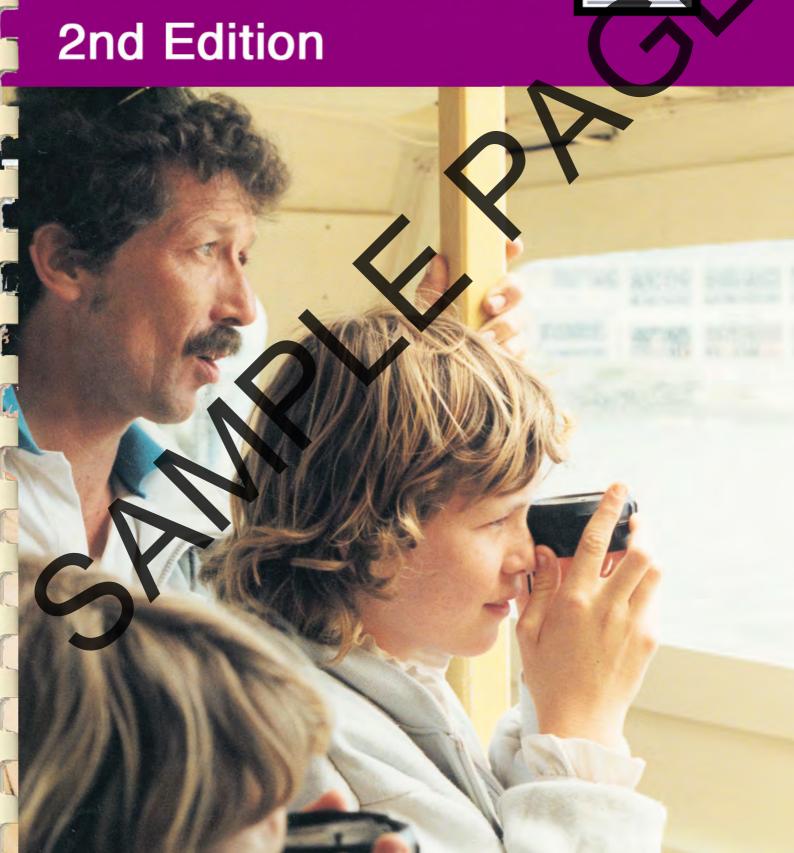
## Marine Science

For Australian Students

# Navigation Worksheets



### © Copyright 2014 Wet Paper

Except as permitted by the copyright law applicable to you, you may not reproduce or communicate any of the content on this website, including files downloadable from this website, without the permission of the copyright owner.

The Australian Copyright Act allows certain uses of content on the internet without the copyright owner's permission. This includes uses by educational institutions for educational purposes, and by Commonwealth and State government departments for government purposes, provided fair payment is made.

For more information, see www.copyright.com.au and www.copyright.org.au.

#### **ISBN**

978-1-86283-144-5

#### Published by

Wet Paper Publishers and Consultants A division of the Moffatt Group Australia Pty Ltd ACN 086 521 084 PO Box 540 COOLANGATTA Q 4225 Telephone (07) 5525 6122

Telephone (07) 5525 61 www.wetpaper.com.au



#### Worksheets developed by

Tim Ryan and Bob Moffatt

#### **Honorary consultants**

Mark Collins and Bruce Parmentier

#### Edited by

Paula Moffatt

#### Original text and illustrations

Bob Moffatt with suggestions from Bruce carmenter and Tim Ryan Navigation exercises on HMSS groups Channel by Box Critchley

#### Cover design

Trent Moffatt Designs.

#### Printed

1st Edition, February 1989

2nd Edition Jun. 2001, Revised March 2004, Reprinted January 2006, Revised 2009

Reprinted February 201

Flipbook 2014

#### Acknowledgements

The publisher would like to thank Tim Ryan, the Hydrographer of the Navy, 1982, Commonwealth of Australia for permission to publish sections of the Cape Hillsborough Channel training chart, John Wiley, Bob Critoffley, Len Couzins, Sea World, John Armstrong, AUSAR, Bruce Chapman, GME Electrophone, LAFENSW, Capt Dick Gandi, Australian Maritime College, students of Maryborough and Benowa High Schools for their assistance in this publication. Thanks also to Bruce Parmenter for his useful suggestions for this 2009 revision and the answer booklet.

#### Disclaimer

Although all care has been taken to provide safety instructions, and offers of training and advice, Wet Paper or any of its employees, advisors or consultants accept no responsibility for any accident that may occur as a result of students performing any of these activities. If schools are unsure of any method, they are advised first to consult with their own State regulations and then if further assistance is required, contact us here at Wet Paper at the above address.

## **Contents**

Worksheet 1 Research and review	4
Worksheet 2 Library/internet research	6
Worksheet 3 Questions	7
Worksheet 4 What day is it?	8
Worksheet 5 Magnetic fields	9
Worksheet 6 Using a hand bearing compass	. 11
Worksheet 7 Making a compass rose	. 12
Worksheet 8 Your local chart	. 13
Worksheet 9 Hypothetical Bay	. 14
Worksheet 10 Your own chart	. 16
Worksheet 11 Chart features	. 17
Worksheet 12 Latitude, longitude, nautical miles	. 20
Worksheet 13 Distance, speed and time	. 22
Worksheet 14 Compass conversions	
Worksheet 15 LOP's	. 26
Worksheet 16 Compass courses	. 28
Worksheet 17 Chartwork	. 30
Worksheet 18 Position fixing	. 31
Worksheet 19 Laying off and plotting	. 34
Worksheet 20 Set and drift	. 36
Worksheet 21 Choosing an objective	. 38
Worksheet 22 Where are we?	. 39
Workshoot 22 Pula of twolfths	40

## WORKSHEET 1 RESEARCH AND REVIEW

estions				
Who was the first person to sail around the	world?			
In what century did he complete this feat?				
Why was it such a big deal in those days to	accomplish this feat?			
				X
Figure 6.2 shows an early navigation aid. V	What is it, how was it	used and show how it v	worked.	
		X		
				_
•				
		,		
N				
			Figure 4.2	
	$\wedge$			
	1.	20 ////////////////////////////////////	11 111111111111111111111111111111111111	

3.	Make a list of modern navigation equipment that is available for inshore navigation.	7.	what problems would the modern commercial ships incur when navigating their way through the Great Barrier or Ningaloo Reefs? Suggest ways in reducing the potential danger to our reefs from shipping.
4.	Investigate a major maritime disaster that has occurred in the $20^{\text{th}}$ century. From your investigations suggest the cause of this accident and how it might have been prevented.		
		8.	Do you think the government should be spending thousands of dollars in upgrading and enhancing the navigational aids along our coastline. List points for and against your view.
5.	Would you take up the challenge that Jessey Martin did — to sail alone around the world? Why?		
6.	A signpost, such as the one shown in Figure 5.1, is rarely found at sea. Why do you believe this is so? Does your group think this type of fand/road sign posting should or could be used at sea?		Perth Parkins Cairns Adelaide Melbourne
			Figure 5.1

## WORKSHEET 2 LIBRARY/INTERNET RESEARCH

In small groups investigate the topics in one of the masts of the ship shown below. You will need access to research facilities in Resource Centre and/or computer room. Each group is to report their findings to the class at the end of the research time. Voyages of: Dufkin, Batavia, Voyages of: Janz or your choice Polynesians, Chinese, Vikings, Ancient Greeks, Roman War Galleys, Kon Tiki, Tasman, Voyages of: Vasco da Gama, Christopher Columbus, Magellan, Kay Cottee, James Cook, ame route each ly do they have terns? How do fish cation find their way as salm migrating What other Ancient navigation instruments How stars are used in nals can detect the world's navigation Early charts of the world nagnetic field? The work of Keple The Scurvy lines Halley's Describe what life would have been like on the First Fleet or a Polynesian or Maori colonisation Internet research teral buoyage system e International Association of Authorities or IALA, agreed to a code of marking the world's ports. placed an old system of lateral marks hown in Figure 6.1 which had two different interpretations. The new system is now slowly replacing the old

Figure 8.1 The lateral system of world buoyage

public to gain acceptance.

system but will rely on education of the boating