Class Exercises for Session 3*

Time/Speed/Distance;

Norths; LOPs; Danger Bearings

Chapters 8, 9 and 10 of the Course book

See complimentary PowerPoint class presentation available for download from www.MarineNavigationBooks.com

3.1 Speed, Time, Distance

a) S = 6.0 kn; D = 5.0 M; find T: ________________

b) D = 5.3 M; T = 53 min; find S: ________________

c) S = 4.2 kn; T = 1 hr 40 min; find D:________________

3.2 Dead Reckoning

a) You plan a cruise from Georgina Point light, (top of Mayne Island, north opening of Active Pass), leaving at 10:00 with a speed of 6 kn on a course of 340° T. Plot your course, and your DR at 10:45.

b) Once at this first DR, you turn to 040° T, maintaining the same speed. Plot the new course, and DR #2 at 11:05. What are the coordinates of this second DR?

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3.3 Conversion of True to Magnetic degrees

Convert the following courses from True (T°) to Magnetic (M°), assuming a Variation of **20° E**.

a) 355° T ____

b) 267° T ____

c) 016° T ____

3.4 Conversion of Magnetic to True degrees

Convert the following hand compass bearings from Magnetic (M°) to True (T°), assuming a Variation of **20° E**.

a) 237° M

b) 119° M

c) 353° M

3.5 Conversion of True to Compass degrees

Convert the following courses from True (T) to Compass (C), assuming a Variation of **20° E**, and a compass deviation as recorded in Fig. 2 p. 17 and Appendix 1, p. 101.

a) 023° T ____________

b) 187° T ____________

c) 017° T ____________

3.6 Conversion of Compass to True degrees

Convert the following courses from Compass (C°) to True (T°), assuming a Variation of **20° E**, and a compass deviation as recorded in Fig. 2.

a) 013° C ____________

b) 187° C ____________

c) 353° C ____________

3.7 Calculating the Magnetic Variation

Calculate V knowing T and M. Indicate “E” or “W”.

	T	V	M
a)	057	________	040
b)	225	________	235
c)	290	________	270

3.8 Calculating the Compass Deviation

Calculate D knowing M and C. Indicate “E” or “W”.

	M	D	C
a)	015	________	012
b)	255	________	250
c)	318	________	320

COMPASS DEVIATION TABLE

Magnetic heading	Compass deviation	Compass heading
000	6° W	006
010	6° W	016
020	6° W	026
030	5° W	035
040	5° W	045
050	4° W	054
060	4° W	064
070	3° W	073
080	2° W	082
090	1° W	091
100	0°	100
110	2° E	108
120	3° E	117
130	3° E	127
140	4° E	136
150	4° E	146
160	5° E	155
170	5° E	165
180	5° E	175
190	5° E	185
200	4° E	196
210	4° E	206
220	3° E	217
230	2° E	228
240	1° W	241
250	3° W	253
260	3° W	263
270	4° W	274
280	4° W	284
290	5° W	295
300	5° W	305
310	5° W	315
320	6° W	326
330	6° W	336
340	6° W	346
350	6° W	356

Fig. 2 Table for 3.6 (Reproduced from Appendix 1, p. 101).

3.9 Plotting of fix (1)

Using the graphic representation of a chart, with a lighthouse and a water tower (Fig. 3), plot your position from two sights at 11:15 with a hand bearing compass: 282° M on the lighthouse, and 214° M on the water tower. The magnetic variation **V = 20° E**. Label the graphic.

3.10 Plotting of fix (2)

Back to the chart for South Georgia Strait. While on a passage from Nanaimo to the Sand Heads light (SW of Vancouver Airport, at the end of the jetty), you record the following bearings at 08:25 and fix your position. Use **V = 20° E**.

Entrance Is. light	095° M
Hudson Rocks light	227° M
Snake Is. light	160° M

Plot your 08:25 fix on the chart for South Georgia Strait.

3.11 Plotting of fix (3)

On a cruise out of Nanaimo, you note that, at 10:00, the Nanaimo Bridge is just visible through the gap between Newcastle and Protection Islands. You also see, on your hand bearing compass, the **RHE** of Gabriola Island at **148° M (V = 20° E).**
What is the type of aid to navigation 200 m to the NW of your boat?

3.12 Plotting of fix (4)

Position from a **sight** on a **landmark** and a **depth contour line**:

Sight on Point Atkinson light:	**025 M** at 08:00
Depth:	**100 m**
Position of the Boat?	(Use **V = 20° E**)

3.13 Danger bearings

Plan your safe entrance into Silva Bay, using the attached detailed chart for the area (Fig. 4). From a position ENE of Bath Island (right edge of the chart), you want to enter Silva Bay. Plot the NLT and NMT danger bearing lines which will ensure at least 5 m of depth N of Bath Island, and S of Acorn Island including its adjacent shallows to the east. Give the limiting angles (danger bearings) in degrees M (assume **V=20° E**). Using your hand bearing compass, take your sights on the **green light** (FLG) at the entrance of Silva Bay.

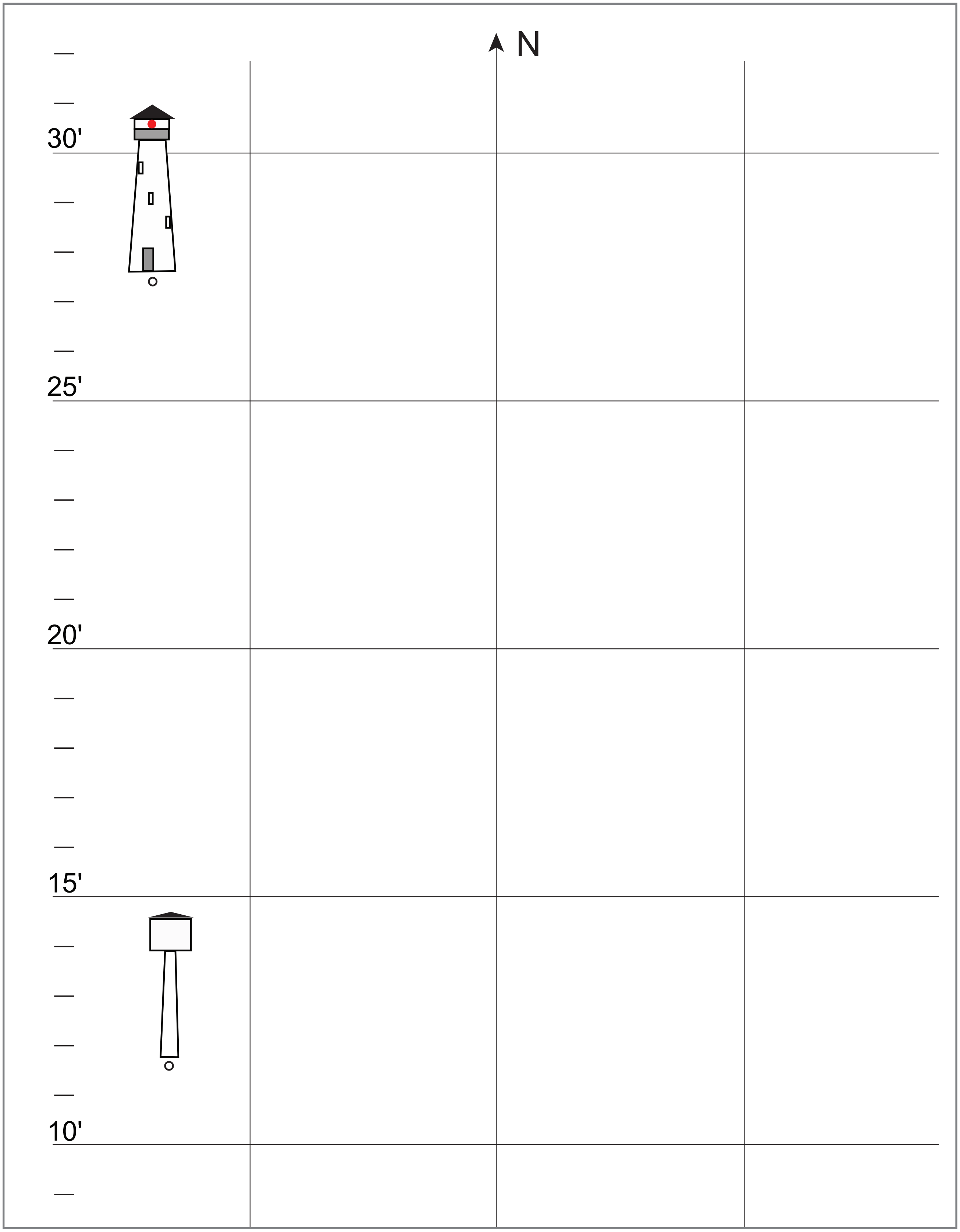

Fig. 3 Blank Mercator chart for 3.9.

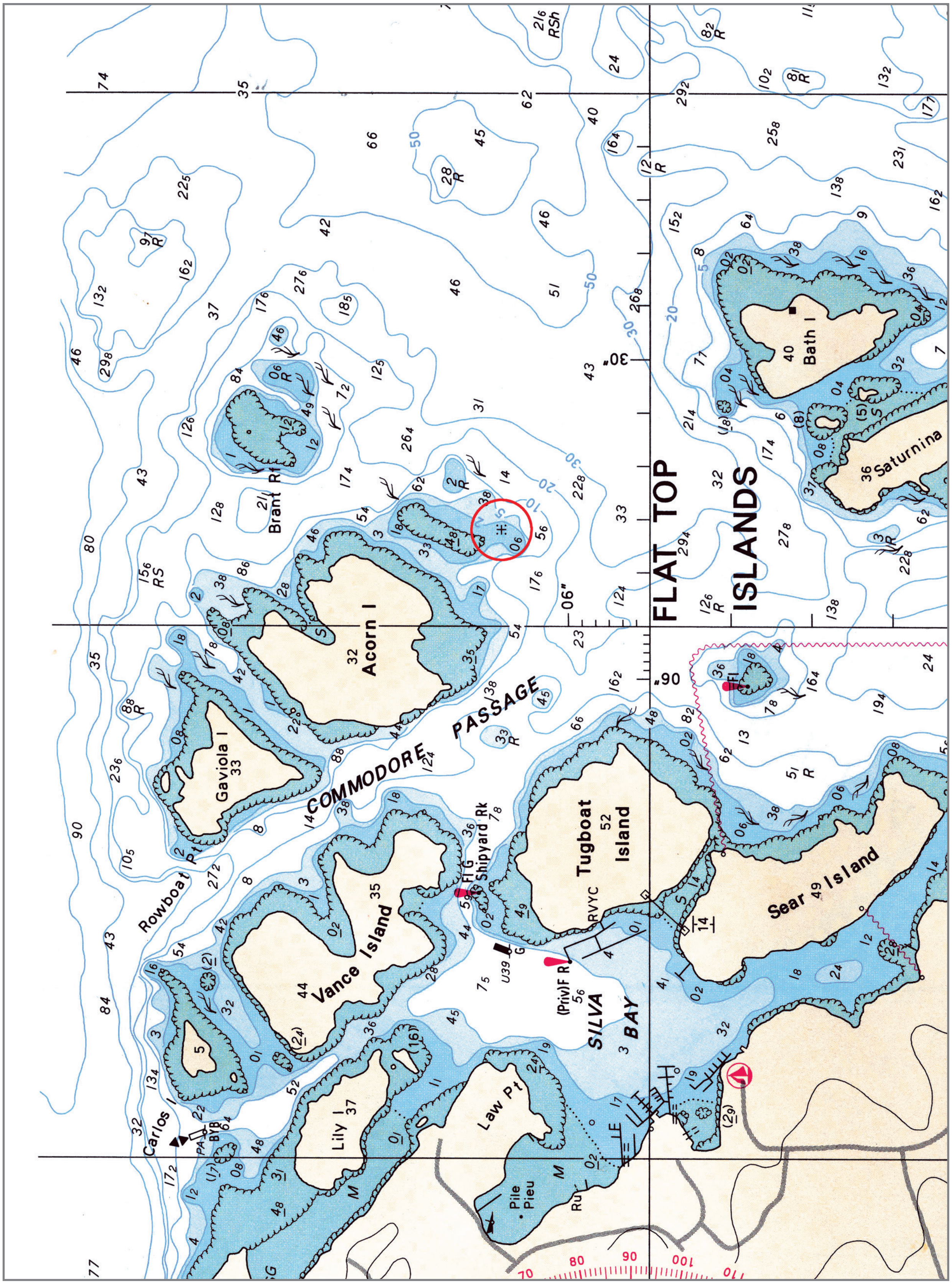

Fig. 4 Chart for 3.13.