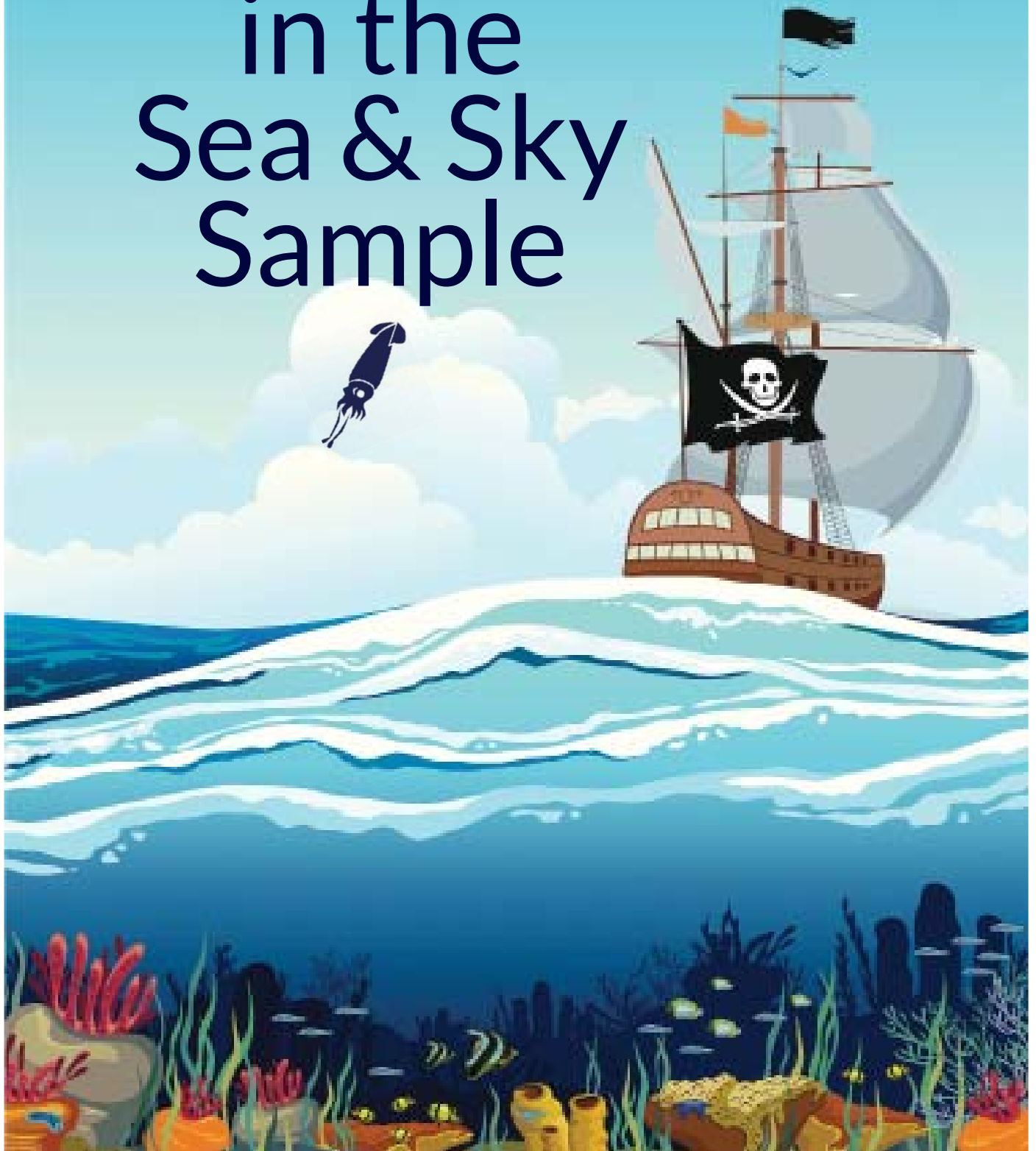


Adventures in the Sea & Sky Sample

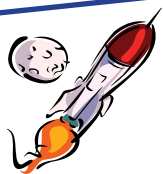


Adventures in the Sea & Sky

Program Guide

Take a Look Inside Our Comprehensive and In-Depth Program Guide!

Check out the year of adventure you could have with Sea & Sky. Below is a one page look at what you'll be learning about this year.



Adventures in the Sea & Sky Overview of Studies

ADVENTURE ON THE HIGH SEAS

THE CHARACTER OF A SHIP

Week 1: A Ship, Inside and Out

PEOPLE TAKE TO THE SEA

Week 2: Ancient Sailors
 Week 3: The Greeks
 Week 4: The Romans
 Week 5: The Vikings
 Week 6: The Middle Ages

THE RENAISSANCE MAKES WAVES

Week 7: A Sailing Renaissance
 Week 8: Age of Exploration
 Week 9: Ships Help Build New Empires
 Week 10: Empires Struggle for Dominance
 Week 11: New Technologies Change Navies
 Week 12: Piracy on the High Seas

INDUSTRIAL AGE SHIPBUILDING

Week 13: America Enters the World's Seas
 Week 14: The British Empire
 Week 15: Steam Power & Ironclads
 Week 16: Luxury Liners & Disasters

20th CENTURY SHIPS

Week 17: Global Power and the Great War
 Week 18: A Second Terrible War to Today



ADVENTURES IN THE AIR

Week 19: Early Aviation Pioneers
 Week 20: Wilbur and Orville
 Week 21: The Four Forces of Flight
 Week 22: The Three Axes of Motion
 Week 23: Flight Attempts and Failures
 Week 24: Kitty Hawk Triumph
 Week 25: Barnstormers & Record-Setters
 Week 26: Air Power in World Wars
 Week 27: World Travel & Sonic Speed

ADVENTURES IN SPACE

Week 28: Our Place in the Universe
 Week 29: One Sun and One Moon
 Week 30: Hard Core Planets
 Week 31: The Gas Giants
 Week 32: The Galaxy's Outer Regions
 Week 33: Early Launches and Milestones
 Week 34: Moon Landing!
 Week 35: Space Shuttles & Catastrophes
 Week 36: Rocketing into the Future

SCIENCE TOPICS

OCEANS & SEAS

Weeks 1-4: Oceanography
 Weeks 5-9: Ocean Tides, Waves, Currents & Zones
 Ocean Biomes & Sea
 Weeks 10-16: Things That Affect Life
 Weeks 17-18: Our Oceans

WEATHER IN THE SKY

Weeks 19-22: Types of Weather
 Weeks 23-27: Forecasting Weather

ASTRONOMY

Weeks 28-31: Exploring the Galaxy
 Weeks 32-36: Constellations and



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More to Great Helps Program Guide

Helpful Charts to help you Plan - Plan - Plan!

To the right you'll see a page from that helps you know which timeline figure to place each week. Below on the right is our "Optional Resources Chart." Here you'll find DVD and website suggestions that add tons of fun to your weekly studies. Below on the left is our wonderfully comprehensive "Activity Planning Chart." This chart will help you know what you'll need to complete the activities scheduled for the year. This chart makes it easy to get all the supplies in one trip! Timeline cards for date memorization and fun games to play using these cards helps students remember key dates in history.

Activity Planning Chart

Use this chart as a guide to determine which activities you plan to complete, and what supplies are needed that are not listed as part of a typical homeschool craft supply cupboard. If supplies for an activity are not listed, this indicates it requires only supplies that you should have if you have accumulated what is listed in the "Basic Craft Supplies" and "Normal Household Supplies" lists.

An easy way to plan is to use a highlighter to choose which activities you want to work on, along with the supplies needed. You can even copy this chart to use as a shopping list! None of the "game-type" activities, website recommendations, "Make-Your-Own" pages, notebooking and mapping projects are mentioned in this activity list. Neither are pages from activity workbooks or coloring books included in the activity schedule or Independent Study Worksheets.

OUR RATING SYSTEM! You'll find here a system that indicates to you the level of involvement needed to complete an activity. Between the stars above the activity are listed terms that should help you to know what an activity will involve. Here is the scale used. To the far right are the abbreviations we use in this chart.

SCALE	LEVEL OF INVOLVEMENT & DIFFICULTY	ABBR.
OPEN & GO!	Involves no prep, but perhaps a supply we provide or you have.	OPN
EASY -	Involves little to no prep for the parent and the student can complete it with common household supplies or none at all.	EAS
LIGHT PREP (LT. PREP)	Involves slightly more prep but just common household supplies.	LTP
LTD. SUPPLIES	Involves little to no prep, but a few supplies you may have to gather, although most supplies will be common items.	LTD
MODERATE	Involves moderate prep work or supplies you'll need to gather.	MOD
SKILLED	Project takes skill to complete, but supplies are provided/common.	SKI
PLAN IT	A project that requires time to plan ahead, but very accomplishable in other respects.	PLN
DIFFICULT	Project requires quite a bit of time, skill or supplies.	DIF

CHOOSE YOUR ACTIVITIES

Check the left box below of the activities you plan to complete. Then, use the list to help you shop for any supplies you don't have on hand.

Do It?	Rating	Activity	Supplies
WEEK 1			
	OPN	Be a Lookout	
	EAS	How Much Water?	9x9 baking pan, large drinking glass
	LTP	Ocean Cupcakes	cake mix and required ingredients, plus cupcake baking pan and cupcake liners, with premade white frosting, and blue and green food coloring
	OPN	Sea Lingo Game	

Sea & Sky Timeline Dates

You can laminate this page, if you like, and use it for reference throughout the year.



Week 1 c. 5000 B.C. - The Creation 5th & 6th days of Creation - The Dinosaurs	1300's A.D. - The Hanseatic League Week 7 1400's A.D. - Three Inventions Lead to a Sailing Renaissance 1375 A.D. - The Catalan Atlas 1390's-1468 A.D. - Johannes Gutenberg 1394-1460 A.D. - Henry the Navigator 1569 A.D. - Mercator's Projection Map
Week 2 3500 B.C. - Noah and the Flood 3500-2500 B.C. - The Ice Age	Week 8 1451-1506 A.D. - Christopher Columbus c. 1500 A.D. - Trade Winds are Charted
Week 3 3500 B.C. - Egyptians Invent the Sail 3100 B.C. - Menes 1900-1100 B.C. - Mycenaean Civilization 1480 B.C. - Queen Hatshepsut's Trade Organization c. 1000 B.C. - Phoenician Civilization	Week 9 1454-1512 A.D. - Amerigo Vespucci 1460-1524 A.D. - Vasco da Gama 1460-1521 A.D. - Juan Ponce de Leon 1475-1541 A.D. - Francisco Pizarro 1492 A.D. - The Treaty of Tordesillas 1485-1547 A.D. - Hernando Cortes 1480-1521 A.D. - Ferdinand Magellan 1475-1517 A.D. - Vasco Nunez de Balboa 1450-1498 - John Cabot 1510-1554 A.D. - Francisco Vasquez de Coronado 1540-1596 A.D. - Sir Francis Drake 1552-1618 A.D. - Sir Walter Raleigh
Week 4 1000 B.C. - The Greeks Build the Galley c. 700-500 B.C. - The Rise of Athens & Sparta c. 689-612 B.C. - The Powers of Mesopotamia c. 509 B.C. - Roman Republic 480 B.C. - Battle at the Bay of Salamis c. 479-431 B.C. - Golden Age of Greece 83-30 B.C. - Mark Antony 69-30 B.C. - Cleopatra 63 B.C. - 14 A.D. - Augustus Caesar 31 B.C. - Battle of Actium 27 B.C. - 476 A.D. - Roman Empire	Week 10 1600's & 1700's - Triangular Trade Begins 1602 A.D. - The Dutch East India Company 1620 A.D. - Mayflower Sets Sail 1620 A.D. - Mayflower Compact
Week 5 10th Century A.D. - Erik the Red 793 - c. 1020 A.D. - Viking Invasions 1000 A.D. - Leif Ericsson	Week 11 c. 1500 A.D. - Gunports Change Warships 1588 A.D. - The Spanish Armada 1652 A.D. - The Line of Battle Tactic
Week 6 c. 500's A.D. - Chinese Invent Junks 1003-1066 A.D. - Edward I (Edward the Confessor) 1027-1087 A.D. - William I (William the Conqueror) 1066 A.D. - Battle of Hastings 11th, 12th & 13th Centuries - The Crusades 1200 A.D. - Northern Europeans Invent the Cog 1300's A.D. - Italian Ports Grow Medieval Trade 1300's A.D. - Innovations in Shipbuilding 1300's A.D. - The Black Death (The Plague) c. 1300 A.D. - The Rudder is Introduced	Week 12 1696 A.D. - Peter the Great Builds a Navy 1718 A.D. - Blackbeard Died
	Week 13 1735 A.D. - The Chronometer is Invented 1753 A.D. - A Cure for Scurvy 1728-1779 A.D. - Captain James Cook

Sea & Sky Optional or Needed Resources (and When They're Used!)

Any item numbers with DVD's indicate the History Channel's numbering system. An ISBN# is the coding used for other media resources and could be used to track down resources through a major retailer such as Barnes & Noble. The star rating system is on a 1-5 scale, with 5 being the highest possible score.

Generally we do not recommend much under a three-star level, which means all the videos we recommend we consider above average as far as presentation and interest. This is not to say that 3-stars are not very good or just "average," but rather, to provide the parent with a way to prioritize those they really want to purchase, rent or borrow for the year. All of the videos we mention would be a welcome addition to your regular studies. 5-stars just indicates a sparkling gem among gems.


Please Note: We always recommend previewing any DVD, to make sure that there are no scary elements or other content that you'd prefer to fast forward past, etc. Even the best documentaries occasionally have objectionable material.

WEEK	Name and Description	Format	Use Level
Week 2	Modern Marvels: "Deep Sea Exploration" History Channel's Modern Marvels series has quite a few entries that would really add to your studies this year. The first of them is "Deep Sea Exploration," which traces the history of submersible machines that have helped men explore the ocean. See incredible discoveries made in the deepest waters. Item #AAE-42212	DVD	Optional ***
Week 5	The Great Ships Series: "The Viking Ships" History Channel's "Great Ships" series has quite a few entries that would really add to your studies this year. The first we're recommending for this year is "The Viking Ships." Be sure not to confuse individual titles with the "Sailing Ships" collection below.	DVD	Optional ***
Week 8	Required Supplies Prepare in advance for a couple of activities this week. The activity, "Currents in the Deep" requires a small ice pack of frozen water or ice cubes in a baggie.	Supplies	Necessary to complete an activity
	"Little Ice Age: The Big Chill" A fascinating video that gives you a new view of this time period! Scientists call it the Little Ice Age - but its impact was anything but small. From 1300 to 1850, a period of cataclysmic cold caused havoc. It froze Viking colonists in Greenland, accelerated the Black Death in Europe, decimated the Spanish Armada, and helped trigger the French Revolution. The Little Ice Age reshaped the world in ways that now seem the stuff of fantasy--New York Harbor froze and people walked from Manhattan to Staten Island. Eskimos sailed kayaks as far south as Scotland, and "the year without a summer" saw two feet of snow fall on New England one June and July.	DVD	Optional *****

Nitty-Gritty Weekly Grids

Need to Know What to Do Each Day?

Our weekly grids give you an at-a-glance look at what your week is going to look like. You'll find daily reading, science, history, online learning, and fun projects and activities. On the left you'll see our weekly intro page that talks about the weekly focus and learning opportunities. Below on the right you'll see the student schedule which tells them what to do each day as well.



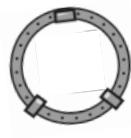

A Ship, Inside & Out

Long, long ago, people figured out how to travel on the water in vehicles that could float. What kinds of boats did ancient men create? For what did they use their boats? It's time to embark on a journey on which you'll follow the history of the ship. As you travel, you'll see that the history of the ship makes all the difference in the history of the world!

You'll start out by discovering the answers to some questions you may have always had about ships. Why do we call some sea vessels ships and others boats? What are the parts of a sailing ship or a powered vessel? How does a ship move? What were the first types of ships that took to the sea? And -- as you've probably wondered -- what makes a person seasick?


Your Destinations This Week:

- History Port:** Embark on Your Study of Ships
Boats of Ancient Peoples
Ships vs. Boats
Parts of a Ship
How a Ship Moves
- Science Port:** Dive into Your Study of Oceans
Earth's Massive Oceans
Amazing Design in the Oceans
Oceans in Human History
The Color of the Ocean
- Culture Port:** Basics of Being Aboard a Ship
- Geography Port:** Geography is a Place

Adventures in the Sea & Sky Week 1 - A Ship, Inside and Out

RESOURCES	DAY 1	DAY 2	DAY 3	DAY 4
ORAL DISCUSSION				
HISTORY STUDY				
An Unfurling Sail	Introduction Page 5	The Parts of a Sailing Ship Page 6	A Ship's Motion and Seasickness Page 8	First Boats Pages 9-10
Planet Earth				Chapter 1 How Big is the Earth?
Sailors, Whalers & Astronauts	SAILING LINGO Pages 8-13	PARTS OF A SHIP Page 6		
SCIENCE STUDY				
The Ocean Book		INTRODUCTION Pages 4-5		EARLIEST SAILORS Read from mid-64 to 65
Under the Sea & In the Air	Different Bodies of Water Page 4		Our Blue Oceans Page 6	How Many Oceans? Page 4
READING TOGETHER				
Treasure Island	Forward & Chapters 1 & 2	Chapters 3 & 4	Chapters 5 & 6	Chapters 7 & 8
STUDENT ASSIGNMENTS				
BIBLE: The God of All Creation	Introduction & Isaiah 40 Discipline 1: Lesson	Isaiah 40: Discipline 2: Journaling	Isaiah 40: Discipline 3: Prayer	
SCIENCE: Planet Earth & Under the Sea & In the Air			UNDER THE SEA: Find That Body Page 6	PLANET EARTH: Questions Page 9
TIMELINE WORK: Timeline Pgs, Figures, Cards				TIMELINE: Place Timeline Figures
JOURNALING - MAKE-YOUR-OWN CAPTAIN'S LOG				
History or Geography Pages		Parts of a Ship Page 6	Your Voyage Aboard the Seafarer Review Pg. 6 & Do Page 7	Chart Your Travels Page 10
Culture, Geography, Science Pages	Coming Aboard the Seafarer Page 5	Measure Your Seagoing Skills Pages 8	Measure Your Seagoing Skills Page 9	
CHOOSE AMONG THESE RESOURCES & ACTIVITIES				
Sailors, Whalers & Astronauts: Life on Ships That Sail & Soar		« OPEN & GO! » Be a Lookout! Page 7		
Under the Sea & In the Air	« EASY » How Much Water? Page 5			« LT. PREP » Ocean Cupcakes Page 5
Other Ideas - See Parent Notes		« OPEN & GO! » Sea Lingo Game (See Below)		« EASY » WEBSITE: How a Boat Sails
Notes				
HISTORY FOCUS: A Ship -- Inside and Out Examine the basics of a ship and the beginnings of sail.		"Sea Lingo Game" - Your student can make up their own memory game. First, have them cut card-size pieces of paper or cardstock. Using the terms and expressions from "Sailors, Whalers & Astronauts" and the "Make-Your-Own Captain's Log," have them put the term or expression on one piece of paper and the meaning on another. When they have gathered quite a few sets of two, they can lay out a "memory game" on the table. Shuffle the cards, then lay all the cards face down on the table in rows. The first player tries to make a match. If they don't, the cards need to be turned back over upside down. Players should try to remember the locations of the cards they've seen. Players keep any matches they make. Continue until all cards are made into matches. The player with the most pairs wins.		
SCIENCE FOCUS: Introducing the Ocean A look at the world's oceans around the globe.				
Website: "How a Sailboat Sails" http://www.boatsafe.com/kids/033199kidsques.htm "How a Boat Floats?" http://www.boatsafe.com/kids/021598kidsques.htm				



Adventures in the Sea & Sky - Week 1 Independent Study Schedules for Students

RESOURCES	DAY 1	DAY 2	DAY 3	DAY 4
INDEPENDENT STUDY				
BIBLE: The God of All Creation	Introduction & Isaiah 40 Discipline 1: Lesson	Isaiah 40: Discipline 2: Journaling	Isaiah 40: Discipline 3: Prayer	
SCIENCE: Under the Sea & In the Air			UNDER THE SEA: Find That Body Page 5	
SCIENCE: Planet Earth				PLANET EARTH: Questions Page 9
TIMELINE WORK: Timeline Pgs, Figures, Cards				TIMELINE: Place Timeline Figures
JOURNALING - MAKE-YOUR-OWN CAPTAIN'S LOG				
History or Geography Pages		Parts of a Ship Page 6	Your Voyage Aboard the Seafarer Page 7	Chart Your Travels Page 10
Culture, Geography, Science Pages	Coming Aboard the Seafarer Page 5	Measure Your Seagoing Skills Pages 8	Measure Your Seagoing Skills Page 9	
MY MATH ASSIGNMENT				
OTHER ASSIGNMENTS				
CHOOSE AMONG THESE RESOURCES & ACTIVITIES				
Sailors, Whalers & Astronauts: Life on Ships That Sail & Soar		« OPEN & GO! » Be a Lookout! Page 7		
Under the Sea & In the Air	« EASY » How Much Water? Page 5			« LT. PREP » Ocean Cupcakes Page 5
Other Ideas - See Parent Notes		« OPEN & GO! » Sea Lingo Game (See Below)		« EASY » WEBSITE: How a Boat Sails
Notes				
Notebooking: Timeline Figures to Place The Creation - c. 5000 B.C. The Dinosaurs - 5th and 6th Days of Creation Noah and the Flood - c. 3500 B.C. The Ice Age - c. 3500-2500 B.C.				
Website to Visit: How a Sailboat Sails and a Boat Floats Have a parent help you to reach these sites. The web address is listed in the parent notes.				

Our Deluxe Color Journal!

Make-Your-Own Captain's Log

**Dive Deep Into Sea & Sky
with Our
Interactive Journal**

Sail the high seas with Crow.
Learn the ways of the seas aboard
the *Seafarer*! Navigate the air and
outer reaches of space. Don't get
lost in the fun of this interactive
journal.

A detailed illustration of a wooden desk with various nautical items. A map is spread out on the desk, featuring a red 'X' and the text 'Captain's Log'. A telescope, a compass, a pistol, and several gold coins are also on the desk. The text 'Make-Your-Own' is at the top, and 'WinterPromise' is at the bottom right of the illustration.

Make-Your-Own

Captain's Log

WinterPromise

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A Ship, Inside & Out



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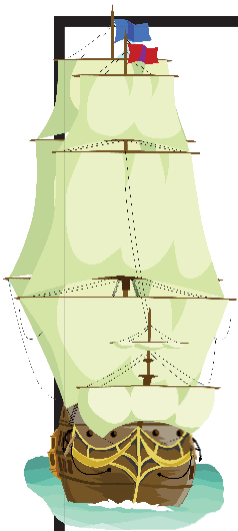
Destinations This Week

History Port: Embark on Your Study of Ships
Boats of Ancient Peoples, Ships vs. Boats,
Parts of a Ship, How a Ship Moves

Science Port: Dive into Your Study of Oceans
Earth's Massive Oceans, Amazing Design
in the Oceans, Oceans in Human History,
The Color of the Ocean

Culture Port: Basics of Being Aboard a Ship

Geography Port: Geography is a Place



Coming Aboard the Seafarer



“My name? Hawk. Well, I mean, Matthew Hawkridge, actually. That’s my real, on-land name. But at sea, they call me Hawk.

“I’ve been aboard the Seafarer since I was ten years old. My family needed the money they’d get by putting me aboard to serve as cabin boy. Now I’m thirteen, but I’m here to show you the ropes of being aboard a sailing vessel, living at sea.

“Let’s see. A name for you. Hmm. We’ll call you Crow, since I heard you cawing so much about coming aboard in the first place. I’m not sure if you’re cut out for this, but there’s no way to know until you’re out on the waves. You take my place as cabin boy, and I get to move up to deck hand. I’m all set for that job, since I’ve been “learning the ropes” around here for a long time.

“Don’t worry. You’ll get your turn. But for now, you ‘d make yourself busy. No one’s going to keep a cabin boy who doesn’t know how to scrub the deck. Grab that mop and that bucket over yonder. Pull up some water, and get to work. This is the last you’ll see o’ land for awhile, so you might want to grab a last glance as we leave the harbor.”

Sailor Talk

Almost as soon as you got busy, your fellow crewmates started telling you things, using expressions common to sailors. Write out what each of these comments means.

“Ya look a landlubber by the cut o’ your jib.”

“Get ya busy, or the cat’ll be out of the bag.”

“Are you in everybody’s mess and nobody’s watch, Crow?”

“Careful, boy, the sail’s footloose!”

“Splash me and I’ll square the yards with ya!”

“He’s always ready to rig his yarn tackle.”

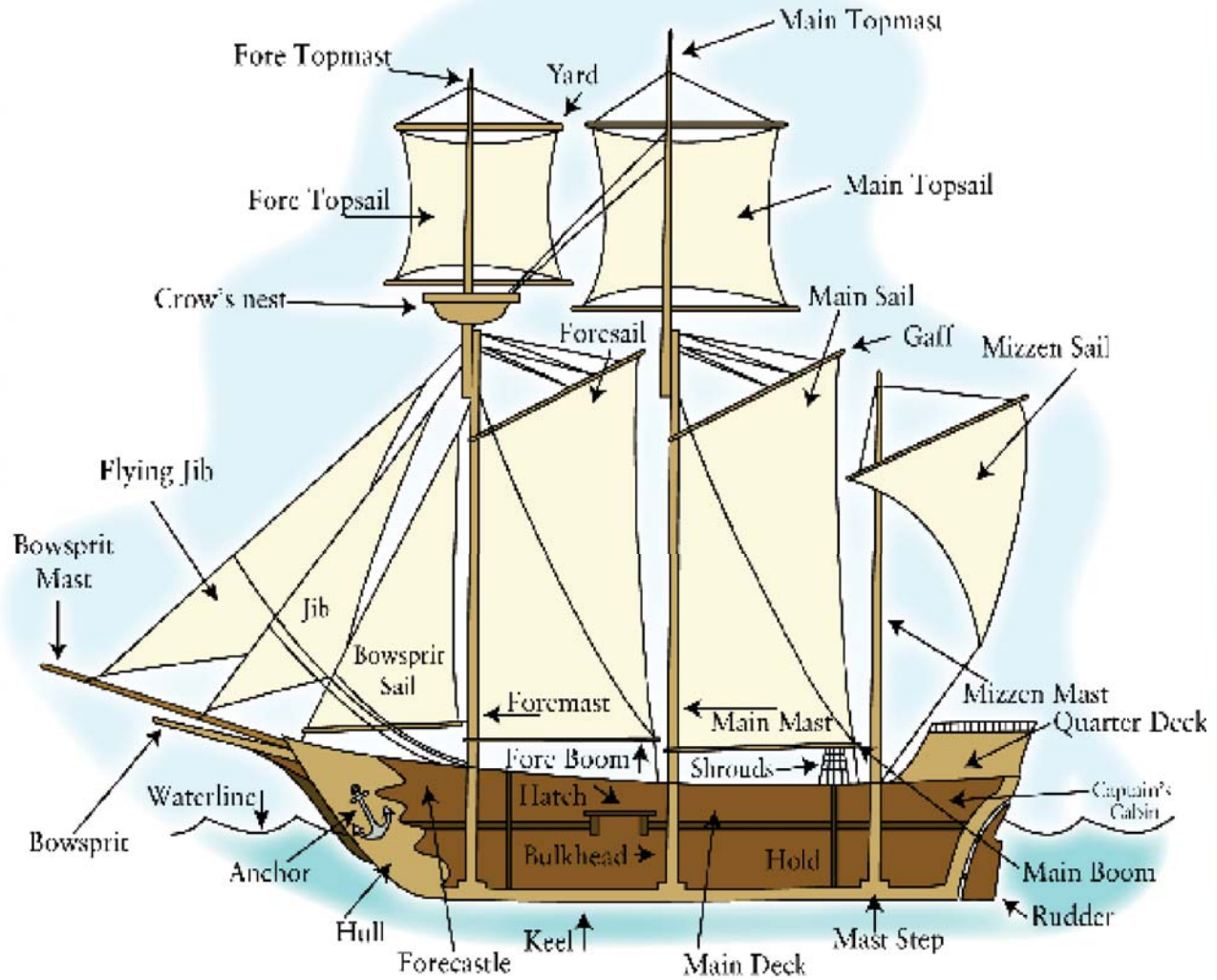
“Boy, help me try a different tack, here.”

“Meet you near the scuttlebutt later, Crow!”

SAILING CULTURE

Parts of a Ship

The *Seafarer* is a fine, three-masted ship. Take a look at each of her parts below.



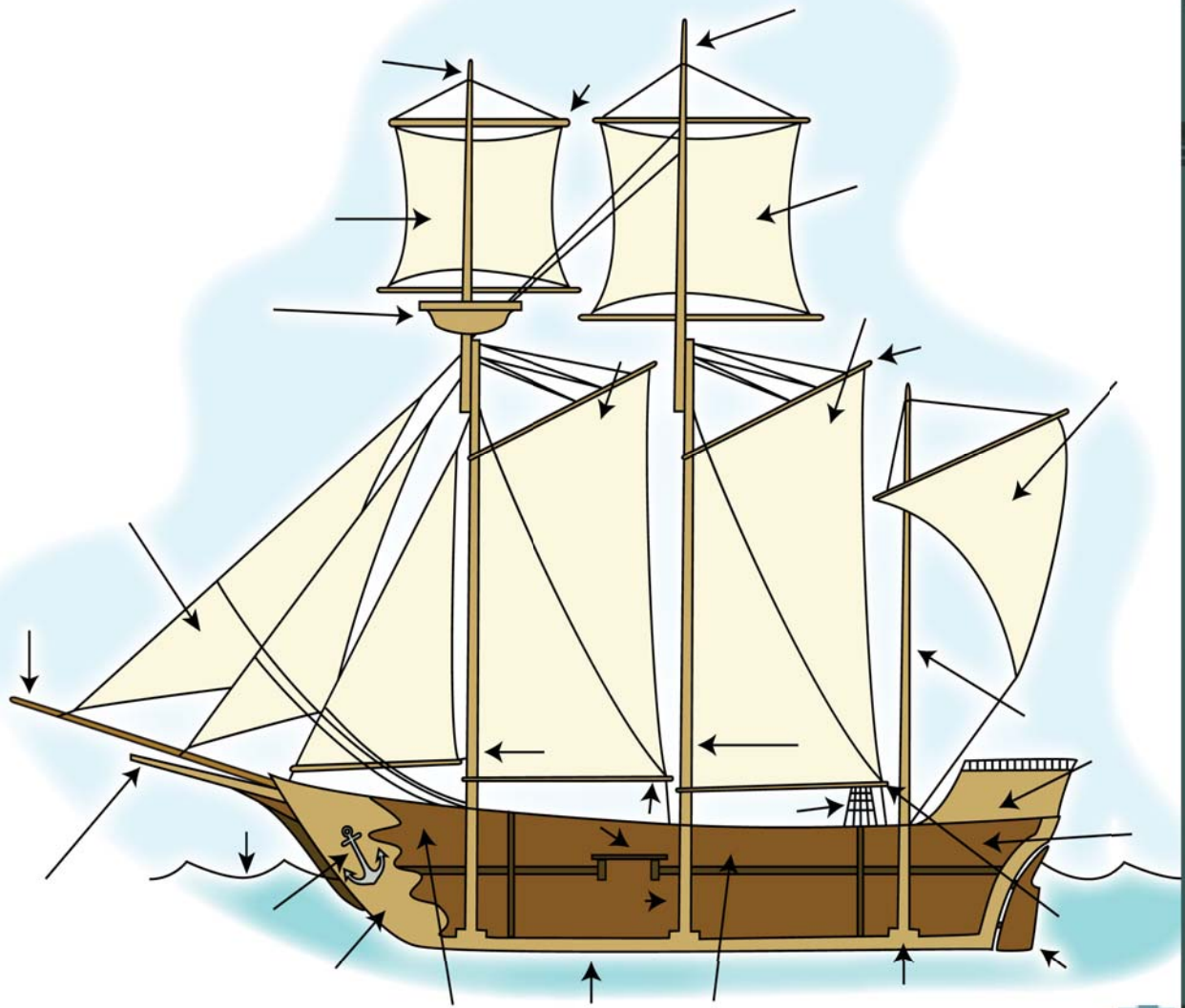


Voyage Date: Today

YOUR VOYAGE ABOARD “The Seafarer”

Crow, you are a new crewman aboard the ship “The Seafarer.” Aboard ship, you’ll discover ships from the past, and travel back to the far reaches of human history. You’ll move forward with mankind as they construct ships, develop trade, and build empires aboard sailing vessels. Then, you’ll watch as men take to the air in flying machines built for the skies and even outer space.

But for now, it’s time to see how well you know your new ship. Label the parts of the *Seafarer* below. You’ll find all the information you need on previous pages in this resource. Label each feature with its name.





Measure Your Seagoing Skills



A Ship's Motion

Unfortunately, the ship's motion has made you seasick the entire first week aboard.

Label the motions below as either:

heaving
pitching

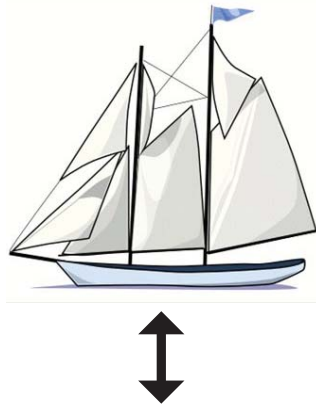
swaying
yawing

surging
rolling

1.



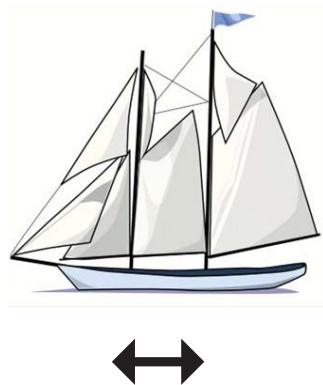
2.



3.



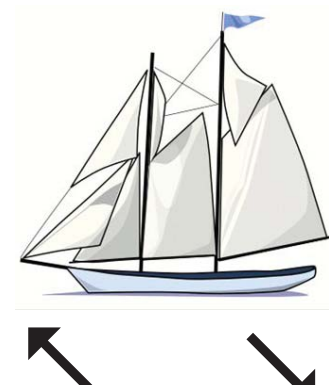
4.



5.



6.



More Fun!

Learn Sailing Culture

SAILING CULTURE

Ranks in the Crew

Crew, you've got to learn right away about who does what around here. I've told you everything I can about the men aboard. Show me what you know by writing below each figure what he does.



Able-Bodied
The Supercargo



Ordinary
Cabin Boy



Boatswain



Seaman



Seaman



Take a look at these idlers! How were idlers different from the other members of the crew?

Write underneath who is included in this group, from left to right..

Live the Life of a Sailor
 What was it like to sleep aboard a whaler?
 What rank would you be aboard a ship?

SAILING CULTURE

Seaport Signs



When a sailor took shore leave at a seaport town, he was enticed to enter shops with signs outside each place of business. The signs had pictures to show what kind of shop it was, since many sailors couldn't read. Below, fill in the seaport sign with a business you might enjoy running.



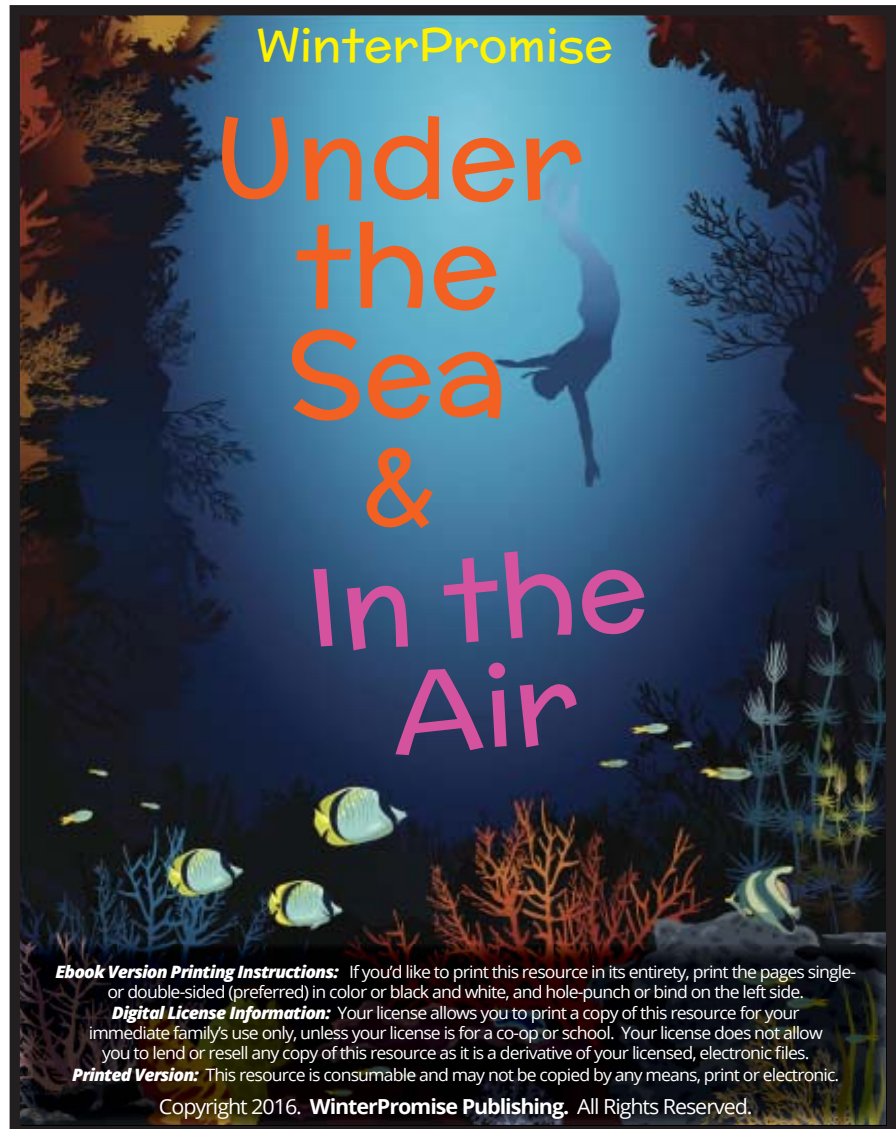
SAILING CULTURE

Life on a Whaler

Draw in what you'd find in the fo'c'sle, including bunks, sea chests, and unwelcome guests such as those you read about in "Sailors, Whalers, and Astronauts."

Learn the Science of the Ocean & Air Under the Sea & In the Air





Under the Sea & In the Air

Brackish Water

Rivers Empty into the Sea

When water falls as rain, it has evaporated from the oceans, and condensed in storm clouds before dropping over meadows, farms, and cities. From there, it is streams and rivers that carry the water back toward the ocean as part of the water cycle. As rivers flow, they bring along water, but also pick up minerals, including salt. Salt forms perfect crystal cubes, which you could see if you looked at salt from your salt shaker under a microscope.

Salt, once it travels to the ocean, stays there for good, since water only gets out of the ocean by evaporating or freezing into polar ice. When water evaporates from the ocean, it doesn't take salt with it; the salt is left behind. The same is true when it freezes. So, the salt stays, and the ocean slowly becomes more salty as salt leaves behind its home in rocks and soil, to travel to the ocean.

When rivers meet the ocean, the fresh water is lighter than the salty water, so the fresh water spills into a layer over the top of the seawater. Of course, soon the water mixes, as waves and tides churn them together. This makes oceanwater near the mouths of rivers less salty, since fresh water is pouring into the ocean. The water here has more salt than fresh water, but less than seawater. Water in these areas is called **brackish water**.

Some animals and plants flourish in brackish water. Mangrove trees live in brackish water, alongside floating plants. Fiddler crabs and mudskippers live in brackish water and so do shrimp and some young sharks. Fish like herring, lamprey, striped bass, sturgeon, tilapia, and even trout live in these waters, an entire ecosystem.



Under the Sea & In the Air

Activity - Heavy Water

What You Need:

- Drinking Glass
- Water
- Salt
- Food coloring
- Straw or eyedropper

Try this experiment to see how fresh water and salty water behave when mixed. Fill a drinking glass halfway with fresh water. In a small bowl or glass, mix 1/4 cup of water with 1 tablespoon of salt and 4 drops of food coloring. Use an eyedropper or even a straw to add the colored salt water to the fresh water, a drop at a time. (A straw works if you dip the straw into the salt water, and plug the top end of the straw with your thumb. Slowly lift just part of your thumb to let a drop fall into the fresh water. What happens? Do you see the colored drops falling to the bottom? That is because salt water is denser than fresh water. Dissolved salt particles fill in gaps between water particles, so it is heavier, and denser.



Under the Sea & In the Air

How Many Oceans?

So How Many Oceans Are There?

Of all the questions you might have about oceans, this might seem like the simplest one to answer, but scientists don't all agree on how to count the oceans. Some scientists think they are four, while others would say there are five.

Here's why. Actually, all of the oceans are linked together all over the world, so really one could say there's only one ocean. But that wouldn't be very helpful to geographers or travelers, either, would it? Geographically, land masses on the earth's surface divide ocean waters into roughly separate bodies. Three of these bodies separated by land are the Pacific Ocean, the Atlantic Ocean, and the Indian Ocean. Two more bodies of water are also typically called oceans. The Arctic Ocean covers the top of the globe, and the Antarctic Ocean covers the bottom of the globe. That would be five oceans.

But some scientists aren't sure it is right to count the Antarctic as a separate ocean, since it isn't separated by land much at all from the Pacific, Atlantic, and Indian Oceans. They say it makes more sense to count the Antarctic Ocean as the southern portions of these three oceans. These scientists say that makes just four oceans.

At least things are a little less confusing when you begin to count seas. Seas are smaller bodies of salt water. Many seas are completely, or almost entirely enclosed by land. The Mediterranean Sea and Black Sea are good examples of these types of seas. Other seas are actually part of oceans nearby countries, but for geographical purposes, it makes it easier to refer to these regions near the coasts as seas. The East China Sea and Caribbean Sea are good examples of these types of seas.



Under the Sea & In the Air

Activity - What Type of Sea?

What You Need:

- Globe

Look at a globe, and decide if each sea below is mostly enclosed by land, or associated with ocean-bordering countries.

Caspian Sea
Adriatic Sea

Bering Sea
Red Sea

Sea of Japan
Coral Sea

Under the Sea & In the Air

The Ocean Floor

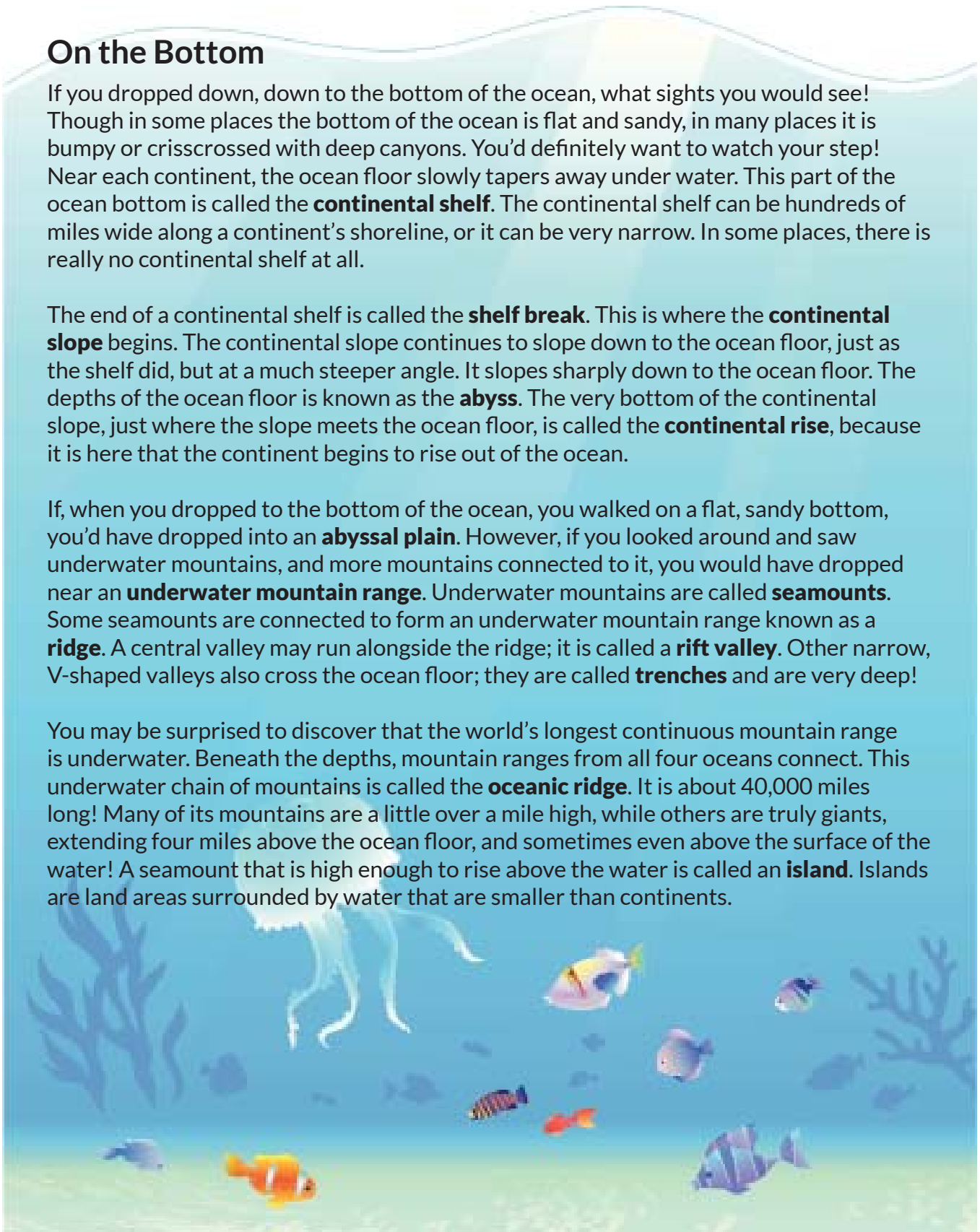
On the Bottom

If you dropped down, down to the bottom of the ocean, what sights you would see! Though in some places the bottom of the ocean is flat and sandy, in many places it is bumpy or crisscrossed with deep canyons. You'd definitely want to watch your step! Near each continent, the ocean floor slowly tapers away under water. This part of the ocean bottom is called the **continental shelf**. The continental shelf can be hundreds of miles wide along a continent's shoreline, or it can be very narrow. In some places, there is really no continental shelf at all.

The end of a continental shelf is called the **shelf break**. This is where the **continental slope** begins. The continental slope continues to slope down to the ocean floor, just as the shelf did, but at a much steeper angle. It slopes sharply down to the ocean floor. The depths of the ocean floor is known as the **abyss**. The very bottom of the continental slope, just where the slope meets the ocean floor, is called the **continental rise**, because it is here that the continent begins to rise out of the ocean.

If, when you dropped to the bottom of the ocean, you walked on a flat, sandy bottom, you'd have dropped into an **abyssal plain**. However, if you looked around and saw underwater mountains, and more mountains connected to it, you would have dropped near an **underwater mountain range**. Underwater mountains are called **seamounts**. Some seamounts are connected to form an underwater mountain range known as a **ridge**. A central valley may run alongside the ridge; it is called a **rift valley**. Other narrow, V-shaped valleys also cross the ocean floor; they are called **trenches** and are very deep!

You may be surprised to discover that the world's longest continuous mountain range is underwater. Beneath the depths, mountain ranges from all four oceans connect. This underwater chain of mountains is called the **oceanic ridge**. It is about 40,000 miles long! Many of its mountains are a little over a mile high, while others are truly giants, extending four miles above the ocean floor, and sometimes even above the surface of the water! A seamount that is high enough to rise above the water is called an **island**. Islands are land areas surrounded by water that are smaller than continents.



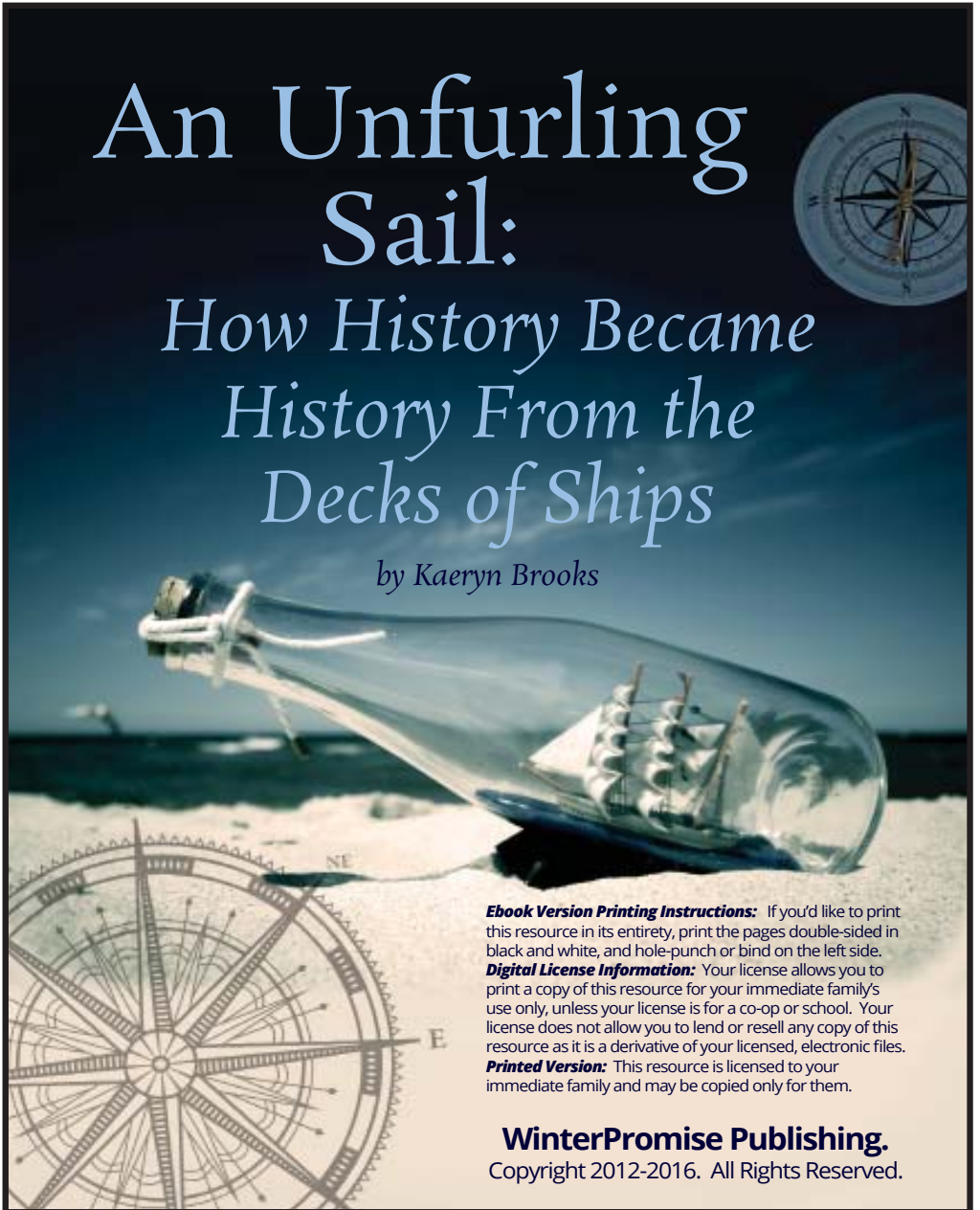
Read the Stories. . .

An Unfurling Sail

An Unfurling Sail:

How History Became History From the Decks of Ships

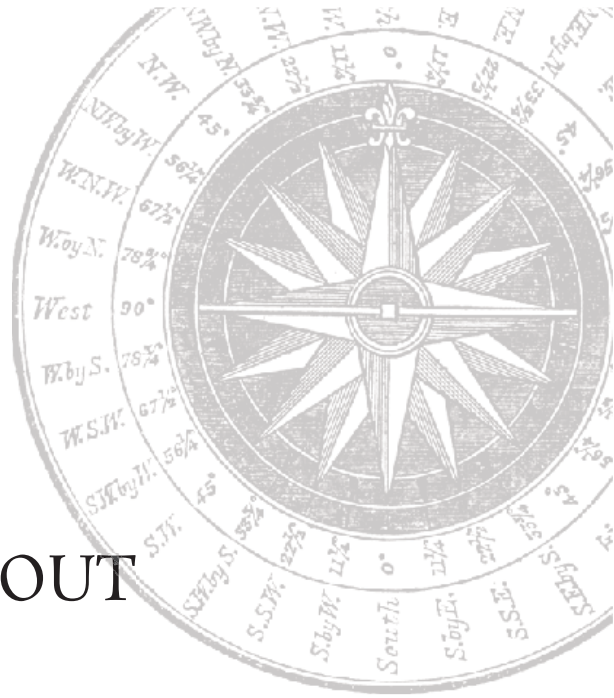
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Chapter 1

A SHIP, INSIDE & OUT

INTRODUCTION

No one knows which human being first decided to head into the water in a floating object. We can imagine that many humans looked with longing at the rivers or seas near their homes, wanting to explore what was just around the bend in the river or just across the sea. As with any new achievement, there are many people who desire to attempt something before one brave person decides to risk trying -- and succeeds! We'll never know who that first person was, but many early human societies took to the water.

Most of these societies found that wood pieces shaped and fit together floated very well. The pieces could be cut and formed in many different ways for making boats in varying sizes or designed for different purposes. The success of many ancient civilizations can be traced to the water travel that aided their trade and expansion. These early peoples used boats in many of the same ways they are used today: for fishing, trade, transportation, military operations, and even recreation.

So, in many ways, the history of the ship is the history of man's communities, empires, and greatest achievements. The pages that follow will take you on a journey filled with the sights, sounds, and smells of sea travel as experienced by humans for thousands of years. Get ready for a trip full of adventure!

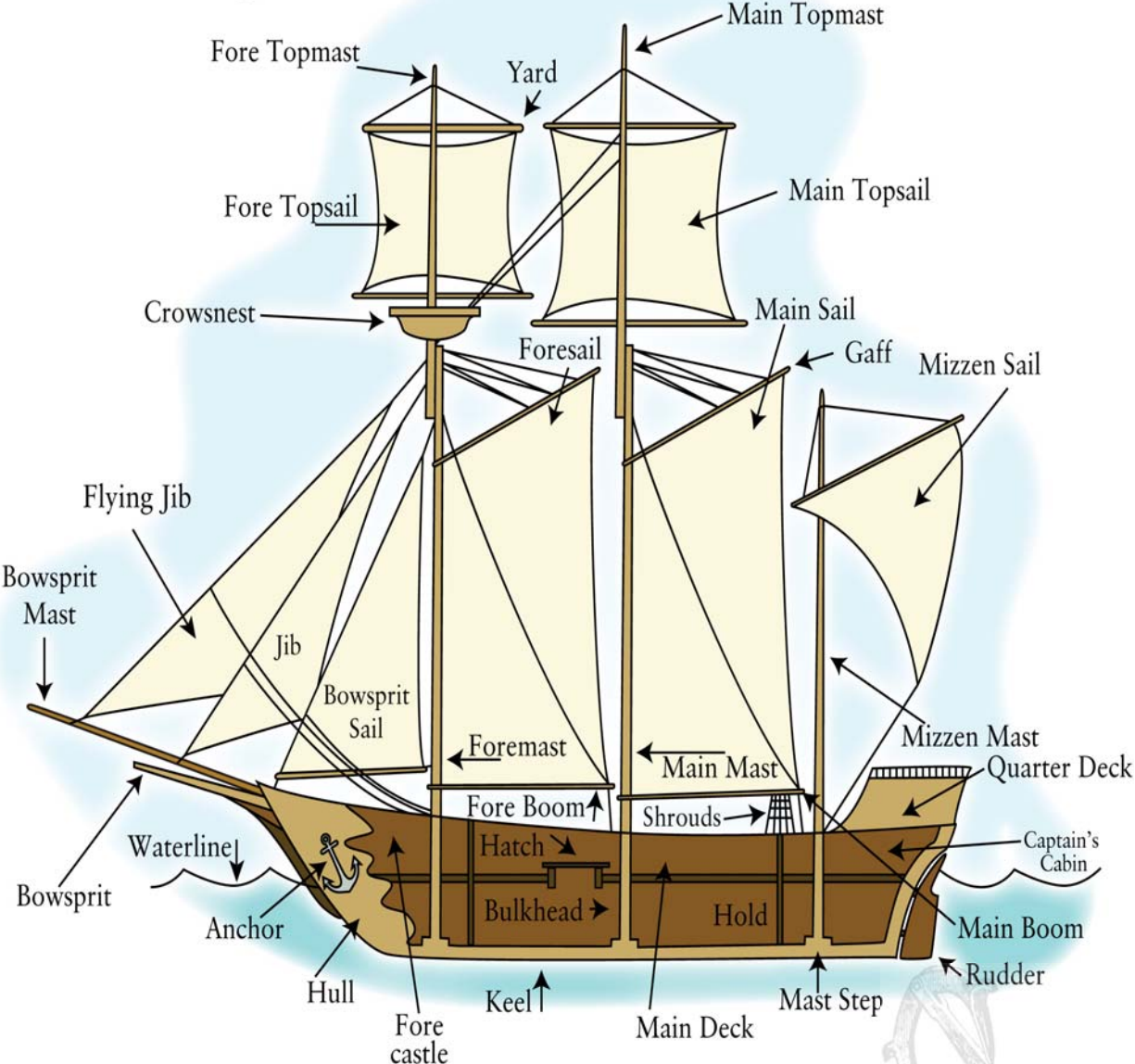
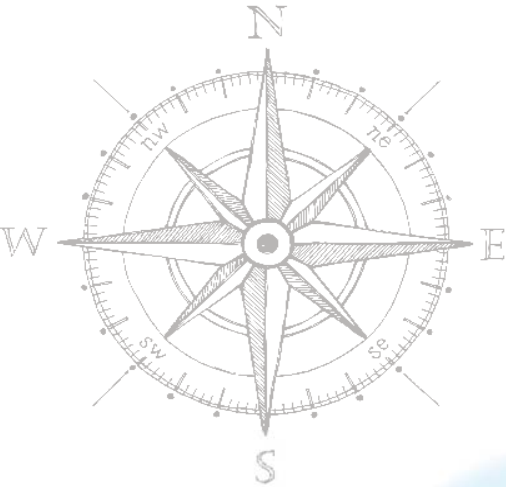
Let's begin by considering the words we use for seagoing vessels. The words *boat* and *ship* are words you probably learned when you were little more than a baby, but have you ever thought about what makes a boat a *boat* and what makes a ship a *ship*?



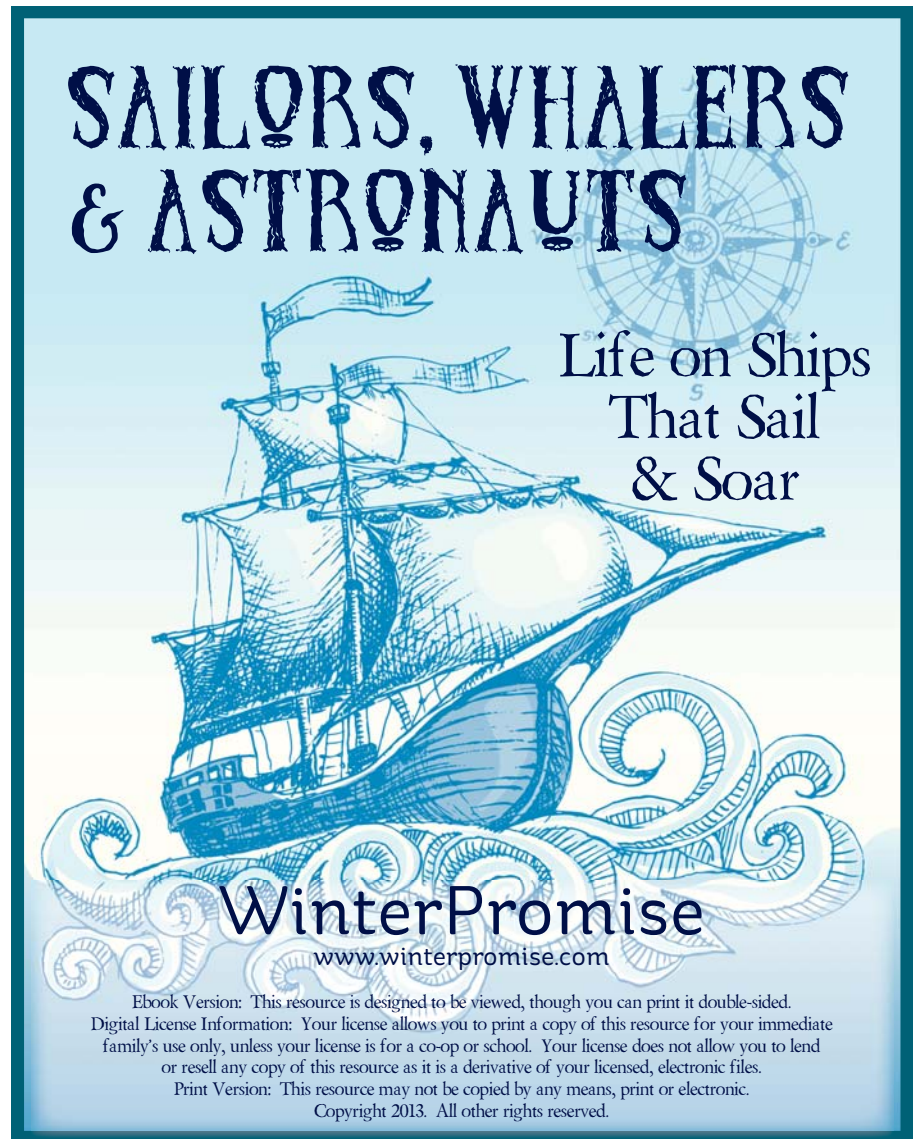
I must go down
to the sea again,
to the lonely sea
and the sky.
And all I ask is
a tall ship
and a star
to steer her by.
-- John Masefield



Parts of a Sailing Ship



Learn About the Culture Sailors, Whalers & Astronauts



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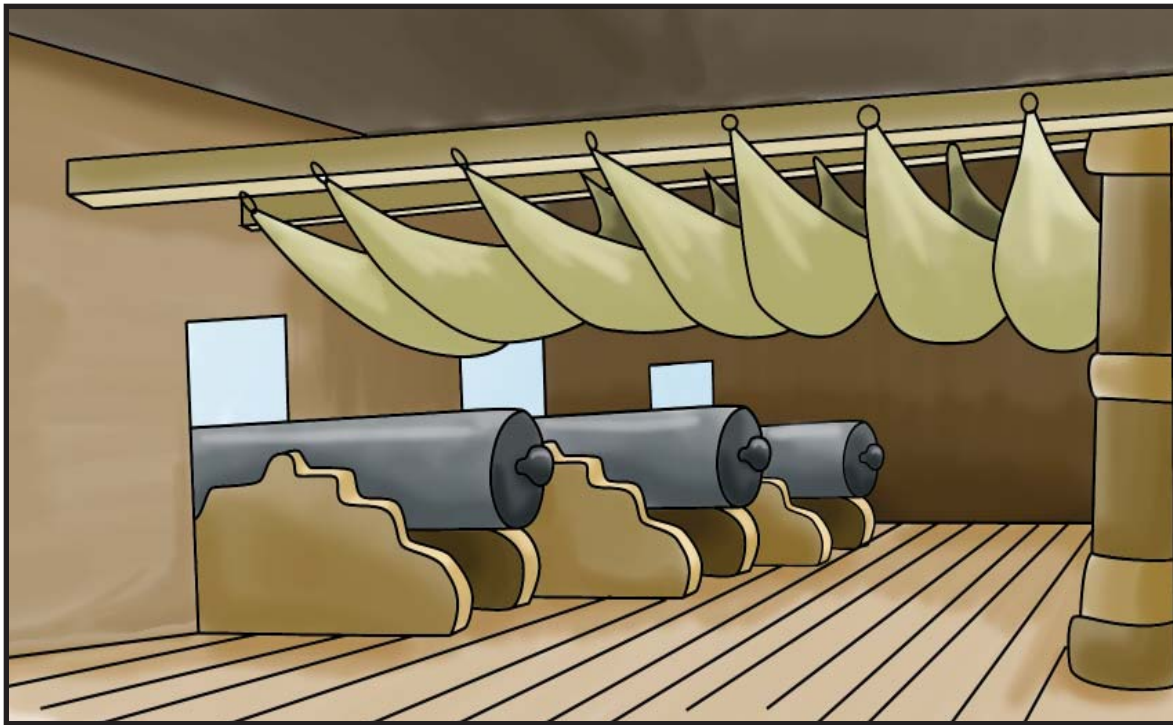
LIVING on a SHIP

A ship in port appears beautiful, a picture of freedom. If you've ever toured a ship, they look tidy and appear roomy. But life aboard a ship was quite different. Ships required a large crew to handle the sails, man the guns, and tend to daily needs, especially relative to the size of the ship overall. Ships were very, very crowded. The crew had virtually no privacy.

The smell aboard the ship could be awful. Men worked hard, sweating as they performed most tasks, and had few opportunities to properly bathe. Food was sometimes half-spoiled, and constant contact with water made areas of the ship damp and musty.

The crew fought dirt and grime constantly. Sailors were required to keep themselves and their clothes clean, but this was tough to do. Crews hung their freshly washed laundry from rigging above the decks to dry. Ship toilets opened out over the sea, but sailors didn't always reach them on time. The lower decks were constantly too humid, since sunlight didn't reach down there to dry out water that seeped inside. As the crew cleaned the decks in an effort to fight dirt above, extra water often washed down into lower decks, making the lower decks even more damp!





Most sailors throughout history chose to sleep onshore if possible, or on the deck, if not. They were not given beds, but instead used rolled-up bedding. Hammocks weren't used until Europeans discovered Native Americans using them. Hammocks were perfect for the swaying of ships, and kept crewmen above items stored below. They were hung from the roof of the gun deck, hung only 15 inches apart, so men were in contact with other men even when they slept. It is no wonder the air was stale and smelly!

Sailors kept personal possessions in their own ditty box. Most sailors kept their personal care items inside, such as shaving tools, combs, and wash kits. Also inside were tools for sailmaking or repair, like needles, thimbles, a sewing palm, and an awl. Personal possessions were also kept safe. Sailors put their letters from home, any photographs or other small reminders of home in the box. A ditty box might have special carvings or painting on the cover for decoration, or have a panel of scrimshaw on its top, a carving in whalebone.

Sailors typically had a sea chest, too, into which they placed their ditty box. The sea chest was for larger items. It held a sailor's clothes, books, larger tools, or other items.

SCULPT A FIGUREHEAD

You can sculpt your own figurehead for a Viking longship or British frigate!

What You Need:

4 to 8 ounces of lightweight air-dry modeling compound
Paint or colored markers

What To Do:

Decide on a shape for your figurehead. Will it be a dragon head for the prow of a raiding Viking longship? Or will it be a mermaid or beautiful woman for a merchant vessel?

Mold your figurehead into the shape you want. Remember to mold a base for it, since you'll want to stand it up on a shelf. The figurehead could be pressed into the front of the base, or the top, depending on the design.

Let the figure dry overnight. When it is dry, you can paint the figure or color it with markers.

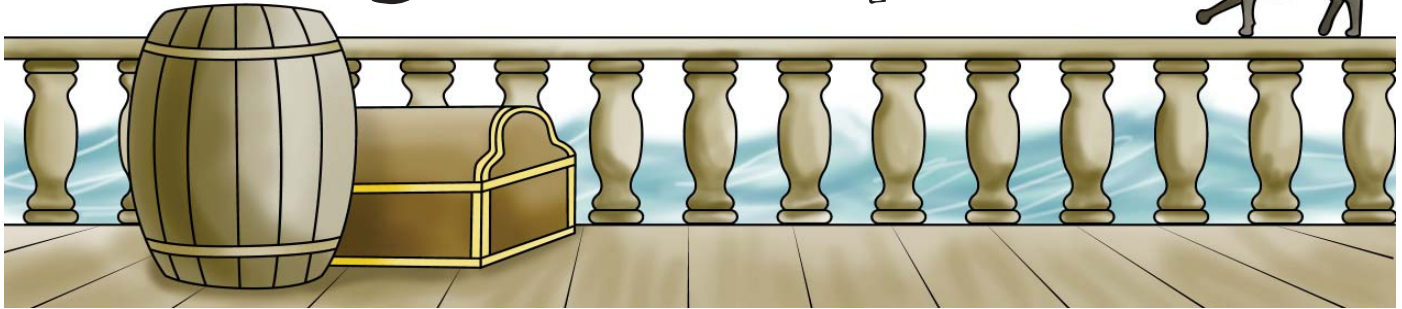


Learn About Pirates!

Pirate Page Pack



Dress Like a Pirate



Pirates liked to wear baggy clothing that would make it easy to swab the decks, climb the rigging, and raid unsuspecting ships. When they raided other ships, they'd take clothing from their prisoners, if it looked comfortable! Let's make your own pirate clothing!

WHAT YOU NEED:

Permission to cut up:
an old T-shirt
an old pair of jeans

Plus:
a red piece of cloth
black paper

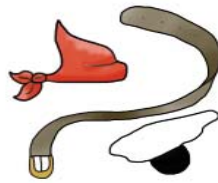
elastic
scissors
belt
glue

Here's what to do!



CLOTHES:

Cut off the jeans just below the knee in a ragged edge. Cut off the arms of the shirt in a ragged edge, too, and perhaps cut a little off the bottom edge.



BELT & SCARF:

Fold the piece of red cloth into a triangle, wrap it around your head and tie in a knot. Put the belt around your waist.

PASTE IN HERE . . . A Picture
of you wearing your new
PIRATE TOGS!



EYEPATCH:

Cut a half-circle out of black paper. Cut a long piece of elastic, and lay it along the straight edge of the circle. Fold over the straight edge of the circle, and glue it down to itself, over the elastic. Tie the elastic ends together so it fits your head.



Jolly Roger



Pirate ships flew a pirate flag when they wanted their ship identified as a pirate ship. The flag was hoisted in time for battle, and many a ship's crew melted in fear when they saw such a dreaded sight.

Most people think of the Jolly Roger as a skull and crossbones, but Jolly Roger flags also had other symbols such as an hourglass, which also represented death in Europe. Some pirate's flags were simply black or red, while other pirates had their own signature flags.

The flag was flown in the hopes that it would frighten the pirate's victims into surrendering without a fight. This often worked, as crews knew that pirates would not follow the usual rules of engagement, and, if they took the ship by force, slaughter the crew. However, red flags were particularly feared, as a black flag indicated the pirates would give quarter to surrendering crews, but a red flag indicated that no such mercy would be shown.

The flags below were the signature flags used by Edward Low and Bartholomew Roberts. Low's had a red skeleton, and Roberts' showed him and death holding an hourglass. You'll need to make your own signature Jolly Roger!

WHAT YOU NEED:

large piece of red or black felt
smaller piece of felt - either red or black, whatever you didn't choose for your large piece
white felt
scissors
glue



Here's what to do!

Cut your large piece of felt into a large flag-size triangle. With a pencil, create a design you want for your flag, and draw it on the contrasting pieces of felt.

Cut out the pieces, then assemble and glue them onto the flag-sized piece of felt.

Fly your flag proudly on a broomstick!

