

COXSWAIN NAVIGATION EXERCISES AUS 811

NAME:

A [deviation card](#) is supplied at the end of this file. See the [answers](#).

EXERCISE NO.1

SMALL CRAFT

1. Why should the weight of the boat be slightly forward of the trailer axle?

2. What problems would occur if your trailer rollers did not spin freely?

3. What problems might you have if you back your trailer into the water immediately after a long tow to the slip?

4. On retrieval, why run out the winch cable before backing the trailer into the water?

5. After winching up you notice that the boat is not straight on the trailer and uneven on all of the rollers. What damage could be caused if you drove away?

6. Identify the Latitude & Longitude of a position with road access to launch near Wauchope, Telegraph Point and Fernbank Creek. What are the distances to the Breakwall entrance? How long would it take the Duck for the journey? How much fuel would it use?

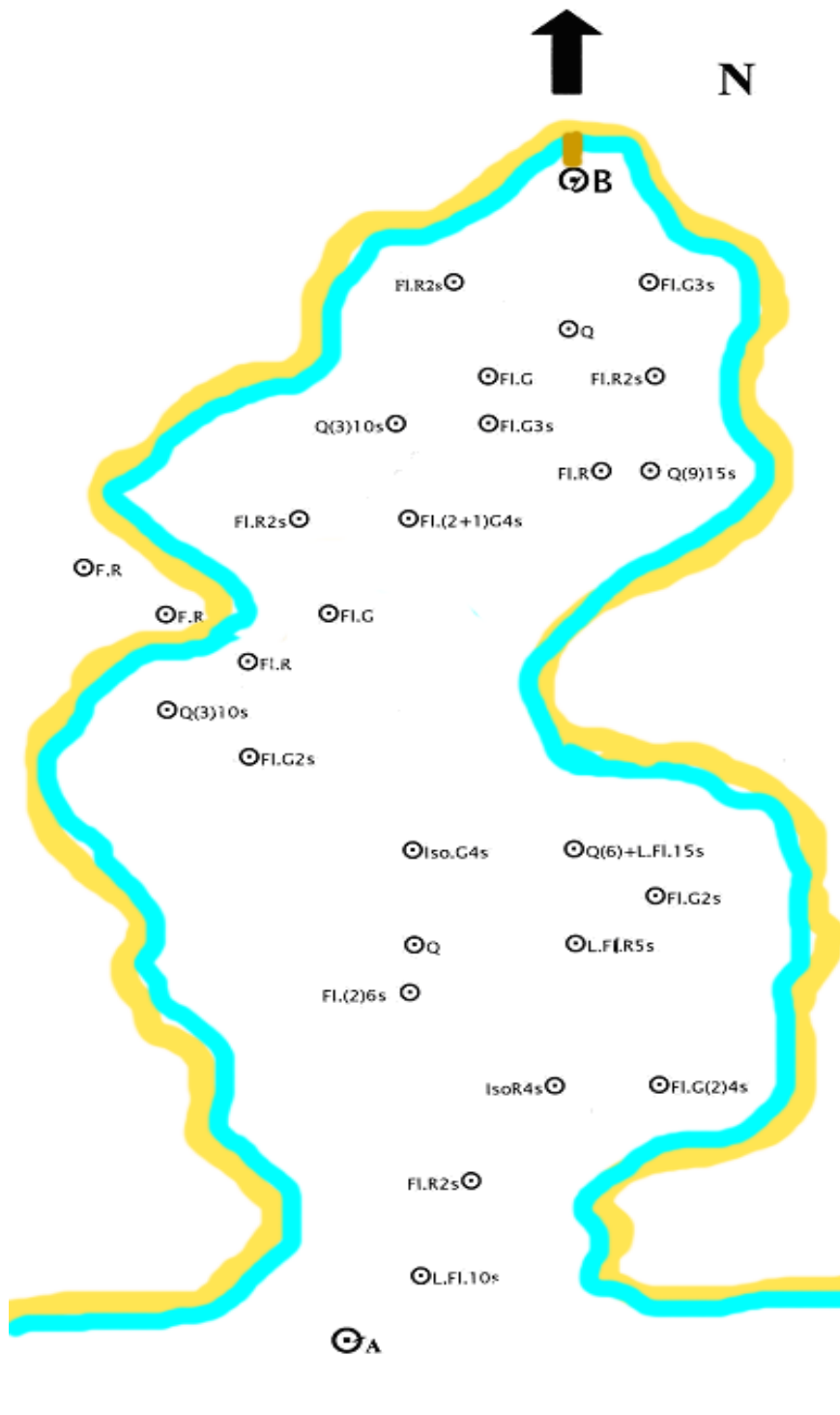
_____NM	_____Hrs	_____Ltrs
_____NM	_____Hrs	_____Ltrs
_____NM	_____Hrs	_____Ltrs

Assume overall top speed of 20Kts and consumption of 40ltrs an hour.

EXERCISE NO. 2

BUOYAGE Ask your trainer to explain buoyage then,

draw a course from the ocean at **A** to the upriver wharf at **B**:



EXERCISE NO. 3**TIDES - USING THE RULE OF TWELFTHS**

Ask your trainer about tides and the Rule of Twelfths.

1. The tide tables give the following data for a place on a particular date:

HW 1450; 1.7 metres LW 2050; 0.5 metres

Find the height of the tide at 1850.

2. The tide tables give the following data for a place on a particular date:

LW 1306; 0.3 metres HW 1936; 2.7 metres

At what time will the height of tide be at least 2.5 metres?

3. HW 0927; 9.6 metres LW 1533; 2.4 metres

What is the height of the tide at 1130 hours?

4. The tide tables give the following data for Sydney (PM Bar + 30 mins).

LW 0740; 0.5 metres HW 1350; 2.3 metres

The sounding of Port Macquarie bar is 3 metres at chart datum. Find the time when the height of the tide is 5 metres.

5. A yacht approaching PM at HW on the morning of a certain day, takes a sounding of 8.3 metres. What should be the charted depth?

LW 0058; 0.9 metres

HW 0708; 1.7 metres

LW 1305; 1.0 metres

HW 1915; 1.5 metres

Is it springs or neaps?

6. The charted depth of a shoal is 2 metres. What would be the clearance beneath the keel of a yacht drawing 1.5 metres at LW if the Tide Tables showed the following information for that particular day

HW 1117; 6.7 metres

LW 1720; 3.1 metres

7. A vessel drawing 2.3 meters passes over a reef with a charted depth of 3.1 meters. What would be the underkeel clearance if the height of tide was 1.6 meters?

8. At high tide a vessel passes over a bar with a charted depth of 2.6 meters. If the vessel draws 4.1 meters what is the vessels under keel clearance?

HW 0937 1.9m

LW 1514 0.3m

9. The tide tables give the following data for Sydney:

LW 0740; 0.5 metres HW 1350; 2.3 metres

Tide at Port Macquarie is 20minutes after Sydney, and 1hr & 50 minutes after at Wauhope. Estimate the time of HW at Rawden Island, Fernbank Creek and Telegraph Point.

EXERCISE NO. 4**CHART SYMBOLS AND ABBREVIATIONS**

Name and **Explain** the symbols at the following positions on [Chart AUS 811](#)

1. 30° 37'.4S 153° 01'.6E
2. 31° 28'.6S 152° 56'.3E
3. The northern edge of Pt. Korogoro bearing 270° True
Grassy Head(19) is in transit with (Ø) Green Island
4. The star type symbol at Mermaid Reef
5. 31° 39'.9S 152° 52'.4E
6. The two cross symbols in close at Queens Head?
7. From what points are heights, and, at what datum are soundings measured from on this chart?
8. How up to date is the chart you are working on and where could you find the updating corrections?
9. Name three nautical publications of use on an inshore passage.

EXERCISE No.5 POSITION - DISTANCE - DIRECTION

1. Identify the following places.

(a) $31^{\circ} 46'.2S$ $152^{\circ} 48'.5E$

(b) $30^{\circ} 56'.4S$ $153^{\circ} 06'.1E$

(c) $31^{\circ} 50'.7S$ $152^{\circ} 45'.3E$

(d) $31^{\circ} 43'.6S$ $152^{\circ} 48'.2E$

2. Find the geographical position of the following.

(a) Tacking Point Lt.

(b) Mt. Cairncross (533)

(c) Smokey Cape Lt.

(d) Crescent Hd. (63)

(e) Crowdy Hd. Lt.

3.

Find the **distances** and **true directions** between the following positions

FROM

TO

(a) Jolly Nose (246)

Middle Brother (555)

(b) Croppys Hill (101)

Cliff Pk. (99)

(c) Big Smokey (308)

Ballengara (308)

(d) $31^{\circ} 05'.2S$ $153^{\circ} 10'.1E$

$31^{\circ} 30'.1S$ $153^{\circ} 31'.2E$

(e) $31^{\circ} 36'.0S$ $153^{\circ} 04'.4E$

$31^{\circ} 17'.6S$ $153^{\circ} 08'.2E$

4. You are in position $31^{\circ} 30'.0S$ $153^{\circ} 00'.0E$
- What is the true bearing of:
- (a) Tacking Pt. Lt.
 - (b) Tank (191) on Grants Hd.
 - (c) Diamond Hd (112)
 - (d) Smoky Cape Lt.
5. A vessel is broken down and gives their position as due east of Nobbies Headland in 73 metres.
- (a) What is the Lat/Long position
 - (b) How far is the vessel from the entrance to the Hastings River
 - (c) How long would it take CR1 to reach the vessel at 20 Knots
6. A vessel gives its position as Tacking Point Lighthouse is in transit with North Brother Mountain and Queens Head in transit with the Elephants back
- (a) What is the Lat/Long position
 - (b) What is the depth of water
 - (c) How far is the vessel from the entrance to the Hastings River
 - (d) What course will "Rescue Vessel One" steer to reach the vessel
 - (e) How long would it take "R1" to reach the vessel at 20 Knots

7. A vessel gives its position as Tacking Point bearing 270° True and Camden Head bearing 210° True
- (a) What is the Lat/Long position
 - (b) How far is the vessel from Port Macquarie
8. A vessel gives its position as Point Plomer bearing 280° True, Camden Head bearing 220° True and Tacking Point bearing 235° True.
What would explain the large cocked hat?
- (a) What is the Lat/Long position
 - (b) What is the bearing of the vessel from Port Macquarie
 - (c) How far is the vessel from Port Macquarie
9. A disabled yacht gives its position as $31^{\circ} 20'.348$ south, $153^{\circ} 08'.598$ east.
- (a) How far is the vessel from Port Macquarie
 - (b) What depth of water is the vessel in
 - (c) What course should "R1" steer to reach the vessel
10. "R1" has picked up an injured person from a yacht at $31^{\circ} 35' S$ $153^{\circ} 01' E$. They have called for an Ambulance to meet them at the Country Comfort Wharf at Port Macquarie. Best speed under the conditions is 15 knots.
- (a) What is the ETA of "R1" if the time now is 0925

- (b) How long would it take to tow a vessel from the above position at a speed of 7 knots

- 11 How far will the "R1" travel at:
 - (a) 23 knots for 5 minutes
 - (b) 30 knots for 20 minutes

EXERCISE No.6**DEVIATION AND VARIATION.**

1. Complete the table below:

TRUE	VARIATION	MAGNETIC
254 ⁰	10 ⁰ E	_____
048 ⁰	3 ⁰ W	_____
287 ⁰	6 ⁰ E	_____
159 ⁰	2 ⁰ W	_____

2. Complete the table below:

MAGNETIC	VARIATION	TRUE
015 ⁰	5 ⁰ E	_____
132 ⁰	7 ⁰ W	_____
246 ⁰	11 ⁰ W	_____
333 ⁰	9 ⁰ E	_____

3. Complete the table below:

TRUE	VARIATION	MAGNETIC
146 ⁰	9 ⁰ E	_____
064 ⁰	_____	073 ⁰
_____	9 ⁰ W	320 ⁰
259 ⁰	_____	244 ⁰
146 ⁰	14 ⁰ E	_____
_____	11 ⁰ W	090 ⁰

4. Complete the table below:

TRUE	VARIATION	MAGNETIC	DEVIATION	COMPASS
350 ⁰	12 ⁰ E		6 ⁰ W	
137 ⁰	9 ⁰ E		3 ⁰ E	
247 ⁰	2 ⁰ W		3 ⁰ W	
003 ⁰	4 ⁰ W		7 ⁰ E	

5. Complete the table below:

TRUE	VARIATION	MAGNETIC	DEVIATION	COMPASS	ERROR
075 ⁰		069 ⁰	2 ⁰ W		
	17 ⁰ W		4 ⁰ E	121 ⁰	
		243 ⁰		250 ⁰	8 ⁰ W
359 ⁰			7 ⁰ E		7 ⁰ W
	8 ⁰ E		0 ⁰ E	321 ⁰	
001 ⁰		005 ⁰			9 ⁰ E
228 ⁰	15 ⁰ E				4 ⁰ E

EXERCISE NO. 7 RELATIVE BEARINGS

1. A vessel steering 035°C takes the following bearings.

Crescent Hd. (63) 272°C

Green Islet. 245°C

Hat Head. 332°C

Fix the vessels position.

2. A vessel took the following bearings.

NE edge of Scotts Head 291°C

Smokey Cape Light 250°C

Hat Head. 213°C

What is the vessels position if she was steering 170°C

3. A vessel steering 020°C takes the following bearings with a ships head up un-stabilised display radar.

Tacking Point Light 220°Rel

NE Edge of Pt. Plomer 291°Rel

Hastings River 241°Rel

Fix the vessels position

4. A vessel steering a course of 190°C takes the following radar bearings.

NE edge of Pt. Plomber 93°Rel

Diamond Hd. (112) 42°Rel

Tacking Point Light 70°Rel

Fix the vessels position.

EXERCISE No.8**WEATHER INFORMATION**

1. Define the following:

(a) trade wind

(b) pressure gradient

(c) sea breeze

(d) strong wind warning

2. Detail the typical weather associated with cold fronts by completing the table.

	Before	At the front	After
Wind direction and strength			
Barometric Pressure			
Temperature			

3 Describe:

(a) how an aneroid barometer works.

(b) how to take a reading from an aneroid barometer.

4. A Coxswain at sea in inshore coastal areas will have a range of sources of weather information available, some of which will be more reliable or more up to date than others. List these sources in order of importance for reliability or currency.

DEVIATION CARD 1 NAVIGATION		
Magnetic Heading	Deviation	Compass Heading
353°	6°W	000°
014°	6°W	020°
035°	5°W	040°
056°	4°W	060°
078°	2°W	080°
099°	1°W	100°
120°	0°E	120°
142°	2°E	140°
164°	4°E	160°
186°	6°E	180°
208°	8°E	200°
230°	10°E	220°
247°	7°E	240°
266°	6°E	260°
283°	3°E	280°
301°	1°E	300°
317°	3°W	320°
336°	4°W	340°
355°	6°W	360°
This table should not to be used for navigation.		