

U.S.C.G. Merchant Marine Exam

Master Less than 500-1600 Gross Registered Tons

Q124 Navigation General – Oceans

(Sample Examination)

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

1. Which ocean current is "warm" based on the latitude in which it originates and on the effect it has on climate?
- A. California Current
 - B. Kuroshio Current
 - C. Benguela Current
 - D. Peru Current

Correct answer: B

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

Correct answer: D

3. Which is TRUE concerning a first magnitude star?
- A. It is 2.5 times as bright as a second magnitude star
 - B. It is 3 times as bright as a second magnitude star
 - C. It is 5 times as bright as a second magnitude star
 - D. It is 10 times as bright as a second magnitude star

Correct answer: A

4. The velocity of the wind, its steady direction, and the amount of time it has blown determines what about a wind driven current?
- A. Its density
 - B. Its deflection
 - C. Its temperature
 - D. Its speed

Correct answer: D

5. Which correction must be applied to an aneroid barometer reading?
- A. Height error
 - B. Gravity error
 - C. Temperature error
 - D. English to metric conversion error

Correct answer: A

6. What do chart legends printed in capital letters indicate about the associated landmark?

- A. It is a government facility or station
- B. The landmark has a radio transmitter
- C. The landmark is conspicuous
- D. The landmark is inconspicuous

Correct answer: C

7. You are radar scanning for a buoy fitted with a racon. In illustration D017NG below, which radar screen represents the presentation you should expect on the PPI?

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

Correct answer: B

8. When making landfall at night, how can you determine if a light is a major light or an offshore buoy?

- A. By checking the period and characteristics against the Light List
- B. By observing the intensity of the light
- C. By the color, because the buoy will have only a red or a green light
- D. All of the above can be used to identify the light.

Correct answer: A

9. The ARPA may swap targets when automatically tracking if two targets are in which situation?

- A. The targets pass close together
- B. The targets are tracked on reciprocal bearings
- C. The targets are tracked at the same range
- D. The targets are tracked on the same bearing

Correct answer: A

10. You are on course 238°T. To check the course of your vessel you should observe a celestial body on which bearing?

- A. 180°
- B. 238°
- C. 328°
- D. 090°

Correct answer: C

11. Steam fog will occur when which conditions exists?

- A. Warm dry air from shore passes over cooler water
- B. Cold ocean water evaporates into warm air
- C. Extremely cold air from shore passes over warmer water
- D. Cool rain passes through a warm air mass

Correct answer: C

12. 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. Look for a dayboard of type TR-TY to form a range
- C. Leave it to port when southbound on the Atlantic portions of the ICW
- D. Pass it close aboard on either side

Correct answer: C

13. Which is TRUE when navigating a vessel?

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

Correct answer: C

14. A great circle crosses the equator at 141°E. It will also cross the equator at what other longitude?

- A. 39°W
- B. 141°W
- C. 41°E
- D. 180°E

Correct answer: A

15. The direction in which a vessel is steered is the course. The path actually followed is the _____.

- A. course over the ground
- B. route
- C. track
- D. heading

Correct answer: A

16. While steering a course of 150°T, you wish to observe the Sun for a speed check. What would the azimuth have to be?

- A. 150°T
- B. 060°T
- C. 090°T
- D. 240°T

Correct answer: A

17. What is NOT an advantage of the rhumb line track over a great circle track?

- A. Plots as a straight line on Lambert conformal charts
- B. Negligible increase in distance on east-west courses near the equator
- C. Does not require constant course changes
- D. Easily plotted on a Mercator chart

Correct answer: A

- 18.** Given are the courses and speeds of 4 vessels. The navigator of which vessel would be required to know the actual time of meridian transit in order to take an accurate observation at LAN?
- A. C 162°T, Sp 27 knots
 - B. C 095°T, Sp 30 knots
 - C. C 268°T, Sp 22 knots
 - D. C 356°T, Sp 5.5 knots

Correct answer: A

- 19.** The error in a sextant altitude caused by refraction is greatest when the celestial body is in which location?
- A. Near the horizon
 - B. High in the sky
 - C. Rising above 45o elevation
 - D. At or near transit

Correct answer: A

- 20.** Which is TRUE for the directive force acting on a gyrocompass?
- A. The force increases as the latitude decreases, being maximum at the geographic equator
 - B. The force is greatest when a vessel is near the Earth's magnetic equator
 - C. The force remains the same at all latitudes
 - D. The force increases as the latitude increases, being maximum at the geographic poles

Correct answer: A

- 21.** Which publication would describe the explosive anchorages in the ports on the east coast of the United States?
- A. Notice to Mariners
 - B. Pilot Rules for Inland Waters
 - C. Sailing Directions
 - D. Coast Pilot

Correct answer: D

- 22.** Which statement about a gnomonic chart is correct?
- A. Meridians appear as curved lines converging toward the nearer pole.
 - B. Parallels, except the equator, appear as curved lines.
 - C. Distance is measured at the mid-latitude of the track line.
 - D. A rhumb line appears as a straight line.

Correct answer: B

- 23.** 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

24. Where can complete information on weather broadcasts throughout the world be found?

- A. The Selected Worldwide Marine Weather Broadcasts
- B. The Coast Pilot Volume 2
- C. The Notice to Mariners
- D. The Amver worldwide voluntary reporting system

Correct answer: A

25. You take a bearing of 043° and 169° of two objects. What bearing of a third object will give the best fix?

- A. 144°
- B. 356°
- C. 201°
- D. 102°

Correct answer: D

26. The distance between any two meridians measured along a parallel of latitude and expressed in miles is the _____.

- A. meridian angle
- B. difference in longitude
- C. departure
- D. mid-longitude

Correct answer: C

27. Which is a characteristic of anticyclones?

- A. High winds and cloudiness
- B. Overcast skies
- C. Dry, fair weather
- D. Gustiness and continuous precipitation

Correct answer: C

28. By convention, the north pole of a magnet is painted which color?

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

Correct answer: C

29. Under the IALA-A Buoyage System, when entering from seaward which buoy as shown in illustration D046NG below, should be left to port?

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

Correct answer: B

- 30.** The navigational triangle uses parts of two systems of coordinates, one of which is the celestial equator system, which is the other system?
- A. Terrestrial system
 - B. Astronomical system
 - C. Horizon system
 - D. Ecliptic system

Correct answer: C

- 31.** Which is the reference datum used in determining the heights of land features on most charts?
- A. Mean low water
 - B. Half-tide level
 - C. Mean high water
 - D. Mean sea level

Correct answer: C

- 32.** What feature(s) of a daymark is (are) used to identify the beacon upon which it is mounted?
- A. Size
 - B. Method of construction
 - C. Color and shape
 - D. Signal characteristics

Correct answer: C

- 33.** On what does the operation of an aneroid barometer depend?
- A. Column of mercury supported by atmospheric pressure
 - B. Thin, metal, airtight cell
 - C. Curved tube containing alcohol
 - D. Expansion of mercury in a closed tube

Correct answer: B

- 34.** 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 right
 - B. Wait until the lights are no longer in a vertical line
 - C. Continue on the present course
 - D. Come left

Correct answer: C

- 35.** When using GPS without Selective Availability, what can you expect your horizontal accuracy to be of the unit?
- A. 3 meters
 - B. 20 meters
 - C. 100 meters
 - D. 200 meters

Correct answer: B

36. Where can data relating to the direction and velocity of rotary tidal currents in a U.S. Atlantic Port be found?

- A. Tidal Current Tables
- B. Nautical Almanac
- C. Tide Tables
- D. Mariner's Guide

Correct answer: A

37. A time diagram is a diagram of the celestial sphere as observed from above which location?

- A. The observer's meridian
- B. The south celestial pole
- C. The north celestial pole
- D. The Greenwich meridian

Correct answer: B

38. Which of the following causes the development of an occluded front?

- A. A low-pressure area
- B. A high-pressure area
- C. An area of calm air
- D. A cold front overtaking a warm front

Correct answer: D

39. You are steaming on a course of $084^{\circ}T$ at a speed of 13 knots. At 1919 a lighthouse bears $106.5^{\circ}T$. At 1957 the same lighthouse bears $129^{\circ}T$. What will be your distance off the lighthouse when abeam?

- A. 7.1 miles
- B. 5.7 miles
- C. 4.3 miles
- D. 8.2 miles

Correct answer: B

40. On 5 July, at 1200 zone time, you cross the 180th meridian steaming westward. What is your local time?

- A. It is 1200, 4 July.
- B. It is 1200, 5 July.
- C. It is 1200, 6 July.
- D. It is 2400, 6 July.

Correct answer: C

41. The vertical distance from the tidal datum to the level of the water is the _____.

- A. actual water depth
- B. charted depth
- C. height of tide
- D. range of tide

Correct answer: C

42. Which is TRUE of the term coastal current?

- A. It flows in a circular pattern
- B. It flows outside the surf zone
- C. It is also known as a longshore current
- D. It is generated by waves striking the beach

Correct answer: B

43. You swung ship and compared the magnetic compass against the gyrocompass to find deviation. Gyro error is 2°W. The variation is 8°W. Find the deviation on a gyro heading of 039°.

NP-0108	
HEADING	
PSC	PGC
030.5°	024°
061.5°	054°
092.0°	084°
122.5°	114°
152.0°	144°
181.0°	174°
210.0°	204°
239.5°	234°
269.0°	264°
298.0°	294°
327.5°	324°
358.5°	354°

- A. 0.8°E
- B. 0.0°
- C. 0.5°W
- D. 1.0°W

Correct answer: D

44. The track line on the chart is 274°T. Variation is 4°E, and deviation is 2°E. The gyro error is 1.5°E. What course would be steered by gyrocompass to make good the desired course?

- A. 280.5°pgc
- B. 278.0°pgc
- C. 275.5°pgc
- D. 272.5°pgc

Correct answer: D

45. As a warm front approaches how does barometric pressure change?

- A. Pressure is steady
- B. Pressure is uncertain
- C. Pressure rises
- D. Pressure falls

Correct answer: D

46. The direction in which a vessel should be steered between two points is known by which term?

- A. Bearing
- B. Course over the ground
- C. Course
- D. Heading

Correct answer: C

47. Which is TRUE of the dangerous semicircle of a hurricane in the Northern Hemisphere?

- A. It is the area between the ship's heading and the bearing to the eye
- B. It is measured from true north clockwise to 180° T
- C. It is the area of the storm that is to the right of the storm's track
- D. It is measured from true north counterclockwise to 180° T

Correct answer: C

48. What is the definition of height of tide?

- A. The vertical distance from the surface of the water to the ocean floor
- B. The vertical difference between the heights of low and high water
- C. The vertical difference between a datum plane and the ocean bottom
- D. The vertical distance from the tidal datum to the level of the water at any time

Correct answer: D

49. You are underway on course 050° T and your maximum speed is 11 knots. The eye of a hurricane bears 070° T, 80 miles from your position. The hurricane is moving towards 270° T at 19 knots. What course should you steer at 11 knots to have the maximum CPA?

- A. 234°
- B. 250°
- C. 215°
- D. 227°

Correct answer: C

50. When is the peak of the hurricane season in the western North Pacific?

- A. July through October
- B. April through June
- C. January through March
- D. November through December

Correct answer: A

51. When the time is based on the movement of the visible Sun along the ecliptic the time is known as _____.

- A. mean time
- B. real time
- C. apparent time
- D. visible time

Correct answer: C

52. Which wind results from a land mass cooling more quickly at night than an adjacent water area?

- A. Coastal breeze
- B. Land breeze
- C. Sea breeze
- D. Mistral

Correct answer: B

53. Which would be the subject of a NAVAREA warning?

- A. All military exercises on the high seas involving four or more vessels
- B. Off-air times of radio beacons when scheduled for routine maintenance
- C. Extinguishment of Wolf Trap Light located inside Chesapeake Bay
- D. A drifting buoy sighted in the harbor

Correct answer: B

54. The dew point is reached when which condition occurs?

- A. The temperature of the air equals the temperature of the seawater
- B. The relative humidity reaches 50%
- C. The atmospheric pressure is 14.7 lbs. per square inch
- D. The air becomes saturated with water vapor

Correct answer: D

55. Weather systems in the middle latitudes generally travel in which direction?

- A. North to South
- B. West to East
- C. East to West
- D. Southeast to Northwest

Correct answer: B

56. Which is TRUE concerning magnetic compass deviation?

- A. It varies depending upon the bearing used
- B. It is published on the compass rose on most nautical charts
- C. It is the angular difference between geographic and magnetic meridians
- D. It is the angular difference between magnetic north and compass north

Correct answer: D

57. 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

58. Under the IALA cardinal system, what does a mark with a quick white light showing 6 flashes followed by one long flash indicate in relation to the location of the safest water?

- A. Safe water is on the north side of the mark
- B. Safe water is on the south side of the mark
- C. Safe water is on the east side of the mark
- D. Safe water is on the west side of the mark

Correct answer: B

59. The GP of a body for a high-altitude sight is determined from the declination and which other information?

- A. The zenith distance of the body
- B. The azimuth of the body
- C. The right ascension of the body
- D. The Greenwich hour angle of the body

Correct answer: D

60. While navigating in fog off a coastline of steep cliffs, you hear the echo of the ship's foghorn 4 seconds after the signal was sounded. What is the distance to the shore?

- A. 209 yards
- B. 363 yards
- C. 480 yards
- D. 730 yards

Correct answer: D

61. The four standard light colors used for lighted aids to navigation are red, green, white, and _____.

- A. blue
- B. orange
- C. yellow
- D. purple

Correct answer: C

62. The First Point of Aries is the position of the Sun on the celestial sphere on or about _____.

- A. September 21
- B. March 21
- C. June 21
- D. December 21

Correct answer: B

- 63.** If the gyrocompass error is east, what describes the error and the correction to be made to gyrocompass headings to obtain true headings?
- A. The readings are too high and the amount of the error must be subtracted from the compass to obtain true
 - B. The readings are too high (large numerically) and the amount of the error must be added to the compass to obtain true
 - C. The readings are too low (small numerically) and the amount of the error must be added to the compass to obtain true
 - D. The readings are too low and the amount of the error must be subtracted from the compass to obtain true

Correct answer: C

- 64.** A vessel's position should be plotted using bearings of _____.
- A. buoys close at hand
 - B. fixed known objects on shore
 - C. fixed objects
 - D. All of the above

Correct answer: B

- 65.** You are in a channel inbound from sea. A daymark used to mark a channel junction, when the preferred channel is to port will have the shape indicated by what letter in illustration D045NG below?
- A. A
 - B. B
 - C. C
 - D. D

Correct answer: D

- 66.** Entering a harbor, you take a bearing on a range and get 338° per gyrocompass (pgc). The true bearing from the chart is 340° T. Variation for the area is 14° E. Your course is 329° per standard magnetic compass (psc) and 338° pgc. What is the deviation on this heading?
- A. 3° E
 - B. 3° W
 - C. 5° E
 - D. 5° W

Correct answer: B

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

Correct answer: C

68. When using a mechanical (windup type) marine chronometer, how often should it be reset?

- A. Only when it is overhauled
- B. If the chronometer rate changes from gaining to losing or vice versa
- C. At the start of each voyage
- D. Whenever the chronometer error exceeds approximately four minutes

Correct answer: A

69. Which type of weather could you expect soon after seeing "hook" or "comma" shaped cirrus clouds?

- A. Clearing with the approach of a cold front
- B. Rain with the approach of a warm front
- C. Continuing fog and rain
- D. The formation of a tropical depression

Correct answer: B

70. Two well-developed high-pressure areas may be separated by which item?

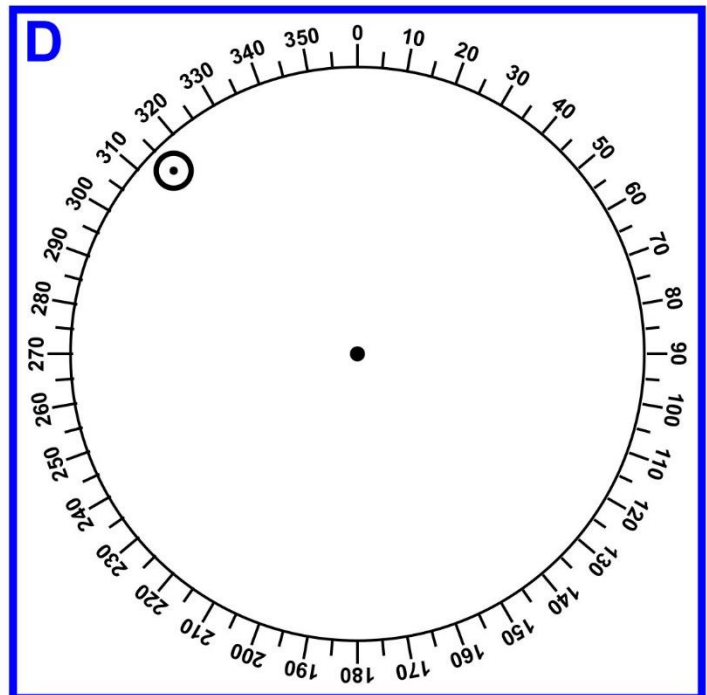
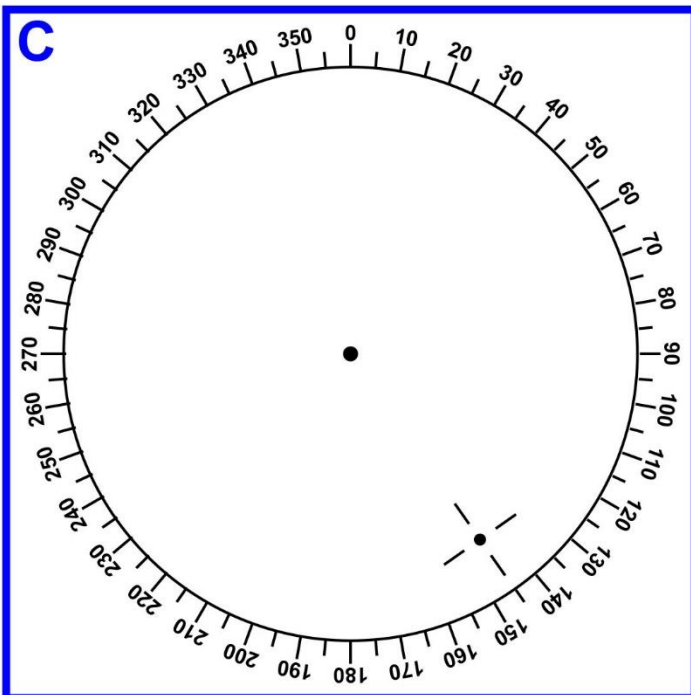
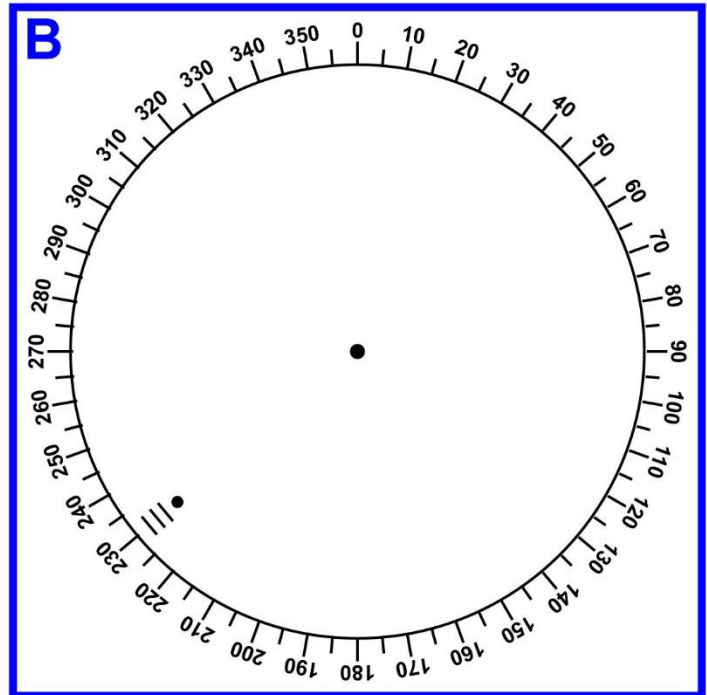
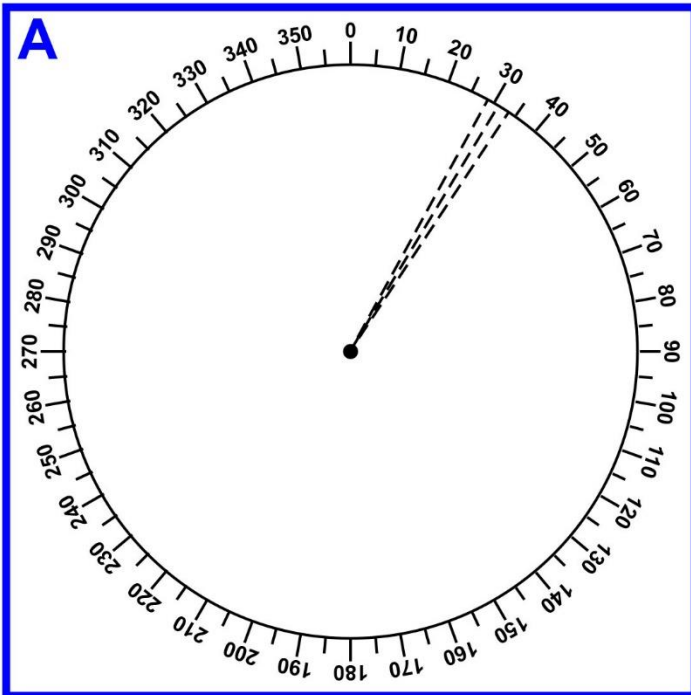
- A. A trough of low pressure
- B. A valley of low pressure
- C. A hill of low pressure
- D. A ridge of low pressure

Correct answer: A

United States Coast Guard National Maritime Center



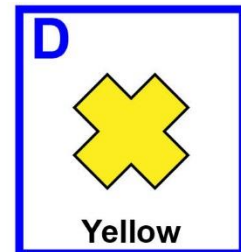
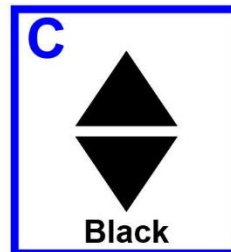
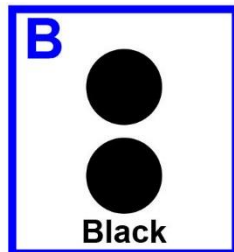
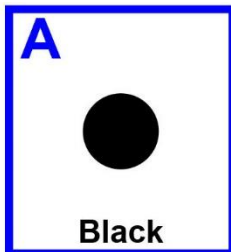
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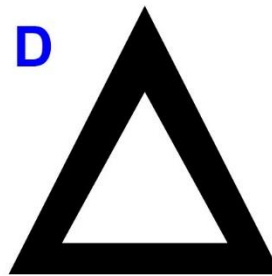
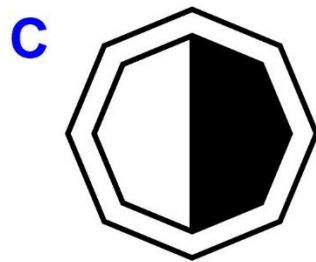
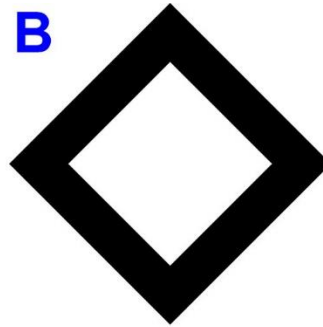
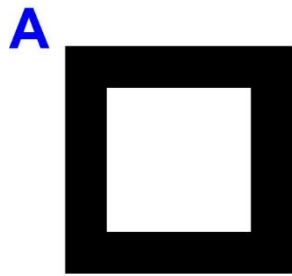
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