

COXSWAIN NAVIGATION EXERCISES AUS197 [\(View as Pdf\)](#)

NAME:

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

Question 1

Using any chart (or use the [AUS 197](#) extract) to:

1. Identify a distance of one nautical mile, i.e. minute of latitude.
2. Compare one minute of latitude to one minute of longitude.
3. Why is longitude not used to measure distance?

Question 2

Obtain any chart (or use the [AUS 197](#) extract) to find the following:

1. the value of the magnetic variation and its name (east or west).
2. the year to which that amount of variation refers.
3. any annual change (increasing or decreasing) in 'minutes'.

Question 3

Draw Chart symbols for the following:-

- | | |
|-------------------------|-------------------------------------|
| (a) A Steep Coastline. | (b) A Lighthouse. |
| (c) A rock which dries. | (d) An easterly current of 2 knots. |
| (e) Sand dunes. | (f) A wreck. |

Question 4

At a speed of 10 knots, how far will a vessel travel in 3 hours 15 minutes?

- a. 53.5 nm miles.
- b. 32.5 nm miles.
- c. 25.3 nm miles.
- d. 35.2 nm miles.

Question 5

Courses and bearings are plotted on charts as:

- a. magnetic.
- b. all of the choices.
- c. compass.
- d. true.

Question 6

Corrections to your chart are published in the:

- a. Australian Notices to Mariners.
- b. Marine Orders.
- c. National Tide tables.
- d. Australian Marine Notices.

Question 7

Deviation of the compass is caused by:

- a. Magnetic influences in the vessel.
- b. The earth's magnetic field.
- c. Magnets in the compass.
- d. The moon's influence.

Question 8

- a What is the distance, in nautical miles, between Bangalley Head and Long Reef Point point?

- b What is the charted depth nearest the position $33^{\circ} 50'.0S$, $151^{\circ} 20' E$?

- c Describe the lighting characteristics of Macquarie Lt.

- d What is the latitude and longitude of the Barrenjoey Lt ?

Question 9

- a What is the latitude and longitude of the eastern limits of Port Jackson Traffic Regulations area A?

- b A vessel at a speed of 12 knots will travel how far in 2 hours and 45 minutes?

- c South East of Macquarie is a chart symbol, *S.Sh* What does it mean?

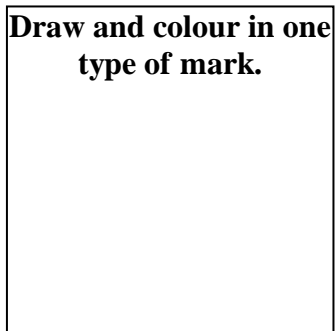
- d How many nautical miles is equal to one minute of Latitude?

Question 10

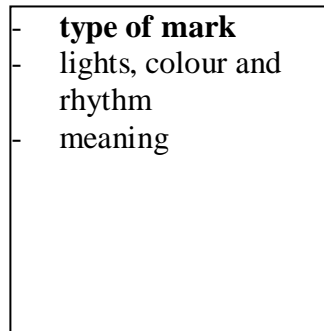
To assist you in learning the buoyage system it is recommended that you make a series of palm cards.

For example,

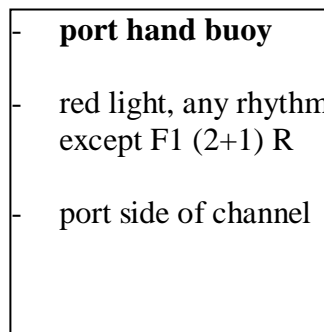
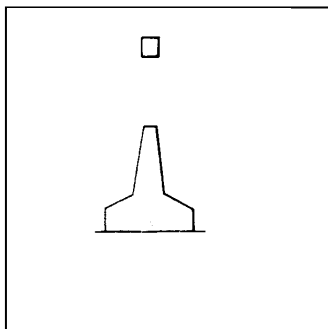
Front of Card



Back of Card



A completed example.



[Show me some Buoyage cards ready to print out](#)

Question 11

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

	<u>FROM</u>	<u>TO</u>
(a)	Shark Island.	Sow & Pigs.
(b)	South Head.	North Head.
(c)	33° 50'.0S 151° 20'.0E	33° 35'.2S 151° 21'.9E
(d)	33° 35'.2S 151° 21'.9E	33° 45'.0S 151° 20'.0E

Question 12

Complete the following exercises on magnetic variation by filling in the missing value.

	1		2		3
True Co	095°	True Co	240°	True Co	357°
Var	<u>5° E</u>	Var	<u>8° W</u>	Var	<u>4° W</u>
Mag Co		Mag Co		Mag Co	
	4		5		6
True Co	005°	True Co		True Co	147°
Var	<u>10° E</u>	Var	<u>5° E</u>	Var	<u>½° W</u>
Mag Co		Mag Co	232°	Mag Co	
	7		8		9
True Co	108°	True Co	004°	True Co	358°
Var	<u>4½° W</u>	Var		Var	
Mag Co		Mag Co	002½°	Mag Co	<u>003°</u>

Question 13

Look at the local tide tables for your port and determine the heights and times of high and low water. Note the phases of the moon and the springs and neaps.

1. What are the times and heights of high and low waters at Sydney on 21 June 2008?

2. What are the times and heights of afternoon high and low at Sydney on 11 August 2008? What is the phase of the moon?

3. What are the times and heights of low water at Sydney on 27 July 2008?

4. What is the earliest time and height of high water at Sydney on 24 May 2008?

Question 14

North Head Light bore 257° M. At the same time Ben Buckler bore 197° M. What is the Latitude and Longitude of the vessel?

Question 15

At 0500 you fix your position as $33^{\circ} 49'.5S$ $151^{\circ} 20'.0E$. You plan a north bound passage to pass Long Reef Point with a clearance of 2 NM.

What is the compass course to steer? Use the [deviation card](#) supplied at the end of this paper.

At 0545 Little Reef bears 317° M and the Water Tower (128) behind Narrabeen beach bears 241° M. What is your new position?

What speed over the ground have you made good between 0500 & 0545.

Question 16

At 0600 you observe Barrenjoey Light come into view.

At the same time, Radar gives your following distances off:

Turimetta Head 2.8 NM distant

Little Reef 2.6 NM distant

What is the Latitude and Longitude of the vessel?

What is the compass course to steer to anchor below Box Head? Use the [deviation card](#) supplied at the end of this paper.

What will be your ETA at an average speed of 5 knots.

Using the tidal information below, what do you anticipate will be the depth of water over a submerged rock below Box Head (charted depth 3 mtrs)?

HW	0127	1.7
LW	0742	0.3
HW	1410	1.5
LW	2042	0.5

Question 18

You are struck by a violent electrical storm. When visibility returns you find the Eastern edge of Barrenjoey Headland dead ahead with the centre of Lion Island in transit. You suspect error in your compass as you are steering 341° C. (Do not use the given deviation tables).

1 What is the new compass error on this heading?

2 Calculate the new deviation of the compass on this heading.

3 Is the deviation different from the deviation card?

4 If yes, explain why and what action would you take.

Question 19

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 on the NSW East Coast 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.

Question 20

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 2 COASTAL NAVIGATION		
Magnetic Heading	Deviation	Ships Head By Compass
356°	4°W	000°
015°	5°W	020°
034°	6°W	040°
056°	4°W	060°
078°	2°W	080°
099°	1°W	100°
121°	1°E	120°
143°	3°E	140°
164°	4°E	160°
186°	6°E	180°
208°	8°E	200°
230°	10°E	220°
248°	8°E	240°
266°	6°E	260°
283°	3°E	280°
301°	1°E	300°
319°	1°W	320°
338°	2°W	340°
356°	4°W	360°
Study example only - Not for navigation		