B

- 34.** The velocity of the apparent wind can be more than the true wind, and come from the same direction, if certain conditions are present. One condition is that the _____.
- A. true wind must be from dead astern
 - B. true wind velocity must be faster than the ship's speed
 - C. ship's speed must be less than the true wind velocity
 - D. true wind must be from dead ahead

Correct answer: D

- 35.** Under the IALA Buoyage Systems, which is TRUE of safe water marks?
- A. They must show a composite group-flashing, Fl(2 + 1), green light
 - B. They may show a quick-flashing, Q(9)15s, white light
 - C. They may show a white Morse (A) light
 - D. They may show a composite group-flashing, Fl(2 + 1), red light

Correct answer: C

- 36.** Your vessel is participating in the Voluntary Observing Ship Program, you are preparing WS Form B-80 as seen in illustration D041NG below. The sky is overcast, and the anemometer indicates that the apparent wind is from 144° relative at 8 knots. You are on course 162°T at 15 knots. How should you encode group Nddff?
- A. 01615
 - B. 91521
 - C. 81408
 - D. 83322

Correct answer: D

- 37.** In most cases, the direction of the apparent wind lies between the bow and which reference point?
- A. The direction of the true wind
 - B. The true north
 - C. The beam on the lee side
 - D. The beam on the windward side

Correct answer: A

38. You have replaced the chart paper in the course recorder. Which statement is TRUE?

- A. Line the course pen up on 0-degree mark
- B. Adjust the chart paper to indicate GMT
- C. Set the zone pen to the far right of the paper
- D. Test the electrical gain to the thermograph pens

Correct answer: B

39. What are Cirrus clouds primarily composed of?

- A. Ice crystals
- B. Nitrogen
- C. Snow crystals
- D. Water droplets

Correct answer: A

40. At 0000 you fix your position and plot a new DR track line. At 0200 you again fix your position, and it is 0.5 mile east of your DR. Which statement is TRUE?

- A. The drift is 0.25 knot.
- B. The current is westerly at 0.5 knot.
- C. You must increase speed to compensate for the current.
- D. The current cannot be determined.

Correct answer: A

41. What must the owner or Master do if any of the towing vessel's required navigational safety equipment fails during a voyage?

- A. Repair it at the earliest practicable time
- B. Enter its failure in the log or other on-board record
- C. Consider the state of the equipment in deciding whether it is safe for the vessel to proceed
- D. All of the above

Correct answer: D

42. How is an occluded front represented on a weather map?

- A. A dashed blue line
- B. An alternate red and blue line
- C. A blue line
- D. A purple line

Correct answer: D

- 43.** While navigating in fog off a coastline of steep cliffs, you hear the echo of the ships foghorn 5.5 seconds after the signal was sounded. What is the distance to the shore?
- A. 3450 ft (1052 meters)
 - B. 3072 ft (936 meters)
 - C. 3825 ft (1166 meters)
 - D. 2475 ft (754 meters)

Correct answer: B

- 44.** You are plotting a running fix. The LOP to be run forward is an arc from a radar range, what technique should be used?
- A. The distance between LOP's should be added to the radar range and a new arc swung.
 - B. An arc should never be run forward.
 - C. The position of the object observed should be advanced to the new time and a new arc swung using the radius of the old arc.
 - D. The arc should be converted into a straight-line using offsets and then run forward.

Correct answer: C

- 45.** Which type of projection is used to make a Mercator chart?
- A. Simple conic projection
 - B. Rectangular projection
 - C. Polyconic projection
 - D. Cylindrical projection

Correct answer: D

- 46.** The Light List shows that a navigational light has a nominal range of 5 miles and a height above water of 21 feet (6.4 meters). Your height of eye is 32 feet (9.8 meters) and the visibility is 1.0 mile. At what approximate range will you first sight the light?
- A. 1.0 mile
 - B. 1.5 miles
 - C. 5.0 miles
 - D. 11.7 miles

Correct answer: B

- 47.** Your ship is proceeding on course $320^{\circ}T$ at a speed of 25 knots. The apparent wind is from 30° off the starboard bow, speed 32 knots. What is the relative direction, true direction and speed of the true wind?
- A. Relative 40° , true $080^{\circ}T$, 16.4 knots
 - B. Relative 80° , true $060^{\circ}T$, 15.2 knots
 - C. Relative 60° , true $040^{\circ}T$, 18.6 knots
 - D. Relative 80° , true $040^{\circ}T$, 16.2 knots

Correct answer: D

48. The buoy symbol printed on your chart is leaning to the northeast. What does this indicate?

- A. You should stay to the west or south of the buoy
- B. Nothing special for navigational purposes
- C. You should stay to the north or east of the buoy
- D. The buoy is a major lighted buoy

Correct answer: B

49. Which of the following is the most accurate method of determining gyrocompass error while underway?

- A. Comparing the gyro heading with the magnetic compass heading
- B. Determining from the chart the course made good between celestial fixes
- C. Comparing the gyro azimuth of a celestial body with the computed azimuth of the body
- D. It cannot be determined accurately at sea due to drift of unknown currents.

Correct answer: C

50. Which term is given to the mechanical lifting of air by the upslope slant of the terrain?

- A. Advective lifting
- B. Convective lifting
- C. Vertical lifting
- D. Topographic lifting

Correct answer: D

51. You are in a channel inbound from sea. A daymark used to mark a channel junction when the preferred channel is to starboard will have the shape indicated by what letter in illustration D045NG below?

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

Correct answer: A

52. What does the description "Racon" beside an illustration on a chart mean?

- A. A radar calibration beacon
- B. A circular radio beacon
- C. A radar conspicuous beacon
- D. A radar transponder beacon

Correct answer: D

53. An ECDIS is required to display which information?

- A. Soundings
- B. Meteorological data
- C. Radar targets
- D. Waypoints

Correct answer: A

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

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

Correct answer: C

55. What does a barometer measure?

- A. Temperature
- B. Relative humidity
- C. Dew point
- D. Atmospheric pressure

Correct answer: D

56. Which is TRUE when navigating a vessel?

- A. You should assume a wreck buoy is directly over the wreck
- B. You should never rely on a floating aid to maintain its exact position
- C. You can always rely on a buoy to show proper light characteristics
- D. You can always rely on a buoy to be on station

Correct answer: B

57. How are chart legends which indicate a conspicuous landmark printed?

- A. In italics
- B. In capital letters
- C. In boldfaced print
- D. With underlined letters

Correct answer: B

58. Information about the pilotage available at Miami harbor may best be obtained from which publication?

- A. Sailing Directions
- B. United States Coast Pilot
- C. World Port Index
- D. Pilot Chart

Correct answer: B

59. In modern fathometers, what produces the sonic or ultrasonic sound waves?

- A. A transceiver
- B. A transducer
- C. A generator
- D. An amplifier

Correct answer: B

60. How can you estimate the position of a tropical storm's center?

- A. Observe the wind direction and apply Buys Ballot's law
- B. Using shipboard radar
- C. With a radio weather bulletin or weather fax
- D. All of the above

Correct answer: D

61. Quadrantal error in a gyrocompass has its GREATEST effect on which of the following?

- A. When the vessel is on intercardinal headings
- B. When the vessel is near the equator
- C. When the vessel is on north or south headings
- D. When the vessel is in high latitudes

Correct answer: A

62. Swell is the rise and fall of the ocean's surface due to _____.

- A. the pull of the moon
- B. local storms
- C. fetch
- D. distant winds

Correct answer: D

63. Which class of tide prevails in the greatest number of important harbors on the Atlantic Coast?

- A. Semidiurnal
- B. Mixed
- C. Interval
- D. diurnal

Correct answer: A

64. Which maritime radio system, consisting of a series of coast stations, transmits coastal warnings?

- A. SAFESEA
- B. HYDROLANT/HYDROPAC
- C. NAVTEX
- D. NAVAREA

Correct answer: C

65. You are on course 277°T and take a relative bearing of a lighthouse of 045°. What is the true bearing to the lighthouse?

- A. 038°
- B. 232°
- C. 315°
- D. 322°

Correct answer: D

66. Which is TRUE as the temperature for a given mass of air increases?

- A. The dew point increases
- B. The relative humidity decreases
- C. The relative humidity increases
- D. The dew point decreases

Correct answer: B

67. If a weather bulletin shows the center of a low-pressure system to be 100 miles due east of you, what winds can you expect in the Southern Hemisphere?

- A. North-northeasterly
- B. South-southwesterly
- C. South-southeasterly
- D. North-northwesterly

Correct answer: B

68. 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

69. The Light List indicates that a light has a nominal range of 18 miles and is 38 feet high. If the visibility is 6 miles and your height of eye is 15 feet, at which distance will you sight the light?

- A. 14.8nm
- B. 11.7nm
- C. 6.0nm
- D. 18.0nm

Correct answer: B

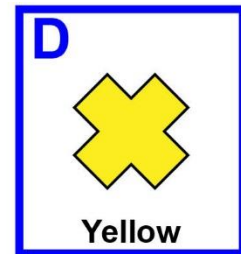
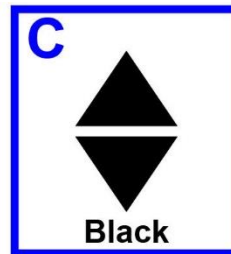
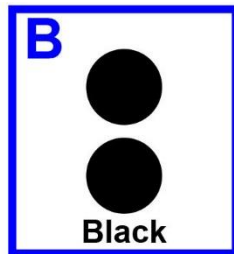
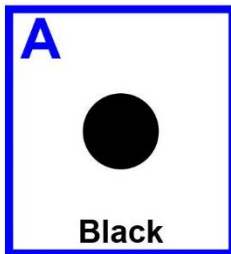
70. What wind reverses directions seasonally?

- A. Secondary winds
- B. Monsoon winds
- C. Hooked trades
- D. Jet stream

Correct answer: B



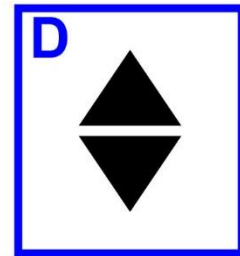
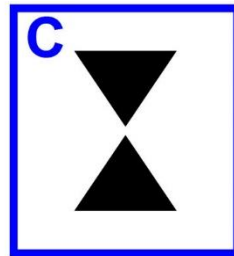
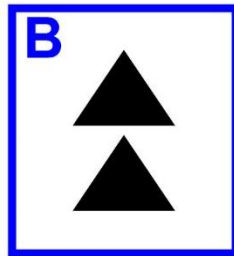
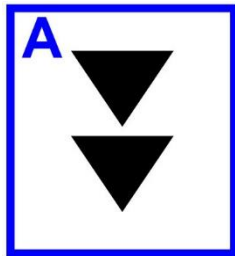
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United States Coast Guard National Maritime Center



D041NG

NO.		SHIP NAME	DATE SENT (UTC)	TIME SENT (UTC)	STA. CALLED	FREQUENCY
ADDRESSES						
U.S. Coast Guard: No address needed, start with BBXX indicator and ship's call sign.						
INMARSAT Standard A: Select—Coast Earth Station (CES), routine priority, duplex telex channel, and initiate call. When GA + is received, select 41 +. Upon receipt of answerback, NWS OBS MHTS, send the weather report starting with the BBXX indicator and ship's call sign. End the report with 5 periods. Try to limit INMARSAT call time to 30 seconds. Standard C: To establish special access code 41, see manufacturers recommended instructions for set-up, or the Mariners Weather Log Summer, 1994, or later editions.						
U.S. commercial and foreign radio stations: To: OBS METEO _____ (get address from "Radio Stations Accepting. . . ."). Start with BBXX indicator and ship's call sign and combine the remaining numbers into 10-character groups.						
INDICATOR	CALL SIGN	YYGGi _w	99L _a L _a L _a	Q _c L _o L _o L _o L _o	i _R i _x hVV	Nddff
BBXX			99		4	
00fff	1s _n TTT	2s _n T _d T _d T _d	4PPPP	5appp	7wwW ₁ W ₂	8N _h C _L C _M C _H
222D _s v _s	0s _t T _w T _w T _w	2P _w P _w H _w H _w	3d _{w1} d _{w1} d _{w2} d _{w2}	4P _{w1} P _{w1} H _{w1} H _{w1}	5P _{w2} P _{w2} H _{w2} H _{w2}	6I _s E _s E _s R _s
8S _w T _b T _b T _b	ICE	c _i S _i b _i D _i z _i	PLAIN LANGUAGE			TRANSMITTED BY
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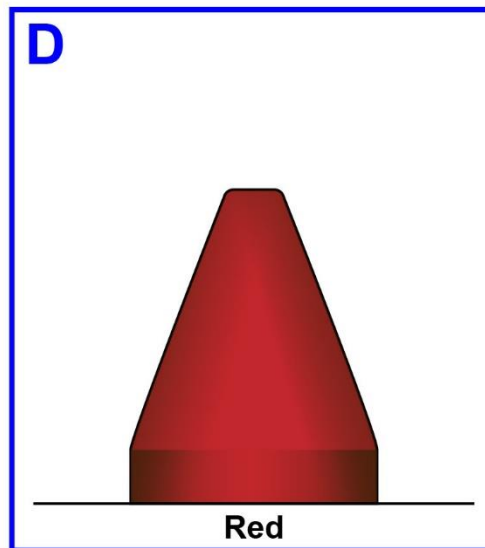
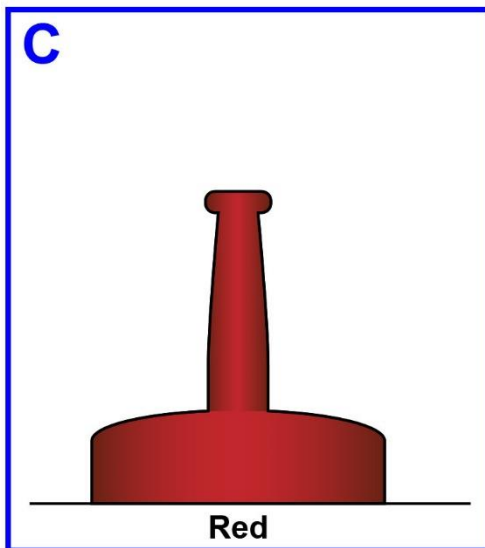
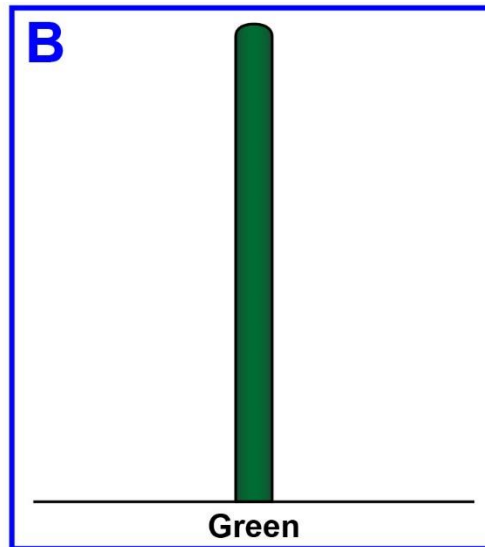
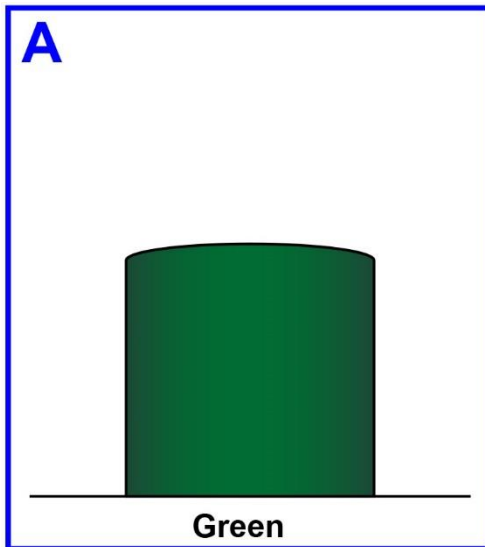
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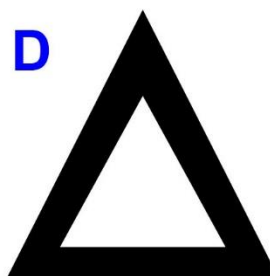
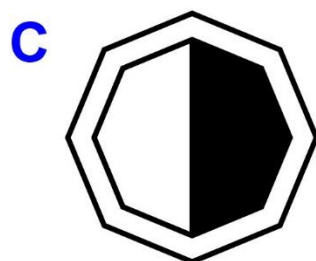
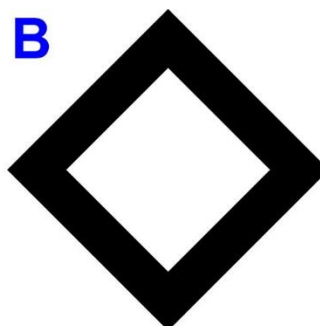
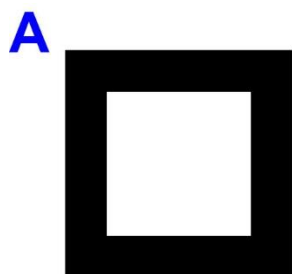


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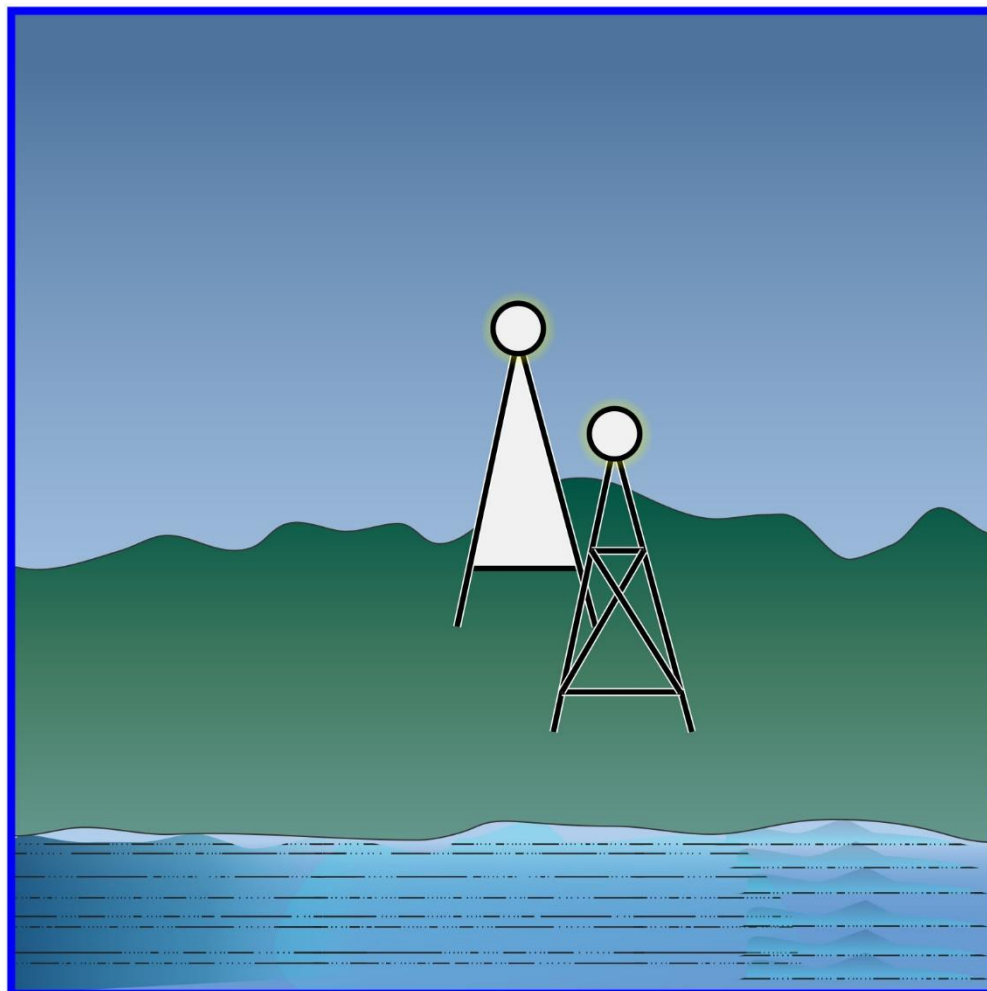


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