Northern Breezes
Sailing School

ASA 105 Navigation Course Supplemental Problems

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DEVIATION TABLE
[ALL VALUES IN DEGREES(°)]

COMPASS TO MAGNETIC		MAGNETIC TO COMPASS	
(A) Compass Heading	(B) Deviation	(C) Magnetic Heading	(D) Deviation
000	2E	000	2E
015	3E	015	3E
030	5E	030	4E
045	6E	045	6E
060	5E	060	5E
075	5E	075	5E
090	3E	090	3E
105	3E	105	3E
120	2E	120	IE
135	1W	135	1W
150	2W	150	2W
165	3W	165	2W
180	4W	180	4W
195	5W	195	5W
210	6W	210	6W
225	5W	225	5W
240	4W	240	4W
255	5W	255	5W
270	4W	270	4W
285	3W	285	3W
300	2W	300	2W
315	1W	315	1W
330	1E	330	1E
345	2E	345	2E
360	2E	360	2E

P5-3. Using the forms of the Speed, Time, and Distance formulas, complete the following table: (Precision: Speed to nearest 0.1 kn, Time to nearest minute, and Distance to nearest 0.1M)

SPEED	TIME		DISTANCE
(kn)	(hr)	(min)	(M)
a. 8.0	_____	_____	12.5
b. 15.0	2	28	_____
c. _____	0	46	5.0
d. 9.0	_____	_____	15.0
e. 6.0	3	23	_____
f. _____	0	45	9.8
g. 7.0	1	30	_____
h. _____	1	19	23.6
i. 5.0	_____	_____	1.0
j. 8.0	_____	_____	3.0

P5-4. At 0900, we take departure from Buoy R "16" Fl R 6 sec BELL just south of the entrance to Falmouth Inner Harbor (L: 41° 32.0'N Lo: 70° 36.5'W), and set a course for Buoy R "26" Fl R 4 sec BELL, running at 8.0 knots. Plot this course line, labeling it with course and speed, time of departure, and time expected to pass Buoy R "26" close aboard.

a. True Course _____; Magnetic Course _____; Compass Course _____
b. DEP: _____
c. Time at Buoy R "26" _____

P5-5. We pass buoy R "26" close aboard at 0920, a little late because of some extra maneuvering, and turn to pass close aboard buoy "27" Fl G 4 sec BELL, maintaining our speed of 8.0 knots. What are our new true, magnetic, and compass courses? When do we expect to arrive at buoy "27"? Plot and label the new course and DR plot.

a. True Course _____
b. Magnetic Course _____
c. Compass Course _____
d. Time at buoy "27" _____

P5-6. We pass buoy "27" at 0940, change course for buoy "29" Fl G 4 sec GONG, and bring up our speed to 10.0 knots. Draw and label our new DR plot, indicating true, magnetic, and compass courses, speed and DR positions for 1000 and 1030. Indicate latitude and longitude for the 1000 and 1030 positions, and the time expected to arrive at buoy "29".

a. True Course _____
b. Magnetic Course _____
c. Compass Course _____
d. 1000 DR L: _____ Lo: _____
e. 1030 DR L: _____ Lo: _____
f. Time at buoy "29" _____

P6-7. On another day at 6:25 a.m., while running C262C at S10.0, you sight the CUTTYHUNK ISLAND MONUMENT on the starboard beam over the vessel's compass at 090R. At the same time you note that the MONUMENT and the HOUSE on NASHAWENA ISLAND are in range.

a. What is the *compass* bearing of the CUTTYHUNK MONUMENT?

Answer: _____

b. Plot and label the FIX, and determine its latitude and longitude:

Answer: L: _____

Lo: _____

Note: This assumes that the range can be seen from the SW of NASHAWENA Island. Assume this is true for the purpose of solving this problem.

P6-12. While underway on C231T/S10.0 from Buoy "27" Fl G 4 sec BELL, approximately three miles southwest of WOODS HOLE entrance in VINEYARD SOUND, you take a bearing on the light at the head of TARPAULIN COVE, NAUSHON ISLAND, Fl 6 sec 78 ft 9 M, at bearing 090R at 5:15 p.m. At 5:33 p.m. you take a bearing on the light at GAY HEAD, Alt Gp Fl (3) W & (1) R 40 sec, bearing 341R while on course.

a. Plot and label the course line: _____
b. Plot and label the 5:15 p.m. LOP: _____
c. Plot and label the 5:33 p.m. LOP: _____
d. Advance the 5:15 LOP to 5:33. Plot and label. _____
e. Plot and label the RUNNING FIX: _____
f. Position: L: _____ Lo: _____

P3-3. What is the position of the lighted buoy G "1B1" Fl G 4 sec BELL, located just north of Sandy Pt, on Block Island?

Answer: L: _____

Lo: _____

P3-4. What is the distance between lighted buoy G "1B1" Fl G 4 sec BELL and lighted buoy W Or "A" Fl 4 sec BELL?

Answer: _____

P3-5. What are the true and magnetic directions from lighted buoy G "1B1" Fl G 4 sec BELL to lighted buoy W Or "A" Fl 4 sec BELL?

Answer: _____TRUE

_____MAGNETIC

P3-6. Their reciprocals?

Answer: _____TRUE

_____MAGNETIC

P3-7. What is the position of lighted buoy R "2" Fl 10 sec WHISTLE, just South of Pt. Judith?

Answer: L: _____

Lo: _____

P3-8. What kind of bottom do we find in the vicinity of the buoy in problem P3-7, above?

Answer: _____

P3-9. What are the characteristics of the light at Pt. Judith?

Answer: _____

P3-10. What ATON is located at L: 41° 25.6'N, Lo: 71° 23.3' W?

Answer: _____

P3-11. What is the object located at a true bearing of 208, 1.0 M from the ATON of problem P3-10 above?

Answer: _____

P3-12. What are the directions and distances between the object in problem P3-11, above, and the lighted buoy W Or "A" Fl 4 sec BELL south of Conanicut Island.

Answer: _____

P3-13. What is the depth of water at L: 41° 22.3'N, Lo: 71° 18.5'W, and what can be found there?

Answer: _____

P3-14. What is located at L: 41° 26.6'N, Lo: 71° 09.6'W, and what are the colors of the ATON there?

Answer: _____

Answers

P5-3. a. 1; 34.
b. 37.0.
c. 6.5.
d. 1; 40.
e. 20.3.
f. 13.1.
g. 10.5.
h. 17.9.
i. 0; 12.
j. 0; 22 or 23.

P5.4. a. C225; C240M; C244C.
b. 0900.
c. 0918.

P5-5. a. C224T.
b. C239M.
c. C243C.
d. 0943.

P5-6. a. C231.
b. C246M.
c. C250C.
d. L: 41°26.0'N; Lo: 70°45.0'W.
e. L: 41°22.8'N; Lo: 70°50.2'W.
f. 1039.

P6-7. a. 352C
b. DOT WITHIN CIRCLE, 0625
L: 41°22.8'N Lo: 70°55.4W

P6-12. a. C231 / S10.0 b. 1715 / 321 c. 1733 / 212
d. 1715-1733 / 321 e. 1733 R FIX
f. L:41°24.7'N Lo: 70°47.0'W

P3-3. L: 41°15.5'N
Lo: 71°34.6'W

P3-4. 8.0 nautical miles.

P3-5. 082, 097M.

P3-6. 262, 277M.

P3-7. L: 41°20.0'N
Lo: 7l°28.5'W

Note: The 1999 *Light List* shows this buoy as watching at L: 41°19.3'N, Lo: 71° 28.6'W, over 3/4 of a mile away! This change of assigned position illustrates why floating aids are not recommended for position fixing. Accurate updates are difficult to enforce in recreational boating with most boaters assuming the latest edition is "close enough." Using this buoy as the entrance buoy to the "Harbor of Refuge" to the northwest could cause you to miss the entrance altogether!

P3-8. boulders.

P3-9. Gp Occ (1+2) 15 sec 65 ft 16 M Horn R Bn 325 .- -. /. - - -

P3-10. BRENTON REEF LIGHT.

P3-11. Lighted buoy W Or "H", Fl 2 sec BELL.

P3-12. 180T (or 195M), 8.1 M.

P3-13. 109 ft., Dumping Ground.

P3-14. Elisha Ledge Can Buoy, Green over Red Horizontal Bands.