Educational Packet

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Introduction

June 2011

Teachers:

These activities are designed to give you an opportunity to explore various aspects of TALL SHIPS with your students, especially as the Channel Islands Harbor Tall Ships Festival in June approaches.

Activities have been provided. These activities range from Primary to Middle School (Grades 2-9) so we ask you to modify them as needed. Many are interdisciplinary. Website extensions are provided for further enrichment. They are excellent and lots of fun. Before beginning the various activities, you may want to familiarize your students with our Nautical Dictionary.

We hope that some of these resources will be useful to you now, and in the future. We want young people to become more aware of our rich maritime heritage.

Many thanks to the dedicated volunteers who have spent countless hours creating this year's TALL SHIPS FESTIVAL. In addition, we would like to acknowledge the support of the American Sail Training Association in fostering Tall Ship education and adventures around the world.

We wish you and your students a good voyage! Check out our website:

http://tallshipschannelislands.com

This summer, Channel Islands Harbor is host to as many as 10 Tall Ships that will visit our port as part of our **Tall Ships Festival**. We are a port of call in the 2011 Tall Ships Challenge. The ships arrive on Thursday, June 23rd and depart on Monday, June 27th. Activities begin Friday, June 24th. Tall Ships Challenge is organized by the American Sail Training Association (ASTA®, fostering youth education, sail training and leadership development around the world).

What Is A Tall Ship?

A Tall Ship is a traditionally rigged sailing vessel. It can be a schooner, brigantine, barquentine, brig, ketch, sloop, or full-rigged ship, depending on the number of masts and the cut of the sails.

The Tall Ship Festival

The Channel Islands Harbor Foundation is presenting a major maritime festival in our harbor from June 24 – 26, 2011. On Thursday, June 23rd, the ships will arrive and anchor between Marine Emporium Landing and the Whale's Tail before entering the harbor on Thursday at noon in a Parade of Sail.

In addition to welcoming Tall Ships, the Foundation will host activities from Friday through Sunday that reflect the theme, including tours of the ships, model boat building, theatre, continuous live music events, artisans, and a maritime marketplace.

See: http://tallshipschannelislands.com for photos, tickets and more information. The website will be updated as the event approaches.

Activity 1 – LEARNING ABOUT TALL SHIPS

Ages 5–15
2 pages

Purpose:
To give students an understanding of the size and types of Tall Ships that still sail our seas.

1. Have students select one of the Tall Ships from the website of the American Sail Training Association (www.tallships.sailtraining.org) by clicking the link "Ships & Events". {***Idea***: ASTA ships are categorized by alphabet; assign students a ship, on or next to the first letter of their last name}
2. Students are to find out the following:
   name of the ship; size (length); type of tall ship; flag it flies; when it was built; history; number of crew members; anything else that they found interesting or unusual.
3. Each student should be prepared to present his or her findings to the class or to a small group.

Who Runs This Event?
The Festival has been created by the Channel Islands Harbor Foundation, a group of volunteers who have seen the potential of celebrating our maritime history and the advantages of Tall Ships as both a reality and a metaphor for what is best about living and learning:

> *"Sail training vessels present real problems that demand real solutions that you can't walk away from. Is it any wonder that a young person, having experienced the responsibilities of hauling on a line, working aloft, plotting a course in the fog, steering the vessel, or simply being the bow lookout, is better prepared to take command of his or her own life? Cooperation, teamwork, problem solving, decision making, patience, persistence, endurance, courage, and caution are skills and attitudes that are essential for human competency."**
>
> *** [Jim Gladson, Los Angeles Maritime Institute from his speech at the launch of the Pacific Grace.]*

Activity 1 – LEARNING ABOUT TALL SHIPS

Ages 5–15

The Foundation has worked to create the event that will be a highlight of our summer. We encourage you to come and visit the site as individuals or with your students. Field trips are scheduled for Friday, June 24. Check the website for more information about scheduling and tickets.

Activity 2 - TYPES OF TALL SHIPS

Ages 5-15
8 pages

Purpose:
Use Matching Card games to recognize and match twelve different sail and rigging plans or to name and match the same sail and rigging plan with their names.

Background information

The sail plans of sailing vessels were many and varied. Besides differences in original design, a ship might undergo a number of changes, depending upon the whims of her owner, captain, or builder, the trade in which she was used, or local traditions.

These changes were introduced to improve sailing qualities and to provide a rig that could be handled by a smaller crew, thus paying higher returns to shareholders.

The silhouettes of vessels overleaf represent different rigs of ships on the East Coast of North America during the mid 1800s to the early 1900s, a period in marine history often referred to as the "Golden Age of Sail".

Sailing ship rigs can be divided into two broad categories: the "fore and aft rig" (left), in which the sails lie along the same plane as the ship's fore and aft line; and the "square rig" (right), in which the sails are rigged athwart (across) the ship. Each rig had certain advantages.

The Fore & Aft Rig

The fore and aft rig, or schooner rig, required only a small crew, and was generally used in the coastal and fishing trades. Ships with this rig could point higher into the wind and were usually more maneuverable when working in the changing winds along the coast. The rig was not limited to coastal schooners, and big fore-and-afters could be seen plying across the Western Ocean bound for European ports, the West Indies, or South America.

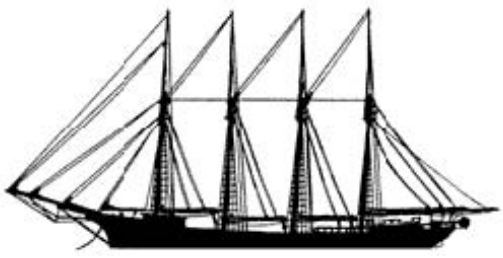
Sloop - a fore and aft rigged vessel with one mast is a sloop. In the early 1800s, some large sloops traded with the West Indies, but most sloops in the 19th century were small inshore fishing vessels. In the 20th century, sloops became the most popular rig for yachts.

Grand Bank Fishing Schooner - schooners have two or more masts with fore and aft sails. Similar to the famous Bluenose, our example, in addition to all the normal lower sails, carries a main gaff topsail and a fisherman's staysail set between the masts.

Square Topsail Schooner – a combination of fore and aft sails and small square sails. They were popular for coastal trading in the early 1800s. Prince Edward Island built a number of topsail schooners and many were sold in Great Britian.

Coastal Schooner – the work horse of our coastal trade. She was probably not much more than a hundred tons, and carried everything from timber and coal to bricks, general cargo, and a load of hay to offshore island communities. Our schooner is shown with only a main topmast, but many also carried a fore topmast. Note the yawl boat towing astern.

Ketch – a two masted sailing vessel where the mizzen mast is ahead of the rudder. The rig is similar to a schooner but the main mast (the tallest mast) is the first mast, not the second mast. Ketches were common in 19th century Europe but rare in North America until they became very popular for yachts in the 20th century.



Four Masted Schooner – shown at anchor. This design attempted to reduce individual sail area, raise tonnage, and still manage with a small crew. In the early days, sails were

hoisted by hand, but gradually the gasoline hoisting engine was introduced, saving work, wages, and food. She could operate with eight hands, and reached 500 to 700 tons. At the turn of the century, these schooners were used in the coastal trade between Canada and the United States, the West Indies, South America, and some trans-Atlantic voyages were made to Europe and West Africa. Nova Scotians built and operated between seven and eight hundred big schooners, but by World War I, most had passed out of the picture. Along the New England coast a number of five and six masted schooners were built, plus one seven master, the steel hulled Thomas W. Lawson.

Tern Schooner – a three master built in great numbers all along our shores between 1880 and 1920. These vessels were cargo carriers of between 200 and 400 tons, requiring a crew of six to eight. Our Tern is shown with all sails set except staysails between the masts. As the years went by these softwood vessels would become waterlogged, sails would wear out, and spars break. With the inroads made by the steamer, the old schooners were hard pressed to find a cargo. A few did survive until World War II.

The Square Rig

The square rig was normally an offshore rig used by vessels making long ocean passages and taking advantage of the prevailing wind and current patterns of the globe. These ships varied in size from the small handy brigantines and brigs of a couple of hundred tons to the great full rigged ships and barques of over two thousand tons. The square rig was also seen in the coastal trade, where brigs plied their trade up and down the eastern seaboard.

Brig – a two masted vessel square rigged on both masts. The brig is a very old and efficient sailing rig, and the class was still in use up to the very end of commercial sailing ships. Only a few brigs were built in North American yards, but they were very common in European waters.

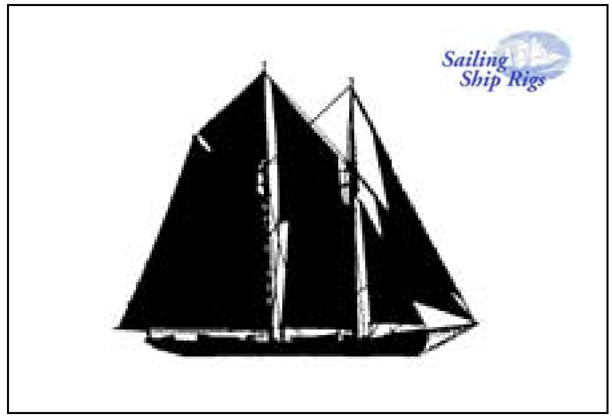
Brigantine – a two masted vessel square rigged on the foremast, with fore-and-aft sails on the mainmast. The drawing shows a typical Bluenose softwood vessel of about 220 tons, similar to Spencer's Island built Amazon, which later became the famous mystery ship, Mary Celeste. The brigantine is shown with two staysails set between the masts.

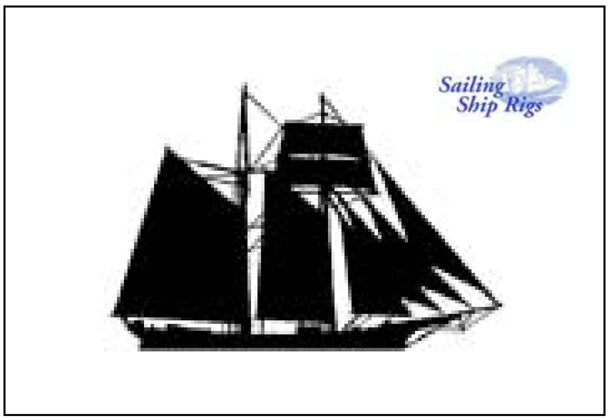
Barque or Bark – usually a three masted vessel, the fore and aft main masts square rigged and the mizzen mast or after mast rigged fore and aft. The four masted barque was a relatively common rig on the oceans, but only two were launched in 1885 at Great Village, and the Kings County launched in 1890 at Kingsport. The barque was a popular rig, and more of this type were built than all other square rigs combined. The big Maitland barque Calburga was the last British North American square rigger of large tonnage to be on the Canadian registry; she was lost off the coast of Wales in November 1915.

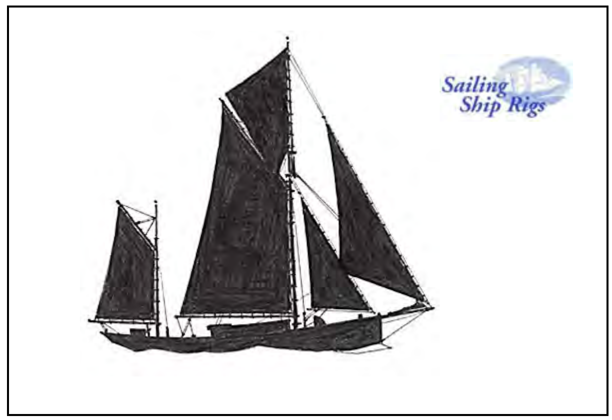
Barquentine – a vessel with the foremast rigged square, and the other masts rigged fore and aft. This vessel is similar to the Maid of England of 750 tons built at Grosses Coques in 1919. She was the last Canadian commercial vessel to carry a square rig, being abandoned at sea in 1928. Only a small number of this type were built locally.

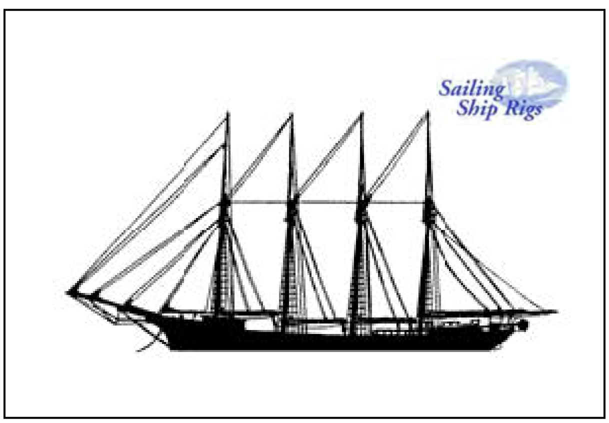
Full Rigged Ship – square rigged on all masts. Staysails could be set between the masts. Outboard of the square sails might be set studding sails, and above the royals (uppermost sails) might be set sails with names such as skysail, moonraker, Trust to God, or Angel Whispers. The ship William D. Lawrence, built at Maitland N.S. in 1874, was the largest wooden sailing ship ever built in Canada. Towards the end of their careers, some ships were reduced to barque rig. Many were "sold foreign" and many others were "lost without trace" or abandoned at sea.

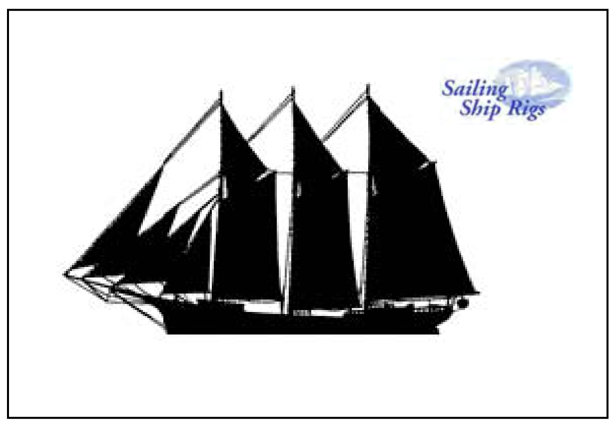
Appendix 2a-1 – Game Cards – Kinds of Ships

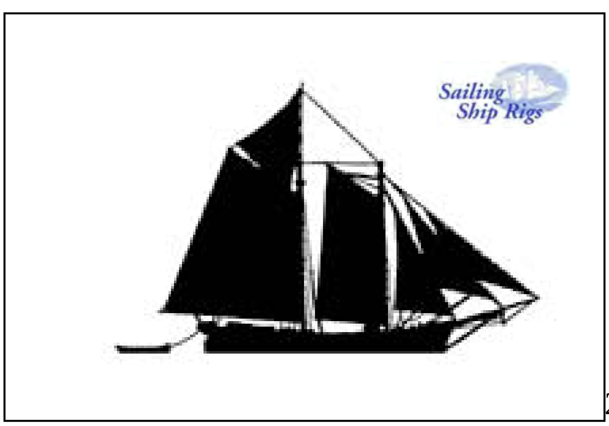


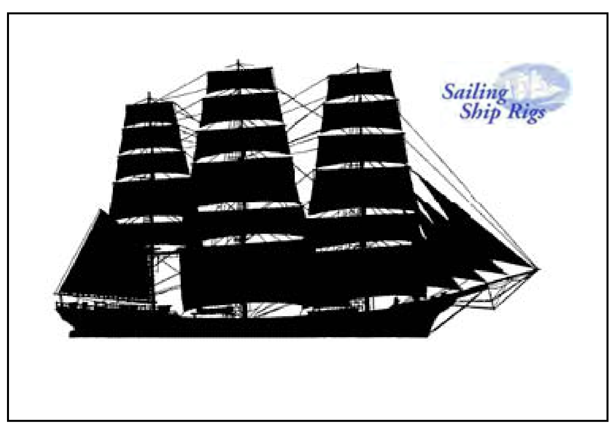












Brigantine

Brig

Barquentine

Barque

Sloop

Grand Banks
Fishing
Schooner

Square
Topsail
Schooner

Ketch

Four Masted
Schooner

Tern Schooner

Coastal Schooner

Full Rigged Ship

Activity 3 – WHAT MAKES THE TALL SHIPS MOVE?

Ages 10-15
3 pages

Purpose:
To provide basic background information on sailing theory, including hands-on activities.

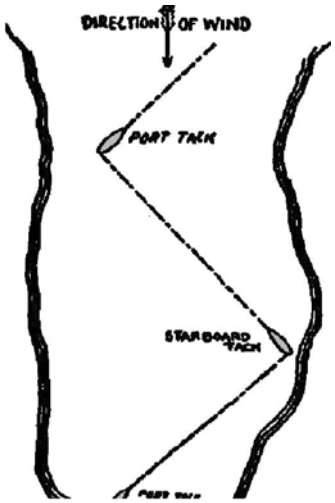
Background Information
http://museum.gov.ns.ca/mma/AtoZ/rigs.html for a description of sailing rigs

Kids 'N Boating
Five online sailing lessons for kids. Easy to read and nicely illustrated points. http://library.thinkquest.org/6169/lingo.htm for Sea Lingo, a dictionary of "salty terms"

Basic Sailing Theory
For a square rigged ship, sails are used to capture the wind and harness its energy to push the ship through the water. The basic direction is down wind, which explains why these ships sought out the trade winds. Trade winds blow steadily from one direction.

Sailing to Windward
A sailing ship cannot sail directly into the wind. It must use a maneuver called "tacking" to move into the wind.

To attempt to sail directly into the wind puts the ship "in irons", which is to say, the ship stalls and cannot move in the direction required. For a square rigged ship, this is a very dangerous situation because the sails will fill from the wrong direction and can either drive the stern of the ship under the water, or dismast the ship.



Tacking to windward
Diagram No. 6.
Dead Beat to Windward.

If a ship is to sail to windward, it relies on Bernouli's Principle to harness the power of the wind. The sail generates thrust by capturing wind and depending on the angle of the sail to the wind, will create a higher pressure on one side of the sail, which causes the sail to push toward the side with lower pressure. The keep of the ship converts this lateral force to forward motion, and so the sailboat moves through the water at an angle to the wind. By sailing in a series of tacks or zigzags, it is possible to "sail into the wind".

For the crew of a square rigger, tacking is much more difficult and dangerous than for a fore and aft rig, as the yards have to be turned to the opposite side to meet the wind each time the ship tacks. Due to the difficulty that tacking posed for a square rigged ship, the crew would often "wear ship" which was a maneuver that required the ship to turn away from the wind and steer in a circle and have the stern of the vessel pass through the "eye of the wind". This maneuver, although it put the ship on a new tack, loses considerable gains to windward and is not an acceptable maneuver if the ship is near land.

Hull Design and Sailing Performance

The design of a ship's hull and its effect on sailing performance is as much an art as it is a science, and many volumes have been written on this topic. A very simplified explanation is: a ship with a narrow forward section, known as a "fine entry", has greater speed and better windward performance than a ship with broader or fuller forward sections. Although faster and better to windward, this type of ship loses carrying capacity and has a tendency to "bury its nose" into the waves making for a very uncomfortable sail.

A ship that is required to "go to windward" needs a deeper keel to create the necessary lateral resistance which stops it from being pushed sideways through the water and converts the thrust of the sails into forward motion. It follows that a shallow draft ship can get into ports that a deeper draft vessel can not access, but has less lateral resistance and has a tendency to slide sideways as it sailed to windward.

Tall Ships

Although there are different types of "tall ships", they fall into two basic categories: square rigged and fore and aft rigged such as gaff (four sided sails) or Marconi (triangular sails) rigged. These two types of rig are part of

the evolution of the sailing ship. As you will find out, certain rigs performed better under different circumstances.

Square Rigged Ships

These ships sail mainly down wind. Their basic goal is to find the trade winds and run with the wind to their destination. Sailing to windward is very difficult and not very productive for most square rigged ships so this limits their destinations and ports they can access.

Fore and Aft Rigs

These ships are often seen in coastal trade where maneuverability and sailing to windward is necessary. There are a variety of fore and aft rigs with the most common in North America being either the gaff rigs or Marconi (Bermuda) rigs. Few commercial ships are rigged Marconi as this is an innovation after the great age of sail declined and steam power became much easier at moving goods between ports.

Extensions

http://www.beworldwise.org

Follow the voyages of the Picton Castle, great teacher resources

http://www.boatsafe.com/kids/index.htm

A website awash in good stuff!

Activity 4 – BUILD A MILK CARTON TALL SHIP

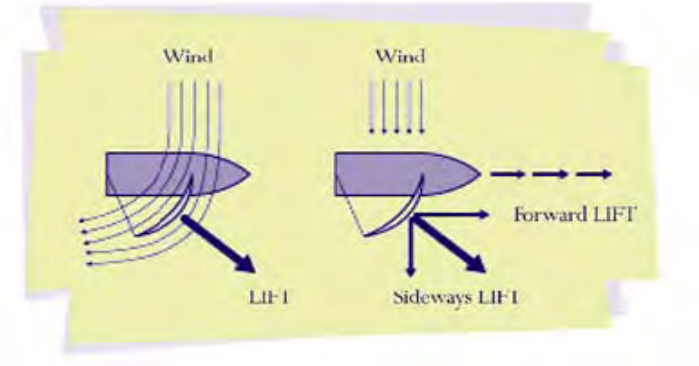
All Ages
1 page

Purpose:
To demonstrate Bernoulli's Principle

Materials
Sheet of paper.

Activity Directions
Bernoulli's Principle states that faster moving air has lower pressure. By creating an air foil shape with a sail, you create this high/low pressure and the sail will pull toward the low pressure.

You can demonstrate Bernoulli's Principle by blowing across a sheet of paper held horizontally across your lips. By holding the paper at each corner, the paper will curve downward from the edge closest to your lips giving it the shape of a wing. When you blow across the upper surface, the paper will rise rather than move downward. You have created a lower pressure across the upper surface of the paper, and the higher pressure below lifts the paper upward.



Extensions

- Discuss the venturi meter, which is used to measure the speed of moving air.
- Describe how it is possible to sail a boat into the wind by the method of "tacking".

Activity 5

Ages 5-10
2 pages

Purpose:
Build a Milk Carton Pirate Ship.

Materials
2 milk cartons
2 straws
Play dough
Yellow, black and white construction paper
Glue, scissors, and tape

ALTERNATIVE: use craft foam instead of construction paper and you will have a ship that you can play with in the bathtub.

Activity Directions

Milk Carton Pirate Ship

- tape a piece of construction paper about ½ way up the milk carton as shown in the photo to the right
- tape black construction paper all the way up the back of the milk carton, leaving about 1 inch sticking up over the carton

- tape white construction paper over the rest of the milk carton

- glue two blobs of play dough into the center of the pirate ship

- cut a two to three inch piece off the bottom of the second milk carton
- tape it onto the ship (covering the play dough)
- poke two holes in it (with a pencil) above the play dough blobs
- cover with white construction paper

- stick two straws through the holes in the top carton
- cut two large rectangles and two small rectangles from yellow construction paper
- poke two holes in each rectangle with scissors or a hole punch and thread onto the straws as masts
- draw windows and a door
- cut yellow circles and glue them to the side of the ship as portholes
- add a gangplank made of cardboard

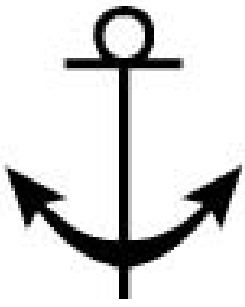
Now, go for a sail!

Activity 6 – WHO RAN THE SHIP?

Ages 10-15
3 pages

Here is a list of some of the people who served on a non-military 'tall ship':

Captain	• Responsible for everything on the ship. Your voyage often depended up on the competency and fairness of the Captain. He would sometimes hold religious services.
Master	• Responsible for the overall sailings of the vessel.
First Mate	• Responsible for ensuring the Captain's orders were followed, including disciplining seamen if required.
Second Mate	• Also responsible for carrying out Captain's orders and working along with ordinary seamen. Would distribute supplies while at sea.
Surgeon	• The medical officer (not all ships had one).
Cook	• Responsible for all food preparation.
Purser	• Responsible for the finances and accounts of the ship.
Idlers Rigger Carpenter Sail Maker Steward Topmen Afterguard Waisters	Specialists on board (Has the meaning of the word changed?) • in charge of keeping the rigging in good form. • keep decks, masts, bunks and the hull in repair. • maintain, repair and make sails. • responsible for food and cargo storage; also assisting the cook. • went aloft to look after the sails. • stayed on deck to manage sils, halyards, etc. • did the hard "grunt" jobs: winding the capstan, cleaning the decks, the head, etc.
Cabin Boy	• Helping the Captain (serving food, cleaning, etc.)



Activity 6a – Running a Tall Ship

Purpose:
To learn about the various responsibilities and tasks that make a Tall Ship function.

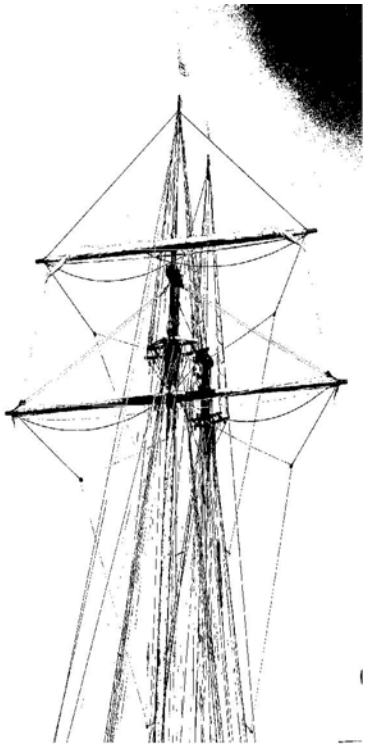
1. You are the Mate on a Tall Ship and are responsible for storing cargo on the ship. Make your own table of the crew members and assign them items from the list below. Items can be assigned to more than one person.

barrels of water	Bibles
wood for the galley stove	ropes of different types
extra sail fabric	medical supplies
spyglass (collapsible telescope)	sea chests
hammers, nails, pegs	caulking supplies
hymnals	thread/needles for sail repairs
leather for shrouds	wood for blocks
waterproof hats & clothing	paper, pens
fruit, vegetables, meat	charts and maps
flour, hard tack	goats
planks of wood for repairs	sextant
wood for spars	logbook
manifest (list) of all the cargo	canvas for hammocks
cannons & munitions	

2. Identify which items would still be carried on a modern ship, and describe any changes as to how the items appeared today or are stored.

3. Which items might no longer be used?

4. What items might be added as supplies for a modern ship?



Who Went to Sea?

If you were 12 years old, you could go to sea and perhaps start an apprenticeship. People went to sea for many reasons. For some it was an opportunity to get away and earn an income or to advance from the squalor of their circumstances.

For others, they had no choice: "Press Gangs" roamed harbors and bars looking for men they could "press" (hijack) directly into the Royal Navy. Victims could try to fight off the gang but usually they would lose and be lashed as a result. If you ran away you were guilty of desertion and could be hung. The Government passed 'quota laws' during the wars with France forcing local communities to provide a certain number of sailors. Prisoners, orphans, or those on welfare (the 'dole') were quickly sent to sea by cities anxious not to loose those men who helped provide income for their town. Sometimes an unlucky man who had a wife, children and an important job might find himself sobering up on a ship out at sea, not to return for months or sometimes even years.

The harsh discipline on navy ships was partly a result of the fact that there were so few volunteers. Poor pay was also a factor. There were cases where large merchant ships returning from India with valuable cargos had most of their crew forcibly taken, leaving the trading ships unable to make it safely home. It was the Royal Navy boarding American ships and taking crew members that caused the War of 1812 between the United States and Britain.

ACTIVITY 7 – TALL SHIP LANGUAGE

All ages
7 pages

The language and terms used around sailing vessels are very extensive. Sailors themselves are famous for their use of colorful, often rude language. However, nautical terms have been used for many years by sailors to describe parts of the ship, directions, tools, food, clothing, and other aspects of life at sea. Teachers can have fun with their students exploring some of these terms. (Our "Nautical Dictionary" has a more extensive listing of terms.)

NAVIGATION INSTRUMENTS:

Compass – a small round device used to determine the ship's course.

Course – the direction of the ship at sea.

Sextant – a hand-held instrument that measures the sun's height at noon. It was used on early sailing ships to determine the ships position north or south.

Ship's Log – a daily diary about the happenings on board, such as: sea conditions, ocean depth, wind and weather, number of sails set, course, ocean currents and speed.

Telescope – a long, thin leather and glass tube with special lenses that makes it easy to see objects at a great distance.

Ship's Glass – encased sand in an egg-timer shaped glass. The cabin boy or watchkeeper turned the hourglass to tell how long the ship has been traveling in a specific compass direction.

HEAD:

Head – toilets at the bow (front) of the ship. Sailors considered the front of the ship the head and hence the name. Holes were cut into the deck

planking with a seat built over them. The head or toilets were not protected from the weather and there was no privacy. Toilet paper was non-existent and sailors used a piece of thick rope unraveled like a soft (or not so soft) brush. It dangled into the sea and was simply pulled up at the appropriate time.

TATTOO:

Tattoos – are permanent marks embedded into the body. They are usually a picture or symbol of some relevance to the person. More than ninety percent of sailors in the nineteenth century wore tattoos.

FLOGGING:

Flogging – punishment was swift and severe on a tall ship. Sailors guilty of stealing, lying, and/or insubordination (talking back to an officer or refusing an order) were stripped to the waist, tied to a grating, which are wooden slats, and whipped. The boatswain or bosun was the disciplinarian on the ship and he used a cat-o-nine tails to whip the offender. A cat-o-nine tails was a whip made by unraveling half a short length of rope, which made 'nine tails' attached to the rope. A less serious offense usually resulted in defaulters, which meant that the sailor who broke the rule is punished by being given extra duty or one that was not very popular, such as cleaning the 'heads' or extra work in the kitchen.

JONAH'S CURSE:

Jonah – refers to a person on board a ship who brings bad luck. Sailors were very superstitious. The creaking of the wooden vessel in the dark nights at sea and the eerie noises of the rigging during foul weather all frightened sailors.

CABIN BULWARK:

Bulwark/bulkhead – a partition (wood or canvas) used to form cabins or compartments. The bulwark refers to the wooden sides or "walls" of the ship and the interior beams and supports.

There were a number of positions on board a tall ship. Each position had its own rules and responsibilities, and privileges.

Admiral – in charge of several ships. Many ships working together were called a fleet.

Captain – the senior man aboard a ship. He was responsible for the well-being of the ship and its crew. It was a lonely job.

Lieutenant – highest ranking member of the crew after the Captain.

Officer – any member of the crew who had authority over other sailors.

Midshipmen – young trainee officers who could be as young as twelve years.

Rating – seamen/crew below the rank of officer who carried out all the duties and tasks required to sail the ship. Part of a Midshipman's training included the fine art of handwriting, called calligraphy, so that he could prepare official documents and write letters.

Bosun (Boatswain) – the rating in charge of all the sails, rigging, and the anchor. There were twenty-five miles of rope and more than 20 sails on the average sailing ship. Because it was such an important job, the bo'sun was also the disciplinarian on the ship.

Topmen – a rating or seaman whose responsibility is to work on the sails and position himself along the masts and yardarms.

Cabin Boy – essentially a servant for officers. Cabin boys were young like Midshipmen, but they were not being trained for higher roles. Despite the harsh conditions, cabin boys were usually better off than if they were orphans or street children in a big city.

Powder Monkeys – boys as young as eight, who were responsible for carrying powder to the gun crews during battle. They had a very dangerous job.

Surgeon – an officer and the ship's doctor. These men often had little training and could do little more than offer first aid. The butcher's bill was the list of injured and killed after a battle.

Everyone on a sailing ship had to learn to tie knots. There are dozens of knots or special ways to tie knots. However, there are four main classifications of knots at sea:

- Hitch – makes a rope secure to another object.
- Bend – join two rope ends
- Splice – joins two loose rope ends by weaving the strands together
- Knots – any knot not included under the other headings

We will have a knot tying specialist at the festival.

FOOD:

Each sailor on a ship was allotted approximately seven pounds of biscuits a week, seven gallons of beer, a half pint of vinegar and lime juice, four pounds of beef and two pounds of pork. Officers were fortunate because the ship carried cattle, sheep, pigs, goats, hens, and geese for fresh meat and eggs for their meals.

Biscuit – a solid piece of flour and bread that was as hard as toffee. Maggots loved them and often each biscuit was crawling with well-fed weevils the size of beetles.

Grog – watered down rum (one part rum/three parts water). Sailors were issued a glass of rum twice a day. Water tended to turn to green slime, but rum lasted a long time. The stronger the rum, the longer it lasted.

Lime – lime delivered a strong dose of vitamins to prevent the dreaded disease, scurvy.

Molasses – a natural sweetener that was cheaper than sugar.

Salt Beef – exactly as it sounds except the salt was like gun powder and the beef was so hard it could bounce off the decks!

Scurvy – a dreaded disease at sea. It was hard to preserve food at sea and fresh fruit and vegetables went bad and were a luxury. When at sea for a long time, sailors did not enjoy these foods and suffered from a lack of vitamin C (ascorbic acid). The most notable evidence of scurvy is when the gums become black and swollen and spongy. The gums bleed and the teeth fall out.

Weevil – a type of beetle, big and crunchy, that loved to live in and eat the grains and biscuits on ships.

PARTS OF THE SHIP:

A ship was a very complex and complicated structure. It was a moving home for over 200 men and the wind and weather at sea made constant repairs necessary.

As you stand on one of the decks and face the front or bow of the ship, **starboard** is to the right and **port** is to the left.

Belaying Pin – there were many belaying pins on a sailing ship. They were located all on the decks and bulwarks to help secure lines and rigging. They are usually tapered to fit into special slots along the railing.

Below Decks – covered decks for guns and living quarters.

Bending on and Beating to Weather – bending refers to rigging a sail into place so that it can be used for sailing. Beating to weather refers to a ship sailing a zigzag path into the weather to move forward or upwind.

Blocks – wooden blocks were used as pulleys and made it easier to haul heavy objects, like barrels, up and down from the hold.

Broadside – this term is usually used during battles at sea to refer to a situation where one ship is able to aim and fire all of its guns along one side. The more guns you could direct at your opponent, the greater the chance of winning the fight.

Capstan – a large drum shaped winch that the crews turned by hand to lift heavy weights such as the anchor.

Forecastle (Foc's'l) – the area of the ship at the front or bow. Many of the sails were controlled from here and the sailors enjoyed relaxing on this part of the ship.

Gangway – the removable platform allowing people on and off a ship.

Halyards – the halyards are lines used to raise and set a sail.

Hold – giant warehouse area near the bottom of the ship.

Note: The **Captain's Cabin** was immediately below the Quarterdeck and was used as both a sleeping area and a **Great Cabin** for dining and entertaining officers.

Holystone – a holystone was used for polishing the decks on your hands and knees. They are blocks of sandstone about the size and shape of the typical family bible of the time and hence the name. They scrubbed the decks clean and smooth and made them gleam almost white.

Lower Deck – location of guns and living quarters.

Middle Deck – closed off from the weather and where the Galley (kitchen) was located.

Mizzen mast – one of the three masts for holding sails (foremast, main mast, mizzen mast). The mizzen mast was located at the back (stern) of the ship.

Morning Watch – the full day is divided into six four-hour 'watches' on a ship. A sailor is on duty for four hours and off for four hours. Watches change at 12, 4 and 8. The morning watch is from 4:00 a.m. until 8:00 a.m.

Orlop Deck – food storage and living quarters for Midshipmen and the Surgeon.

Poop Deck – the highest open deck on the ship. It was at the far stern of the vessel and carried the signal flags. Interestingly, sailors 'pooped' at the front of the ship – the exact opposite end of the ship from the Poop Deck.

Quarterdeck – a raised deck near the back or stern of the vessel. Only officers and Midshipmen could walk on the Quarterdeck.

Spars – Spars are like wooden poles that are at right angles to the masts. The sails are held in place by the spars. A yardarm is a spar that is used to rig square sails.

Upper Deck – divided into forecastle and quarterdeck and open to the weather in the middle.

CLOTHING:

Clothing was functional and varied depending on your rank. Officers wore dress uniforms and crew members wore easy fitting pants and shirts. Shoes did not distinguish between the left and right foot and pants had no pockets.

Coats – coats were personal property and the wealthier the officer the better the quality of overcoat. However, they became increasingly heavy when wet.

Hammock – a hanging bed of cloth or canvas with ropes attached to each end. They are usually three feet wide and six feet long. They were hung above the guns at night and were no more than 14 inches apart. Needless to say, the lower decks became very sweaty and dirty with so many men sleeping so close together. However, there was a positive side to the space constriction, with the movement of the ship, the hammocks swung together instead of individually and thus prevented everyone from banging into each other all night.

Pants – crew members wore pants of any materials including hemp and extra canvas from the sails. Officers' pants were more formal and tight fitting.

Shirts – shirts were made of hemp and were quite tight fitting around the shoulders. Sailors often brought or bought their own materials and hence shirts came in a variety of different stripes, checks and colors.

Activity 8 - HOW SHIPS COMMUNICATE (Signal Flags)

Ages 5-10
4 pages

Purpose:
To give students experience in using traditional signal flags for communication.

Background Information
Before the invention of radios, cell phones, walkie-talkies and other modern forms of communication, messages could only be sent when ships were within sight of one another or in sight of port. Colorful signal flags were used for this purpose. Flags representing letters of the alphabet could be combined to spell words or could be used alone to signify an important message such as "dangerous cargo on board" or "plague on board". The flag alphabet was and is used to communicate between ships. Each flag represents a letter or a number as well as having a specific message.

The Name Banner activity is a great way to introduce the flag alphabet to students and to create a colorful display of student names.

Materials
Provide one copy of the flag alphabet to each student.
Pencil
Colored pencils
Scissors
Glue stick

Activity Directions

1. Have student color the flags of the flag alphabet using the color code key. For younger students, have them find the flags that represent the letters of their names and color those.

2. Have students count the letters in their name and cut out the banner strips ensuring that they have enough "flag boxes" to accommodate the letters of their name. They can cut the extra strip and glue more

flag boxes on so that they have a long enough banner. This is an important step as many a student has worked very hard on their banner only to find they have run out of space. Make sure that the bottom flag of the banner is the "notched" flag, which should be colored black signifying the end of the message.

3. Using a ruler, have students draw the outline of the flags in the flag box.

4. Color each flag following the previously colored flag alphabet. Color the "notched" flag black.

5. Display by hanging these banners vertically.

Extensions
Using the Internet or encyclopedia, have students research the meanings of each flag.

Use the alphabet to display other messages around your school.

Encourage students to investigate the following sites:

A display of international signal flags:
http://www.boatsafe.com/nauticalknowhow/flags.htm

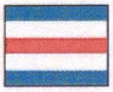
Students can type in a message and the correct flags appear
http://www.sartori.com/nhc/flags

ALPHABET FLAGS

Alpha
Diver down; keep clear

Bravo
Dangerous cargo

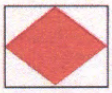
Charlie
Yes



Delta
Keep clear

Echo
Keep clear

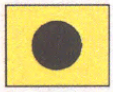
Foxtrot
Disabled



Golf
Want a pilot

Hotel
Pilot on board

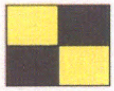
India
Altering course to port



Juliet
On fire; keep clear

Kilo
Desire to communicate

Lima
Stop instantly



Mike
I am stopped

November
No

Oscar
Man overboard

Papa
About to sail

Quebec
Request pratique

Romeo

Sierra
Engines going astern

Tango
Keep clear of me

Uniform
Standing into danger

Victor
Require assistance

Whiskey
Require medical assistance

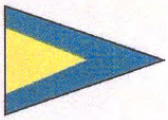
Xray
Stop your intention

Yankee
Am dragging anchor

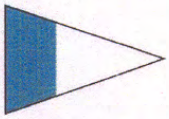
Zulu
Require a tug

SUBSTITUTES

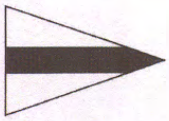
1st repeat



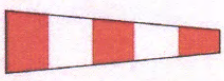
2nd repeat



3rd repeat



Code
Code and answering pennant (decimal point)



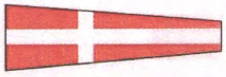
NUMERAL PENDANTS

1

2

3

4



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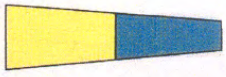

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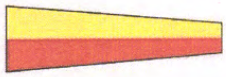

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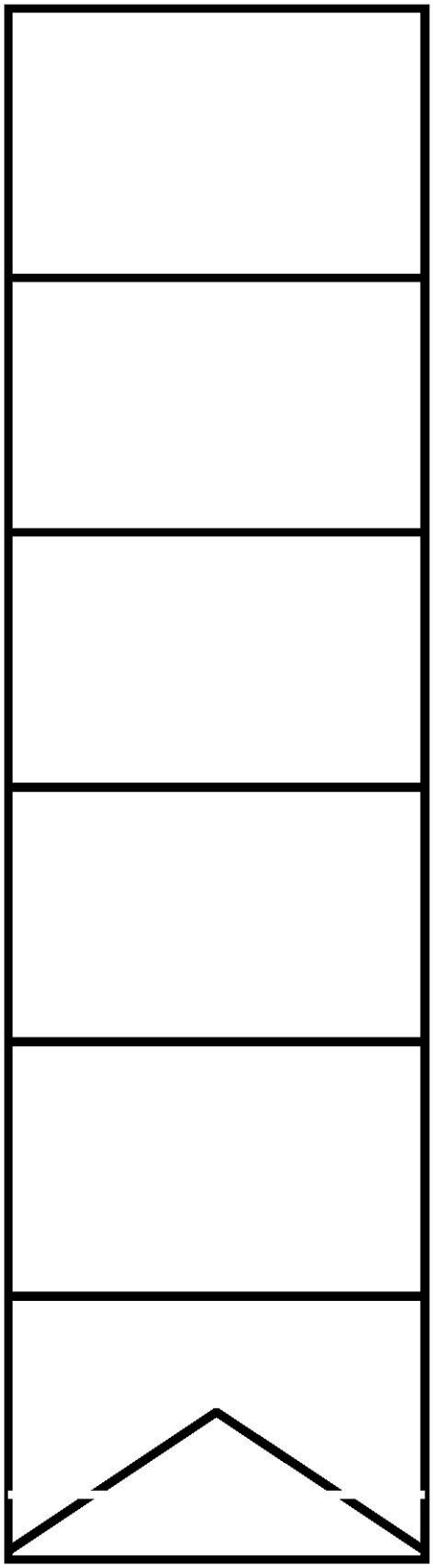
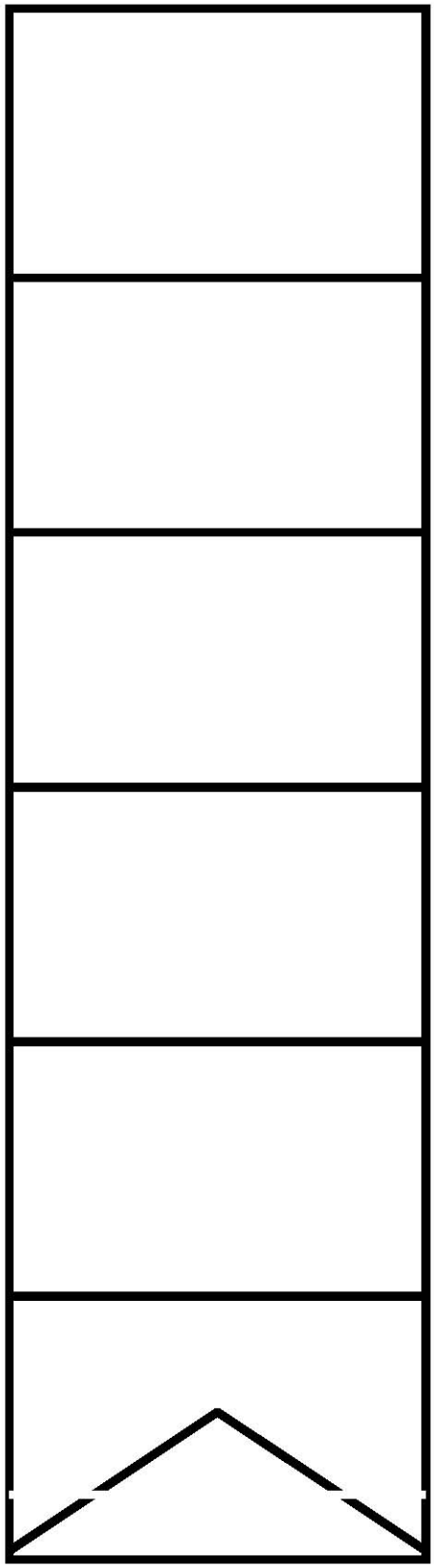




Activity 9 – FINDING YOUR WAY (The Compass)

Ages 10-15
3 pages

Purpose:
The purpose of this activity is to help students understand the vital role the compass played in early navigation and to have them construct their own compass.

Explorers did not want to travel away from unknown landmarks if they had no method of finding their way home again. Fortunately, part of this problem was solved with the discovery of the compass. By 1000 AD, the Chinese were the first to make use of a form of compass, to be followed by Europeans several hundred years later.

Superstition
When it first appeared, many saw the compass as a potentially evil device with the person using it having occult powers and possibly being 'in touch with devil'. As a result it was kept hidden in a little navigation box called a binnacle, a name that is still used today.

What Makes it Work?
Originally, a needle would be made magnetic by being rubbed on a piece of 'lodestone' or magnetite. The needle would then be fastened to a piece of paper and floated on water. The needle then 'points' to the North Magnetic Pole. At one time people thought it was pointing south. The Magnetic 'Pole' is located in northern Canada, around Prince of Wales Island. The location varies slightly year by year so Navigation Charts have the "Variation" in degrees labeled on them. Apparently, the poles reverse themselves periodically over hundreds of millions of years.

The Compass Race
The early compasses would have wind direction on them, showing 4, 8, and 12 wind directions. Eventually these directions were made into 32 points and labeled in degrees, the degrees starting at 'zero' at the North and moving clockwise. East would be 90°, South 180°and North being 360° or 0°. The Compass directions were elaborately decorated and became known as a 'rose', the different directions being one of the petals.

Constructing a Compass

1. Have students construct their own Compass Rose and place it on the CARDINAL points of **North**, **East**, **South**, and **West**. The size should be at least half a page. (It is useful to model the clockwise directions when instructing these activities.) Most students can remember the N and S positions; after all, they know where Santa lives! It is useful developing with them an acronym or some other system for remembering East and West. For example, looking at the Rose you get WE spelling a word.

2. Students then should place on their Compass Rose the secondary points of North East, South East, South West, and North West on it, using slightly shorter lines radiating out from the center for these points.

3. Older students can add the next level of Directional Points: North North East (NNE) and so on (ENE, ESE, SSE, SSW, WSW, and NNW). Add them to the Rose as well, with slightly shorter lines radiating out from the center.

4. All Students can then decorate their "Rose", using a common color for the Cardinal Points, another for the Secondary points and so on, embellishing it as much as possible.

5. **Bearings**: Older students could make a new Compass Rose but add the appropriate angle BEARINGS instead of the DIRECTIONS. Follow the same question sequence as above (#1, 2, & 3).

6. **Constructing a Compass**: Obtain a magnet (preferably a bar magnet), several needles, several small pieces of cork, several bowls to hold water. You will need enough needles, corks, etc. for each group of students.

7. Have student #1 rub needle (lengthwise) along the bar magnet IN ONE DIRECTION, several times. This will magnetize the needle. Student #2 should fill the bowl half full of water (enough to float the cork and needle) and Student #3 should push the needle through the small bit of cork and place it into the bowl of water. The needle should slowly spin to face magnetic north. (Sometimes one may need to hold it off the sides of the bowl.)

8. The Teacher should ask students to identify where in the classroom the needles are pointing. Is there a consensus?

9. For Older Students: Given that the VARIATION from the TRUE NORTH POLE is about 21° West of the True North (in the year 2000), see if students can figure out where in the room TRUE NORTH should be located, using their Compass Rose containing the BEARINGS (in degrees). They will need to move 21° East of the Magnetic North to find it.

   [Note: the variation actually changes slightly each year as the pole moves! This change is called an annual DECLINATION and is noted on Marine Charts.]

10. **Extension Activity**: Students could construct a small Compass Rose containing directions on it and put their magnetized needle through it pointing to the NORTH direction. This will more realistically represent a modern compass, except a modern compass usually has the needle and card immersed in oil to make it more stable.

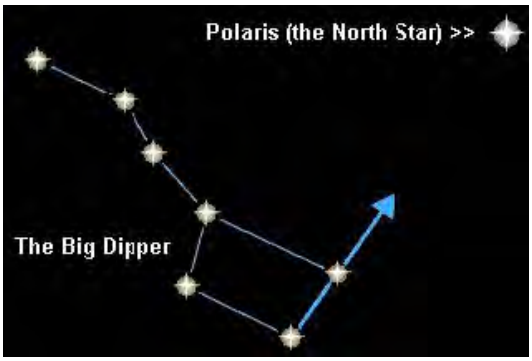
Activity 10 – SAILING BY THE STARS

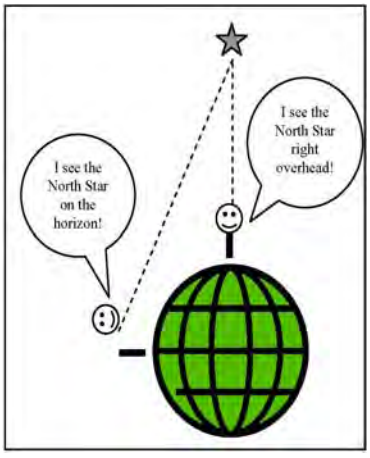
Ages 10-15
3 pages

Purpose:
The students will explore the idea of using the stars to find one's location on earth. They will discover the relationship between the latitude and the height of the North Star, and construct and use a simple quadrant.

Background Information
Celestial navigation (celnav) is the art and science of finding one's location by observing the Sun, Moon, stars and planets. Many people have used celnav techniques through the centuries, from ancient Arab traders and Polynesian explorers, to the astronauts on the Apollo mission to the Moon. In today's age of GPS, celnav is less in use, although many offshore sailors still learn the techniques just in case.

One of the simplest forms of celnav uses the North Star. This star always appears due North – it does not rise and set like the other stars. This is because of its position in the sky, directly over the North Pole. As the Earth spins and the stars seem to whirl about it, the North Star stays still because it is directly over the Pole. Try spinning around yourself while looking at the ceiling and you will see much the same effect!





If you were standing on the North Pole, the North Star would appear directly over your head. As you move South, though, the North Star appears lower and lower in the sky. Finally, from the Equator, it appears right on the horizon. The height of the North Star above the horizon, measured in degrees, equals your latitude on Earth.

Many different instruments have been constructed through history for measuring the height of the North

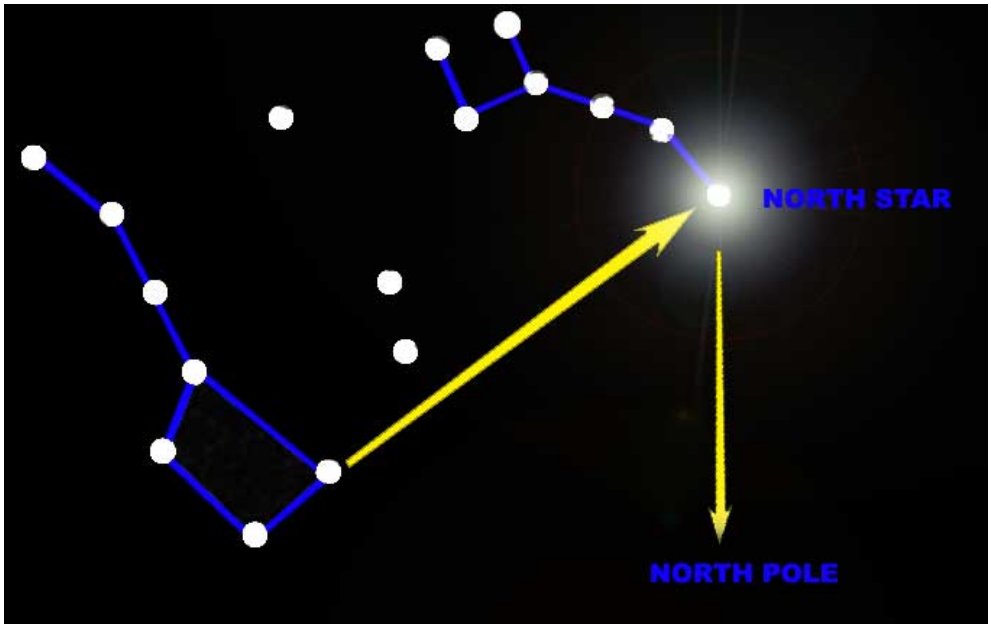
Star and other stars. One simple instrument is the quadrant, so called because it is shaped like one quarter of a circle.

Understanding the Stars

a. Ask the students to close their eyes and imagine themselves as sailors on a tall ship. It is night-time, with the stars twinkling overhead and the moon reflected in the water. You can feel the wind on your face and smell the salt on the air. The only sound is the water lapping against the hull. It has been three days since the last island slipped out of sight – around you is only water. Suddenly, a passenger appears with a map and asks you to point out where the ship is. How do you answer? How do sailors know where they are, when all they can see is the sky and the sea?
b. Introduce the students to the idea that sailors use stars and constellations to figure out where on earth they are. Make sure the students know what a constellation is.
c. Project one of the Sky Pictures. Point out the seven stars of the Big Dipper and help the students to identify the constellation.
d. Tell the students that the Big Dipper is a pointer to help you find a special star. Draw on the overhead to show the students how to use the Big Dipper to find Polaris. Tell the students Polaris is also called the North Star, and that it is a very useful star to help you find where you are.
e. Explain that many sailors for many centuries have used the North Star to figure out where they are at sea. They had different tools for measuring the height of the North Star – one of them was called the quadrant.
f. Show the students a simple quadrant. Hand out the quadrant sheets and supplies and help students construct their own quadrant.
g. Explain to the students that quadrants measure the height of objects not in centimeters or meters, but in a unit called degrees. Ask the students to measure the height of various objects around the classroom (clock, top of blackboard, teacher's head, etc.) and find out their heights in degrees.
h. If time permits, ask the students some extension questions:
    - How high up in the sky can the North Star be? How low down? Where on Earth would the sky look like that? (The North Star can be directly overhead (90°), when viewed from the North Pole, or right on the horizon (0°), when viewed from the Equator).

- Are there places on Earth where you cannot use this method? (The North Star is not visible South of the Equator, so this method would not work in the Southern Hemisphere).
- Does this method tell you exactly where you are on a map? (No, this method only gives you your latitude. To know exactly where you are on the map, you also need your longitude).
- Can you use this method with other stars? (No, other stars rise and set over the course of the night – they don't have a fixed height above the horizon).
- Can you use this method during the daytime? (No, the North Star is not visible during the daytime).

i. Challenge the students to predict how high the North Star would be over Oxnard based on the pattern they found between the height of the North star and location on the map. Assign the students their homework: this evening, they should find the North Star outside and use their quadrants to measure its height.



Extensions

a. http://www.celestialnavigation.net – an extensive site, covering many topics. Be sure to visit "Wayfinding", about non-Western navigation, and "CelNav in the Classroom"
b. http://www.boatsafe.com/kids/navigation.htm - a history of celnav instruments

Visiting a Tall Ship

5 pages

Here are two alternative 'documents' for students to bring to the Tall Ship site. Select the one that best suits your students' needs.

If you are not able to go on a field trip to the site, you could give a copy to those students who may have an opportunity to visit the site with their own family.

- Tall Ship Passport

- Ships Log – 3 panel version
  - 4 quarter fold up version

TALL SHIP PASSPORT

Your name: _____

School: _____ Grade: _____

Number of Tall Ships visible in the Harbor: _____ name three of them:

_____ _____ _____

Name of ship you boarded: _____ Country:_____

Describe your Experience:

1) If you were applying to be a crew member of one of these ships, what task, job or duties would you like to do? (explain why)

_____

_____

_____

_____

2) What tasks would you like to avoid?

_____

_____

3) Describe any sounds or smells that you noticed were part of a "Tall Ship" (other than the visitors!).

_____

_____

_____

4) Imagine being on one of these ships off the north part of Santa Cruz Island in a major storm, where the winds are blowing at 45 knots (86 km/hr) and the waves are almost as high as a flag pole. Describe your feelings:

_____

_____

_____

5) Create a drawing of something that impressed you, surprised you, or is a part of a 'Tall Ship'. You can do this in the space provided, or do a rough sketch then make a good copy on a 'sail' drawing, a tattoo idea, etc. Your drawing could be a sketch of a ship, of a mast, of part of the rigging, something on the ship, something on the dock beside the ship, sailor's clothing, etc.

6) Create a poem or a "Sea Shanty" (sailor's song) on something that interests you related to a "Tall Ships".

Use this Log Book to record your experiences at the Tall Ships Festival.

In the box on each page, create something that will remind you of your trip. You could:

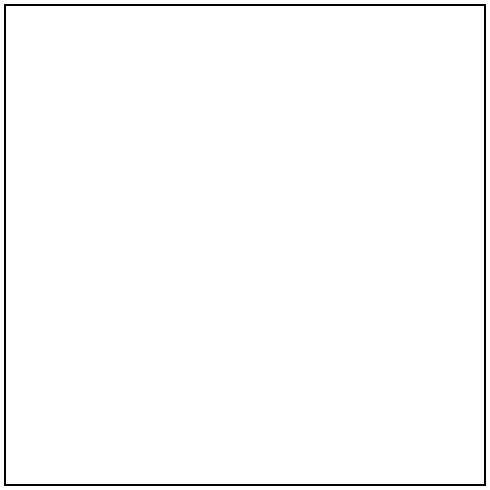
- Attach a photograph
- Draw a picture
- Make a cartoon
- Design a flag or tattoo
- Write a poem or story
- Compose a sea shanty
- Get an autograph

TALL SHIPS FESTIVAL
Channel Islands Harbor

Log Book

Name: _____

_____
_____
_____



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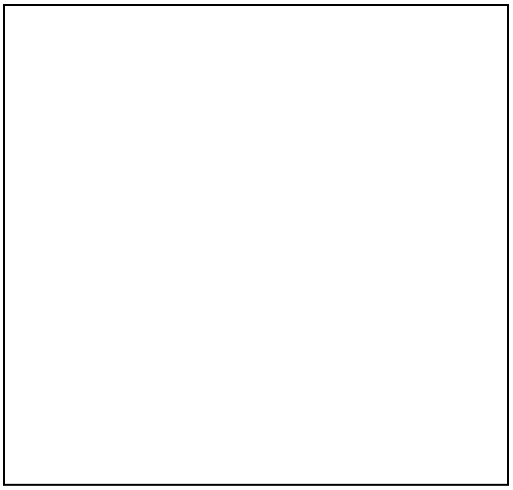

Please don't work on your Log Book while you're aboard a Tall Ship!

Spend time aboard enjoying the experience.

Once you're back on shore, then you can record your experiences here.

How to make your Log Book

- Put this paper on your desk so these instruction are right way up and facing you
- Fold the paper in half from top to bottom
- Fold the paper in half from left to right
- Staple along the second fold to keep the book together
- Write a poem or story
- Cut along the first fold to separate the pages

NAUTICAL DICTIONARY

Aboard – On or in a vessel. *Close aboard* means near a ship.

Admiralty – A high naval authority in charge of a state's Navy or a major territorial component. In the Royal Navy (UK) the Board of Admiralty, executing the office of the Lord High Admiral, promulgates Naval law in the form of Queen's (or King's) Regulations and Admiralty Instructions.

Adrift – Afloat and unattached in any way to the shore or seabed. It may also imply that a vessel is not anchored and not under control, therefore goes where the wind and current take her, (Loose from moorings, or out of place). Also refers to any gear not fastened down or put away properly.

Aft – Towards the stern (of the vessel)

Ahoy – A cry to draw attention. Term used to hail a boat or a ship, as "*Boat ahoy!*"

Aloft – Above the ship's uppermost solid structure; overhead or high above.

Amidships (or midships) – In the middle portion of the ship, along the line of the keel.

Anchor – An object designed to prevent or slow the drift of a ship, attached to the ship by a line or chain; typically a metal, hook like, object designed to grip the bottom under the body of water.

Anchorage – A suitable place for a ship to anchor. Area of a port or harbor.

Ashore – On the beach, shore or land.

Astern – Toward the stern; an object or vessel that is behind another vessel or object.

Avast – Stop! Cease or desist from whatever is being done.

Aye, aye – Reply to an order or command to indicate that it, firstly, is heard; and, secondly, is understood and will be carried out. ("Aye, aye, sir" to officers.)

Beam – The beam of a ship is its width at the widest point, or a point alongside the ship at the mid-point of its length.

Berth – A bed on a boat, or a space in a port or harbor where a vessel can be tied up.

Bilge – The bilge is the compartment at the bottom of the hull of a ship or boat where water collects so that it may be pumped out of the vessel at a later time.

Binnacle – The stand on which the ship's compass is mounted.

Bitt, plural Bitts – Posts mounted on the ship's bow, merely comprising two wooden uprights supporting a crossbar, for fastening ropes or cables; also used on various ships to tie boys over for painful (posterior) discipline, more informally than kissing the gunner's daughter.

Boatswain or **bosun** – A non-commissioned officer responsible for the sails, ropes and boats on a ship who issues "piped" commands to seamen.

Boom – A spar used to extend the foot of a sail.

Buoy – A floating object of defined shape and color, which is anchored at a given position and serves as an aid to navigation.

Bow – The front of a ship.

Bowline – A type of knot, producing a strong loop of a fixed size, topologically similar to a sheet bend. Also a rope attached to the side of a sail to pull it towards the bow (for keeping the windward edge of the sail steady).

Bowsprit – A spar projecting from the bow used as an anchor for the forestay and other rigging.

Bridge – A structure above the weather deck, extending the full width of the vessel, which houses a command centre, itself called by association, the bridge.

Bulkhead – An upright wall within the hull of a ship. Particularly a load bearing wall.

Bulwark – The extension of the ship's side above the level of the weather deck.

Cabin – An enclosed room on a deck or flat.

Capstan – A rotating wheel mounted vertically, used to wind in anchors or other heavy objects; and sometimes to administer flogging over.

Cleat – A stationary device used to secure a rope aboard a vessel.

Compass – Navigational instrument that revolutionized travel.

Coxswain or **cockswain** – The helmsman or crew member in command of a boat.

Crow's Nest – Specifically a masthead constructed with sides and sometimes a roof to shelter the lookouts from the weather, generally by whaling vessels, this term has become a generic term for what is properly called masthead. See masthead.

Davy Jones' Locker – An idiom for the bottom of the sea.

Decks – The structures forming the approximately horizontal surfaces in the ship's general structure. Unlike flats, they are a structural part of the ship.

Deck hand – A person whose job involves aiding the deck supervisor in (un)mooring, anchoring, maintenance, and general evolutions on deck.

Fathom – A unit of length equal to 6 feet, roughly measured as the distance between a man's outstretched hands.

Fender – An air or foam filled bumper used in boating to keep boats from banging into docks or each other.

Figurehead – Symbolic image at the head of a traditional sailing ship or early steamer.

First Lieutenant – In the Royal Navy, the senior lieutenant on board; responsible to the Commander for the domestic affairs of the ship's company. Also known as 'Jimmy the One' or 'Number One'. Removes his cap when visiting the mess decks as token of respect for the privacy of crews in those quarters. Officer i/c cables on the forecastle. In the U.S. Navy the senior person in charge of all Deck hands.

First Mate – The Second in command of a ship.

Flank – The maximum speed of a ship. Faster than "full speed".

Forecastle – A partial deck, above the upper deck and at the head of the vessel; traditionally the sailors' living quarters.

Galley – The kitchen of the ship.

Gangplank – A movable bridge used in boarding or leaving a ship at a pier; also known as a "brow".

Halyard or Halliard – Originally, ropes used for hoisting a spar with a sail attached; today, a line used to raise the head of any sail.

Harbor – A harbor or harbour, or haven, is a place where ships may shelter from the weather or are stored. Harbors can be man-made or natural.

Heaving to – To stop a sailing vessel by lashing the helm in opposition to the sails. The vessel will gradually drift to leeward, the speed of the drift depending on the vessel's design.

Helmsman – A person who steers a ship.

Keel – The central structural basis of the hull

Keelhauling – Maritime punishment: to punish by dragging under the keel of a ship.

Ladder – On board a ship, all "stairs" are called ladders, except for literal staircases aboard passenger ships. Most "stairs" on a ship are narrow and nearly vertical, hence the name. Believed to be from the Anglo-Saxon word hiaeder, meaning ladder.

Land lubber – A person unfamiliar with being on the sea.

Leeward – In the direction that the wind is blowing towards.

Mainmast (or Main) – The tallest mast on a ship.

Mainsheet – Sail control line that allows the most obvious effect on mainsail trim. Primarily used to control the angle of the boom, and thereby the mainsail, this control can also increase or decrease downward tension on the boom while sailing upwind, significantly affecting sail shape. For more control over downward tension on the boom, use a boom vang.

Master-at-Arms – A non-commissioned officer responsible for discipline on a naval ship. Standing between the officers and the crew, commonly known in the Royal Navy as 'the Buffer'.

Masthead – A small platform partway up the mast, just above the height of the mast's main yard. A lookout is stationed here, and men who are working on the main yard will embark from here. See also Crow's Nest.

Mess – An eating place aboard ship. A group of crew who live and feed together.

Monkey fist – A ball woven out of line used to provide heft to heave the line to another location. The monkey fist and other heaving-line knots were sometimes weighted with lead (easily available in the form of foil used to

seal e.g. tea chests from dampness) although Clifford W. Ashley notes that there was a "definite sporting limit" to the weight thus added.

Navigation rules – Rules of the road that provide guidance on how to avoid collision and also used to assign blame when a collision does occur.

Oilskin – Foul-weather gear worn by sailors.

Pilot – Navigator. A specially knowledgeable person qualified to navigate a vessel through difficult waters, e.g. harbor pilot, etc.

Port – Towards the left-hand side of the ship facing forward (formerly Larboard). Denoted with a red light at night.

Privateer – A privately-owned ship authorized by a national power (by means of a **Letter of Marque**) to conduct hostilities against an enemy. Also called a **private man of war**.

Ratlines – Rope ladders permanently rigged from bulwarks and tops to the mast to enable access to top masts and yards. Also serve to provide lateral stability to the masts.

Rigging – The system of masts and lines on ships and other sailing vessels.

Scuttle – A small opening, or lid thereof, in a ship's deck or hull. To cut a hole in, or sink something.

Ship's bell – Striking the ship's bell is the traditional method of marking time and regulating the crew's watches.

Skipper – The captain of a ship.

Splice – To join lines (ropes, cables, etc.) by unraveling their ends and intertwining them to form a continuous line. To form an eye or a knot by splicing.

Squared away – Yards held rigidly perpendicular to their masts and parallel to the deck. This was rarely the best trim of the yards for efficiency but

made a pretty sight for inspections and in harbor. The term is applied to situations and to people figuratively to mean that all difficulties have been resolved or that the person is performing well and is mentally and physically prepared.

Starboard – Towards the right-hand side of a vessel facing forward. Denoted with a green light at night.

Stern – The rear part of a ship, technically defined as the area built up over the sternpost, extending upwards from the counter to the taffrail.

Swinging the lead – Measuring the depth of water beneath a ship using a lead-weighted sounding line. A sailor who was feigning illness, etc. to avoid a hard job was said to be 'swinging the lead'.

Transom – A more or less flat surface across the stern of a vessel.

Under way – A vessel that is not at anchor, or made fast to the shore, or aground.

Watch – A period of time during which a part of the crew is on duty. Changes of watch are marked by strokes on the ship's bell.

Weigh anchor – To heave up (an anchor) preparatory to sailing.

Wheelhouse – Location on a ship where the steering wheel is located, often interchanged with pilothouse and bridge.

Windward – In the direction that the wind is coming from.

Windlass – A winch mechanism, usually with a horizontal axis. Used where mechanical advantage greater than that obtainable by block and tackle was needed (such as raising the anchor on small ships).

Yarr – Acknowledgement of an order, or agreement.

Color Me