Ships to the Sea

Development of U.S. Navy ships from 1775 to today

A curriculum guide for grades 3-5

U.S. NAVY MUSEUM

Developed by the Education Department
of the National Museum of the United States Navy
Washington Navy Yard, D.C.
www.history.navy.mil

Ships to the Sea: Table of Contents

Ships to the Sea Teachers Welcome

Teachers,

Thank you for choosing to use the Ships to the Sea educational program from the U.S. Navy Museum's Field Trip in a Box collection as part of your curriculum. Valuable information can be gained from visiting museums and participating in their activities, but sometimes it is not possible to visit the actual museum site. In those instances we have decided to bring the museum to you!

Ships to the Sea is a program designed for students 2nd-5th grade to discover the United States Navy through the development of shipbuilding from the wooden frigate to the modern nuclear powered air craft carrier. Throughout this lesson, students will:

- determine the best materials for ship building
- see what life is like on board a ship both today and in the past
- learn how ships defend themselves
- learn how ships communicate with one another

The main program, *Ships to the Sea*, (activity 3) is divided into 5 sections:

- Wooden sailing ships—frigates
- Side wheel steamers
- Ironclads
- Battleship
- Aircraft carrier

While there are many different types of ships in the U.S. Navy today, this program focuses on the above five due to their technological advances and historical significances. However, if there is a ship of particular interest to you or your class, such as submarines or cruisers, please feel free to discuss them in your lesson. For information about historic vessels and current vessels please visit the Naval History and Heritage Command's website: www.history.navy.mil or the Navy's official website: www.navy.mil.

Since this is the first time that many students have been exposed to the U.S. Navy, or military, supplemental activities are included. These activities are designed to give students a closer look at the U.S. Navy, the men and women who make up the Navy, and what functions the U.S. Navy serves for both their (the students) community, as well as the country.

Materials included in your kit:

- Teacher's Instruction Binder
- Photo flash cards (activity 2)
- Photos of ships (activity 3)
- CD of *Anchors Aweigh*
- Signal Flags (5x7)
- Signal Flag Memory Decks

Ships to the Sea Teachers Welcome

- Brown ship hulls
- Sponges
- Ship decks
- Coffee stirrers
- Example of ship

Items you will need to provide:

- Glue
- Scissors
- Markers
- X-Acto knife (teachers and parents use only)
- White and colored construction paper

We hope you enjoy this experience and that your students enjoy learning about the U.S. Navy!

-The U.S. Navy Museum Education Department

Activity 1: Anchors Aweigh!

Get your students into the spirit of the U.S. Navy! Originally written in 1906 by Charles Zimmerman and Alfred H. Miles, *Anchors Aweigh* continues to be the unofficial song of the U.S. Navy. First written to be a fight song at the United States Naval Academy, the lyrics were changed in 1950 to include all of the Sailors, rather than just the Midshipmen at the Naval Academy. Today, *Anchors Aweigh* represents the 235 years of heritage and pride Sailors feel for the U.S. Navy. Have your students listen to the song first on the provided CD, and then have them sing along!

Lyrics to Anchors Aweigh

(Please see the provided sheet music to see the original lyrics.)

Stand Navy out to sea, Fight our battle cry
We'll never change our course, so vicious foe steer shy-y-y-y
Roll out the T.N.T. Anchors Aweigh
Sail on to victory and sink their bones to Davy Jones, hooray!
Yo ho there ship-mate, take the fighting to the far off seas
Yo ho there mess-mate, hear the wailing of the wild banshees
All hands-fire-brands, let's blast them as we go, so

Anchors Aweigh my boys, Anchors Aweigh
Fare well to college joys, we sail at the break of day-day-day-day
Through our last night on shore, drink to the foam,
Until we meet once more, here's wishing you a happy voyage home
Heave a ho there sailor, everybody drink up while you may
Heave a ho there sailor, for you're gonna sail at break of day,
Drink a-way, Drink a-way, for you sail at the break of day, Hey!

ANCHORS AWEIGH

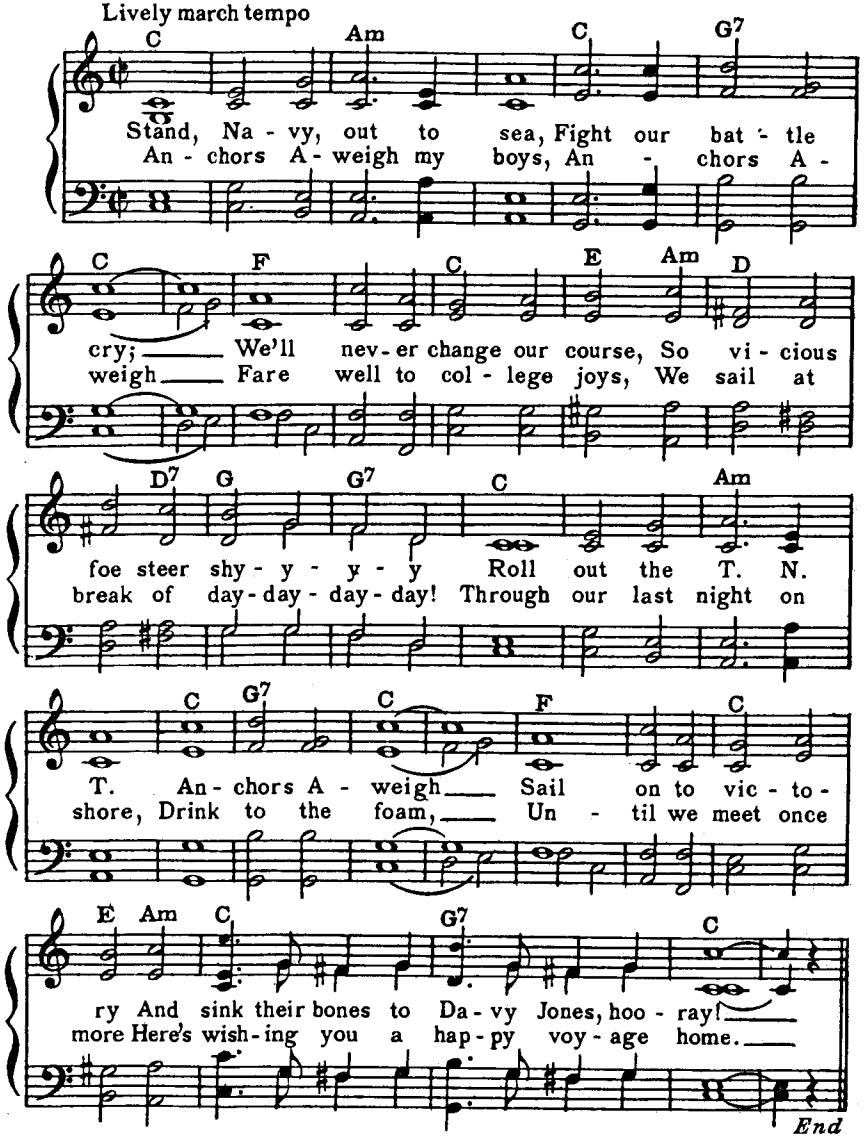
2

(1907)

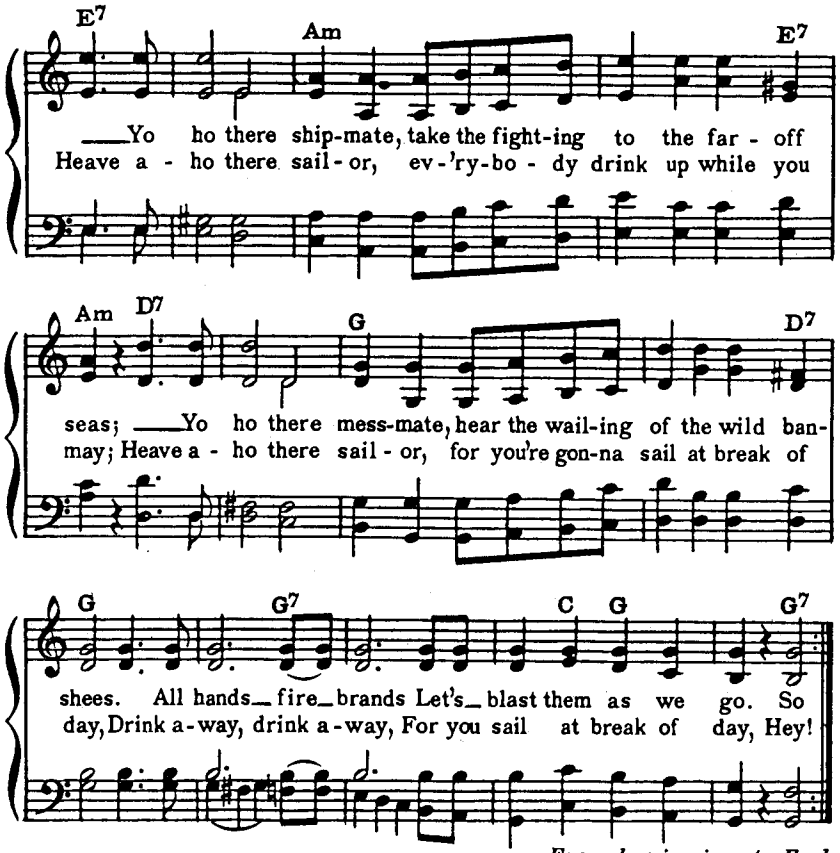
Words by
CAPT Alfred H. Miles, USN
Revised lyrics by George D. Lottman

Music by
LT Charles A. Zimmermann, USN

Lively march tempo



2 continued



From beginning to End

ORIGINAL VERSION

1. Stand Navy down the field,
Sails set to the sky,
We'll never change our course,
So Army you steer shy-y-y-y.
Roll up the score, Navy.
Anchors Aweigh,
Sail Navy down the field
And sink the Army, sink the Army Grey.

2. Get under way, Navy,
Decks cleared for the fray,
We'll hoist true Navy Blue
So Army down your Grey-y-y-y.
Full speed ahead, Navy;
Army heave to,
Furl Black and Grey and Gold
And hoist the Navy, hoist the Navy Blue.

3. Blue of the Seven Seas;
Gold of God's great sun
Let these our colors be
Till all of time be done-n-n-ne,
By Severn shore we learn
Navy's stern call:
Faith, courage, service true
With honor over, honor over all.

Activity 2: Does This Job Belong in the Navy?

Before learning about the specific ships in the U.S. Navy, it is important for students to know a little about the U.S. Navy, especially the purpose that it serves for the American people.

What does the Navy do?

Ask the students to come up with a list of jobs they believe Sailors do in the U. S. Navy. See the example below for possible answers:

Sailors:
Defend our country Sail boats Drive tanks Shoot bad guys

Have them write their responses on the Does This Job Belong in the Navy worksheet. Put all of the students' responses on the chalk/white board (or on a flip chart if done in groups/centers). Once the students have finished thinking about which jobs may be done in the Navy, it is time to find out if they are right!

Does This Job Belong in the Navy?

Materials Needed:

Does This Job Belong in the Navy? worksheet
Photo flash cards

Activity 2: Does This Job Belong in the Navy?

Name_____

What jobs I think Sailors do in the Navy:

Why do you think America has a Navy? _____

_____

Take a look at the different photos of workers. Circle the Yes if you think they could work in the Navy, and No if you don't.

Fire Fighter:	Yes	No	Pilot:	Yes	No
Dentist:	Yes	No	Scuba Diver:	Yes	No
Barber:	Yes	No	Construction Worker:	Yes	No
Soldier:	Yes	No	Doctor:	Yes	No

Did the answers surprise you? Why or why not? _____

_____

_____

Activity 3: Ships to the Sea

Now that the students have begun to think about the types of jobs Sailors have, and the overall purpose of the U.S. Navy, it is time to take a closer look at its history and the types of ships used. All bulleted questions are optional questions for your students to help them to think about the topic and allow them to voice their opinions on the subject.

To begin, ask the students introductory questions:

- How old will the U.S. Navy be this year? (A: 233+ years old. The U.S. Navy celebrates its birthday as October 13, 1775.)
- Do you think that ships look the same as they did 200 years ago? Why or why not?

Frigate 1775- mid 19th century

Pre discussion questions:

- What material(s) do you think a frigate is made out of?
- Do you think a frigate is fast or slow?
- What do you think life was like on a frigate?
- How do you think it moved through the water?
- What kind of weapons do you think were on board?
- How do you think the crews on different ships communicated?

The frigate became the backbone of the early American Navy. Built to be fast and strong, these frigates were designed to be heavily armed, but agile enough to out sail the British Navy.

Building Materials:
American frigates (such as USS *Constitution*) had a wooden hull made from pine and oak. A thin layer of copper was placed on the bottom of the hull to protect it from shipworms (clams that burrow into wooden structures such as hulls and piers) that would cause damage to the ship and cause it to run slower. Copper bolts held the hull together.

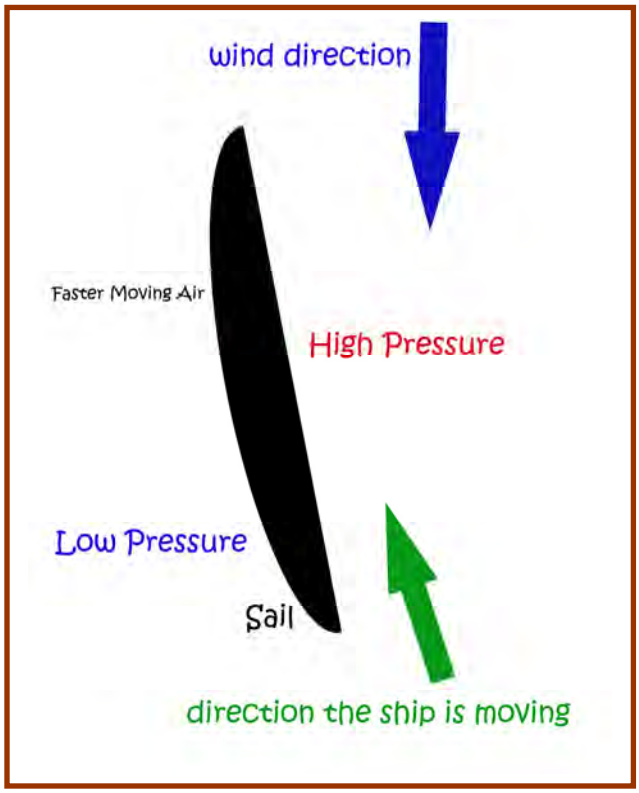
Movement:
The word *frigate* is derived from the meaning "fully rigged." This means that the ship has three masts, all of which have square sails. The sails used on ships like USS *Constitution* were typically made from cotton, as the plant was native to the United States. The traditional material used to make sails, linen, was imported and the supply was often interrupted by war. (such as the War of 1812). Wind propels a sail, and ultimately the ship, in two ways. Firstly, wind pushing on a sail causes the ship to go forward. But what happens when the ship wants

Psst… What's the Scuttlebutt?

Sails create lift, like an airplane wing, and can actually cause the ship to sail faster than the wind is blowing!

to go against the wind? When properly trimmed, the sail acts like an airplane wing on its side. The faster moving air on the outside creates Low pressure, the curved inner side creates High pressure. The High pressure moves toward the Low pressure causing movement. See the diagram below for an illustrated example.

- How fast could an American frigate sail? Under full sail, a ship like USS *Constitution* could sail 13 knots, or about 15 miles an hour. That is 5 miles faster per hour than the British war ships!



Life on Board:

Life on board ship was hard! There were approximately 500 Officers, Enlisted, Marines and boys on board. To make the ship run smoothly, the ship was divided into watches, and each man had a specific job to do during his watch. Some men were carpenters, some handled the sails, others blacksmiths. While they all had very different jobs to perform, they all needed to work together to carry out the orders of the Captain, the head of the ship.

- Where did everyone sleep?

The Enlisted crew slept in hammocks, which were often strung up over the guns! Each Sailor had his own hammock, so every time he got up to work, he had to roll it up and put it away to make room for the next sleeping sailor. Officers, such as the Captain, had a small space of his own with a bed (sometimes hanging from the ceiling), a desk and a wash bin.

- How was the food?

Since there wasn't refrigeration on USS *Constitution*, Sailors would load their ship with food that was meant to stay fresh, such as dried peas, salted meat, and hard tack, which was a hard dried bread. While the Sailors received daily rations, eating aboard frigates was an unwelcome chore since their food was often too hard to eat or spoiled.

- What happened when you got hurt?
- What type of injuries do you think Sailors received when they were working?

While ships like USS *Constitution* had a surgeon on board, smaller ships would only have a surgeons mate. A surgeon typically had training in surgery and medical care. The surgeons' mates were not trained in surgery or only had minimal training. During the course of a voyage, Sailors could have many injuries that ranged from cuts and splinters, to much more life threatening injuries like broken bones, severed limbs or head injuries. Most commonly, ailments of the stomach bothered the sailors, such as sea sickness and food poisoning from the spoiled food.

Weapons:

USS *Constitution* and other American ships were built to hold more guns than a typical frigate. They had 44 guns (or cannons) where as a typical British warship had 36. When two fighting ships were close enough together, other weapons like pistols, pikes, swords and muskets (by the Marines) were used.

- What kind of danger do you think the gun crew was in when they were firing guns?
    - A: Risk of fire, exploding shells, pieces of the ship hurting them

Communication:

- If radios, telephones and computers were not invented yet, how do you think Captains of ships sailing next to one another communicated?

If a Captain had an important message to send to another ship, he would use a series of signal flags, each representing a letter of the alphabet, or when flown alone, a single message.

*See Activity 4, *Signal Flags*, for an in-depth look at signal flags.

Side-wheel Steamer 1854

The side-wheel steamer was a transition ship between wooden sailing ships and steam driven ironclads. It used a steam engine to propel wooden paddle wheels on the sides of the ship to move it though the water. Some side-wheel steamers used both the engine and sails to help them move. For this section, we will discuss USS *Powhantan*, Commodore Matthew Perry's flagship from the opening of Japan, which is a combination sail and engine.

- Do you think the side-wheel steamer was faster or slower than the frigate?
- Do you think life on board was harder or easier?

Building Materials

side-wheelers had wooden masts and hulls, but the hull frames, boilers and engines were made of iron. The sails were made from cotton and the ropes from hemp, like the frigate.

Movement:
To move through the water, side-wheelers used sails in strong wind and steam engines on calm days. A steam engine in the 19th century ran by heating water in a coal run boiler. The steam generated by the boiling water was forced into the engine. The high pressure steam forced the piston and piston rod to move, thus turning the wheels.

- Was running the boiler a dangerous job?
- Do you think it was a comfortable job?

Psst…what's the Scuttlebutt?

Steam inside an engine can reach temperatures of 3000 degrees Fahrenheit! Combine that with the temperature of the burning coal to create steam, and you have one uncomfortable working environment!

Life on board
Some aspects of life on board a side-wheel steamer were much better than life on a frigate. With the ability to move the ship without wind, going from port to port became easier, and the crews were able to stock fresh food and water more frequently. However, with refrigeration still in its infancy (the first ice producing system was patented in 1851, and the first ship with refrigeration was the *Dunedin*, which sailed in 1882), much of the food on board was worm infested and spoiled. This resulted in many of the same sicknesses the sailors aboard USS *Constitution* encountered; like malnutrition and food poisoning. Since there were about half the number of people on board, (290 versus the 500 on *Constitution*) berthing (sleeping) areas and storage space increased.

- Why do you think the number of people on board decreased so much?
    - With out 44 guns requiring 6-10 man gun crews and the amount of sails that needed attending, there wasn't a need for so many people.
- What were some of the dangers of living on board?
    - Working with a steam engine could be extremely dangerous! Besides the sweltering heat of standing and working next to a coal fire, steam engines and the boilers were notorious for exploding, causing life threatening or fatal injuries.

Weapons
A side-wheeler only had 16 guns (cannons) aboard, along with personal weapons such as swords and pistols. Since many of the side-wheelers were not war ships, they were diplomatic in nature and there wasn't a need for a large number of guns for offensive maneuvers in other words, the guns were used for defense.

Side-wheel steamers and the opening of Japan (1853)
A significant event for U.S. Naval and U.S. diplomatic history, in 1853, Commodore Matthew Perry and four ships sailed to Edo, (modern day Tokyo), in hopes of opening trade relations with the island country of Japan. After negotiations, the delegates from

Activity 3: Ships to the Sea

Japan signed the Treaty of Kanagawa, opening up the Japanese ports to American trade, which had been formally restricted to the Dutch and Chinese.

- Why do you think trade with Japan was so important to the Americans?

Communications
Ships like USS *Powhantan* would have used signal flags for communication, like USS *Constitution*. While Morse code was created in the 1840s, radio communication using the code was not used on ships until the turn of the 20th century.

Ironclads 1862
The first Ironclads were wooden steam driven ships that were outfitted with iron plating on the hull for protection. During this program, we will focus on the first all iron warship, USS *Monitor*.

After the Confederate states seceded in 1861, the new Confederate Navy was hard at work constructing an iron clad warship. The wooden hull of the Northern ship *Merrimack*, was covered in iron plating and the CSS *Virginia* was built. The U.S. Navy did not want the Confederates to have naval superiority, so work on an iron clad commenced immediately.

Building Materials
USS *Monitor* is constructed completely from iron.

- Why would building a ship from iron be better than a ship made from wood?

Movement
USS *Monitor* is run by a steam engine.

- Do you think it was faster than a frigate?

While USS *Monitor* had a steam engine, and did not rely on wind to move, it ran slower than the USS *Constitution*, reaching speeds of 8 knots (9.2 mph).

Life on Board
Life aboard USS *Monitor* was still very difficult. Even though the ship rarely left shallow water because the semi submersible design did not handle well in ocean seas, life was still filled with spoiled food, hard work, and long days. Keep in mind, the crew of USS *Monitor* was fighting the Civil War, so fresh supplies and rest were hard to come by.

Weapons
While USS *Monitor* was the first all iron warship, it was the weapons that truly made the ship historic. Rather than loading the ship with 8 guns, like CSS *Virginia*, USS Monitor only had 2 guns placed on a rotating gun turret. This

Psst… What's the Scuttlebutt?

In March of 1862, USS *Monitor* and CSS *Virginia* held a historic battle off the coast of Hampton Roads, Virginia. On March 9 *Monitor* and *Virginia* fired upon each other, while onlookers saw the shells literally bouncing off the sides of the ships!

rotating gun mount would change the way warships were constructed from that point forward. Since the ship itself did not have to rotate to fire its weapon, the monitor could continue on one course while firing in any direction the crew chose. Gun turrets also provide protection from enemy fire, as the crew is positioned inside the iron gun mount.

- Why do you think this was so important to the ships in the U.S. Navy?

Battleship mid 20th century

- What do you think is the purpose of a battleship?

A battleship is a warship that is the most heavily armored and is equipped with the most powerful weapons. Battleships as we know them today were used from the First World War to the Second World War. After the aircraft carrier took its place as the leading warship, battleships became fire support vessels, and in 1996, were taken out of service from the U.S. Navy.

Side Note: Most ships that have been discussed today can be classified as a "battleship." USS *Constitution* was constructed of thick oak and was heavily armed. USS *Monitor* was the first all iron clad warship, which fits the description of a battleship. The distinction becomes clearer in the 20th century, when there are many different types of ships in the fleet, such as the aircraft carrier, cruisers, etc.

For this section, we will look at the largest battleships built, the *Iowa* class, built for service in WWII. During the First World War, aircraft carriers did not have adequate protection from aerial attacks. Therefore, in the years leading up to WWII, plans were made to create larger, faster battleships to escort and protect the growing fleet of aircraft carriers. As a result, the U.S. Navy built 4 *Iowa* class battleships, capable of sailing at 33 knots (38 mph) and were some of the most heavily armed ships ever in the U.S. Navy.

Building Materials

The ship is made from steel. However, unlike its predecessors, the steel that made up the *Iowa* class battleships was much stronger and of a higher quality due to the advancement in forging technology (the steel is forged at higher temperatures which make it stronger). The amount of armor also changed. These four battleships were built with the knowledge that it would be attacked from the air, land and sea with the newest weaponry available. Therefore, its armor was designed differently on the top than the bottom of the ship, since the weapons in water (torpedoes and mines) damage the ship differently than missiles and shells that would be striking the top of the ship.

Movement

Iowa class battleships had four steam turbine engines (heated by oil) that controlled its four propellers. Since each engine controlled only one propeller, it was able to create enough pressure and speed to maintain its speed of 33 knots.

Activity 3: Ships to the Sea

Life on Board
Life in the U.S. Navy today is not too different than life for those sailors on USS *Constitution*. Each Sailor has a job to do, and groups of Sailors work together in "watches." The main difference is the jobs that they do. Instead of trimming the sails, some of the Sailors are in charge of making sure the engines work properly. On their down time, they can do things like reading, watch movies, write home, or sleep.

Sleeping on a battleship is still very cramped. Sailors typically get a small bunk and a small locker to keep their personal items. For the most part, Sailors don't mind too much about the lack of space. They know the job of the ship is to be a warship, so some level of discomfort is expected.

- Do you think a bunk is more, or less comfortable, than a hammock?

During war time, life was difficult and dangerous. Much like the Sailors on USS *Monitor*, Sailors had to be mindful of the dangers of working on a ship, like exploding guns or stormy seas.

- What other dangers do you think are present when working on a battleship?
- Do you think the medical care is better?

Absolutely! Sailors who are doctors are ready to help those in need. If they can not get the care needed, there are many U.S. Naval hospitals around the world that can see Sailors.

- Do you think the food is better or worse than on a frigate?

The food on a battleship was much better! Since there was a way to refrigerate the meat and dairy products, food kept for much longer, allowing the Sailors to remain strong and healthy from a steady diet.

Weapons
Battleships have the largest guns in the fleet, and there are over 150 on board. The main battery (the largest guns) is made up of 9 16-inch guns that can hit a target 24 miles away. Other, smaller guns allow the ship to fire on targets 9 miles away. The ship also has anti-aircraft guns to protect the aircraft carriers.

- Which ship do you think is the safest?

Communications
Battleships during WWII had a much easier time communicating with other ships and with land than with the other earlier ships. Radio using Morse code, had been in use since the First World War. By the time the Second World War started, radio technology had advanced to allow Sailors to verbally communicate over the radio, rather than by using Morse code.

Psst…what's the Scuttlebutt?

The shells of 16 inch guns weigh 2700 pounds! That is the same as 4 baby elephants!

- Why do you think they still used coded messages?

Aircraft Carriers mid 20th Century to Present

Like Frigates of the Revolutionary War period, modern day aircraft carriers have become the back bone of today's Navy. The 2008 "All Hands Owners and Operators Manual" describes aircraft carriers as "support[ing] and operat[ing] aircraft that engage in attacks on airborne, afloat, and ashore targets that threaten free use of the sea; and engage in sustained operations in support of other forces. Aircraft carriers are deployed worldwide in support of U.S. interests and commitments. They can respond to global crises in ways ranging from peacetime presence to full-scale war. Together with their on board air wings, the carriers have vital roles across the full spectrum of conflict."

Building Materials

Aircraft carriers are the largest ships in the fleet, and are built from steel.

Movement

Currently there are two types of aircraft carriers in the U.S. Navy's fleet. The first, the *Kitty Hawk* class, uses the traditional propulsion system of fuel heated steam engines. The newer class, the *Nimitz* class uses nuclear power. During the years before and during the Second World War, scientists all over the world began researching nuclear technology mainly for the development of defense weapons. After the end of the war, the U.S. Government wanted to further nuclear energy research for civilian (non weaponry) purposes. One of the largest uses of nuclear power is the generation of electricity. "Nuclear power-plants generate electricity like any other steam-electric power-plant. Water is heated, and steam from the boiling water turns turbines and generates electricity. The main difference in the various types of steam-electric plants is the heat source. Heat from a self-sustaining chain reaction (the process of fission) boils the water in a nuclear powerplant. Coal, oil or gas is burned in other powerplants to heat the water."[1]

Psst…what's the Scuttlebutt?

Nimitz class aircraft carriers have crews of nearly 6000 people! It's like a floating city! The mess hall (cafeteria) serves between 18,000 and 20,000 meals every day!

- Why is this technology so important to the U.S. Navy?

The use of nuclear power allows ships to sail much farther and longer than traditional steam turbines, since fuel is not used. In 1964 the USS *Enterprise* (the first nuclear powered ship) and two other nuclear vessels embarked on "Operation Sea Orbit:" a trip that took the three ships around the world for 65 days, never having to stop for fuel. Also, without having to store fuel for the ship, the extra room allows for the storage of 50% more ammunition and aviation fuel as compared to a traditional carrier.

[1] "The History of Nuclear Energy", U.S. Department of Energy Office of Nuclear Energy, Science, and Technology

Activity 3: Ships to the Sea

Life onboard

- What do you think life is like on an aircraft carrier?

While an aircraft carrier is an active warship, and the missions of the ship come first, life onboard an aircraft carrier often mirrors life at home. Sleeping areas are small, like the battleship, but each "berthing" area has a TV with satellite TV and movies. Many Sailors will bring their own game consoles with them, such as X-Box or Nintendo to play on their off time. Many ships will have "Steel Beach Picnics:" huge BBQs with music, food and fun right on the flight deck! Those picnics sometimes roll over into the night, where a large sheet is hung from the flight tower and outside movies are projected for the Sailors.

- What is the food like?

Food onboard an aircraft carrier is the same food you eat everyday. From lasagna to hamburgers, salads and pizza, Sailors enjoy most of the same foods that we eat at home. One problem? Dairy foods tend to spoil quickly, even in the carrier's large refrigerators, so to combat that problem, the milk is specially treated, much like how your apple juice is pasteurized, so that it will keep much longer than the milk you buy in the grocery store.

- Can you talk to your family?

Sailors today are able to talk to their families often. With the use of email, satellite pay phones, and writing letters, families can stay in touch with their Sailors.

- What happens if you get sick or injured?

If a Sailor gets sick on an aircraft carrier, he can go to the sick bay on board. With a staff of fully trained doctors, surgeons, and dentists on board, most ailments can be treated right on the aircraft carrier.

Weapons

- Take a look at the photographs of the aircraft carrier and the battleships. How do the guns differ? The guns are much smaller, and there are less of them on an aircraft carrier.
- Why?

The main weapon on board an aircraft carrier is the aircraft itself.

- What moves faster, an airplane or an aircraft carrier?
    - Airplanes! The F4U Corsair, a common aircraft carrier based plane during WWII, had a top speed of 425 mph, whereas the carrier carrying the plane could go 38 mph.
- How could an aircraft be used as a weapon?

There were many important uses for the airplane during WWII, but two main reasons were for protection and for attacking. Since this war was fought in both Europe and Asia, the United States had to cross two oceans to carry men and supplies to the front lines. Many American ships were sunk due to other enemy ships and submarines. Smaller aircraft carriers, called escort carriers, were sent along with supply ships to protect them. The aircraft could fly ahead, spot enemy ships or subs and attack them before their ships were in danger. The airplane was also used for battles. The slower, more vulnerable

aircraft carrier could stay back, while the airplane could attack battleships and enemy convoys.

- What other weapons do aircraft carriers have?

Modern carriers have air to air missiles and anti aircraft guns.

Communications

Modern aircraft carriers have up-to-date communication systems that allow the Sailors on the ship to talk to other ships, as well as land. They also are equipped with RADAR that can identify ships and aircraft in the area. The carriers also have helicopters on board for the purpose of dropping SONAR buoys, to detect submarines and other underwater obstructions.

- Why do you think aircraft carriers still have signal flags?

Signal flags are still kept onboard ships and regularly used. During a time of radio blackout, when all communication over the radio waves must cease, signal flags are used to communicate between ships. More frequently, signal flags are used alone, to display a message, such as “have a diver in the water” (“A” flag) or “I am disabled communicate with me (“F” flag). Please refer to the supplementary materials for the full meanings of each flag and to Activity 4 for a more in-depth look at Signal Flags.

Activity 3: Ships to the Sea

Frigate building Activity:

Materials needed:

Included in kit:
Brown ship hulls
Coffee stirrers (masts)
Ship decks
Sponges

Not included:
Glue
Scissors
Markers
X-acto knife **for the teachers use only
White and colored construction paper

Steps 1 through 3 will need to be done either the day before completion of project or in enough time for glue to dry

1. Color ship deck, and cut it out
2. Slice holes for masts in deck **teacher/parents
3. Glue ship deck to plastic boat hull
4. Make flags, guns, sails, wheels and other accessories out of construction paper
5. Glue accessories to ship deck

Activity 4: Signal Flags!

Background:

Before the advent of the telegraph, telephone or two-way radio, ships would communicate with a series of signal flags. Each flag represents a letter of the English alphabet and each has a specific meaning when flown alone.

This system of international maritime signal flags is still used today and is recognized by the International Maritime Organization, established by the United Nations.

While signaling is not used daily, it can be used when radio silence is required, (in a hostile environment), or when the radio is down. Today, signal flags are most often used as an alert system to other ships. Each flag represents a warning or message such as, "have a diver in the water" ("A" flag) or "I am disabled communicate with me ("F" flag). Please refer to the supplementary materials for the full meanings of each flag.

Along with a corresponding flag, each letter of the alphabet is represented by a word rather than a sound, which is called a phonetic alphabet.

A **Phonetic Alphabet:** is a list of words used to identify letters in a message transmitted by radio or telephone. Spoken words from an approved list are substituted for letters. For example, the word "Navy" would be "November Alpha Victor Yankee" when spelled in the phonetic alphabet. This practice helps to prevent confusion between similar sounding letters, such as "m" and "n", and to clarify communications that may be garbled during transmission.

Pose this question to your students:
If a man was on a boat and needed help, but his radio was broken and he is out of shouting distance, how could he communicate with the ship next to him?

Activities:

Name Writing (can be in centers/groups or full class)

Materials needed:

5x7 Signal Flags
Name Writing worksheet
Markers

1. Put the 5x7 flags in a pocket chart in alphabetical order. Have the students "write" their name by drawing the flags and writing their name out with the phonetic alphabet.

Activity 4: Signal Flags!

Sending a Message!

Materials needed:
5x7 Signal Flags
Sending a Message worksheet
Markers

1. Put the 5x7 flags in a pocket chart in alphabetical order. Draw the message on the bottom of the worksheet using flags.

Signal Flag Memory (centers/groups)

Materials needed:

Signal Flag memory deck

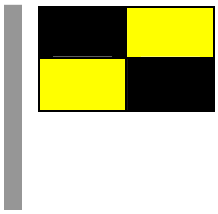
1. Shuffle deck
2. Lay each card face down on a table
3. On each turn, students get to turn over two cards. If they don't match, they must turn them back over; if they match, they keep the cards.
4. The student with the most matches wins!

Activity 4: Signal Flags!

Name Writing

Name: _____

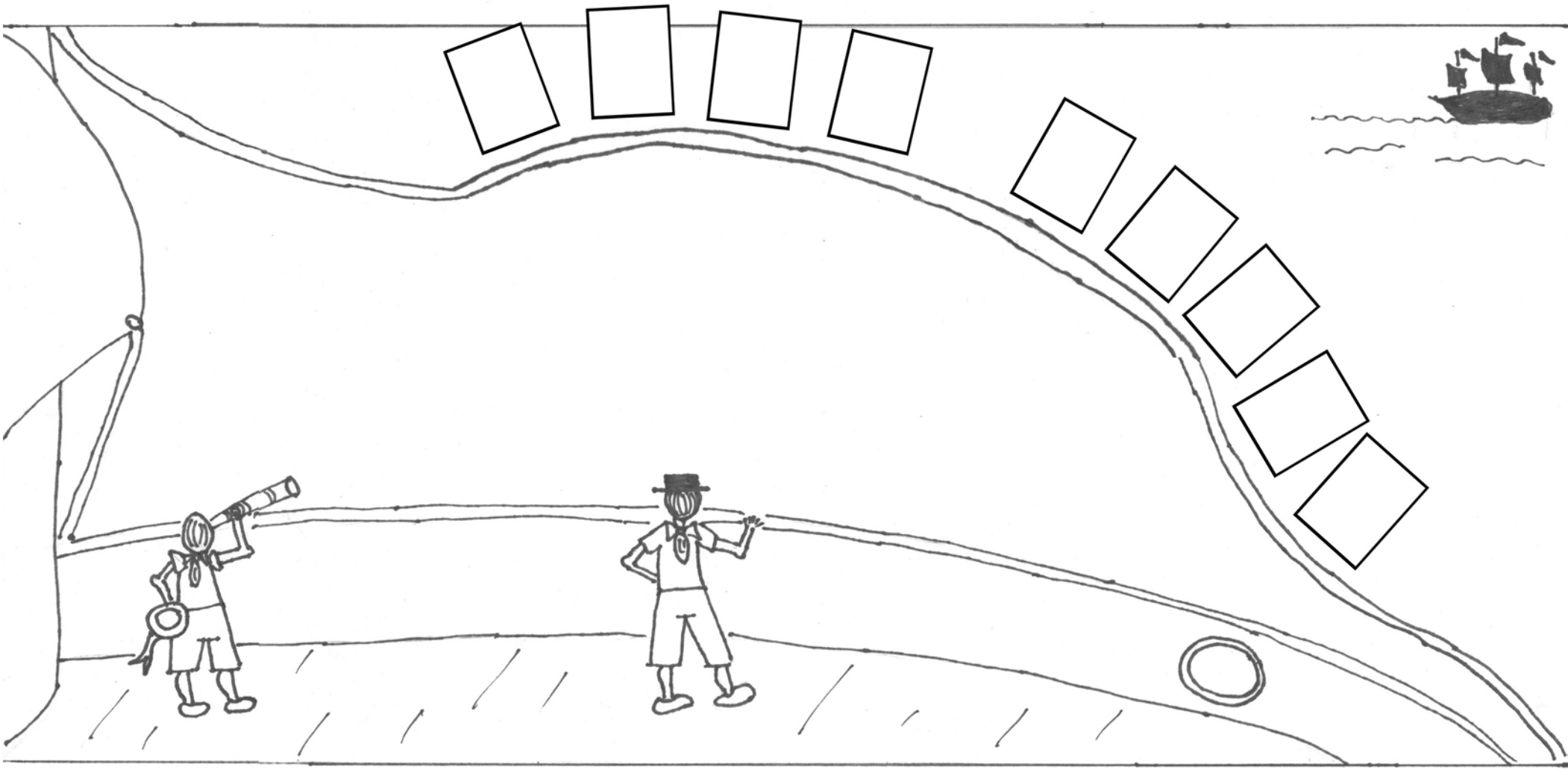
Instructions: Draw your name in signal flags on the flag poles! (Hint: the flags fly top to bottom) An example “L” is drawn in for you.



Now write your name with the phonetic alphabet! Example: Lima Alpha Uniform Romeo Alpha (LAURA)

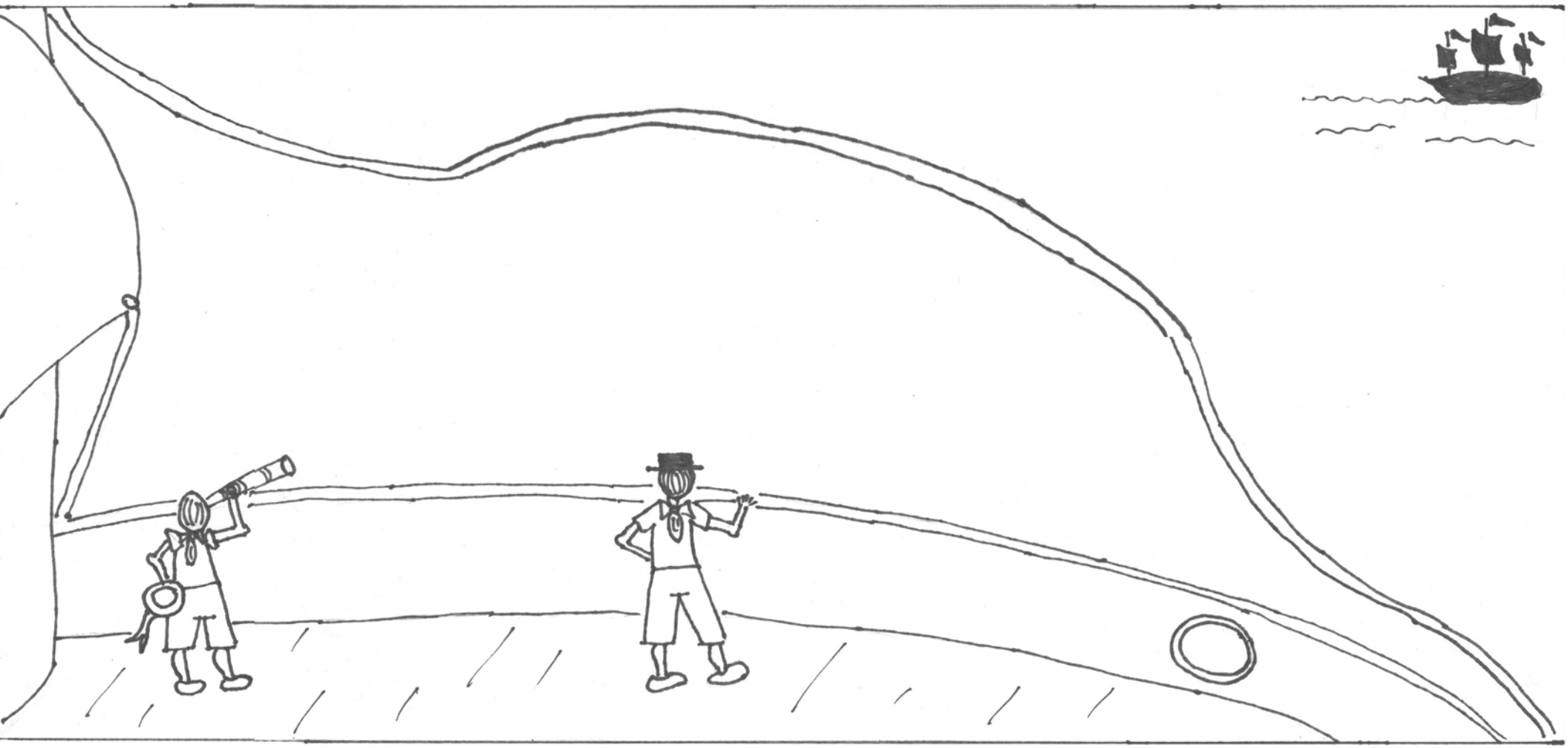
_____

Can you help these sailors send a message? Name:

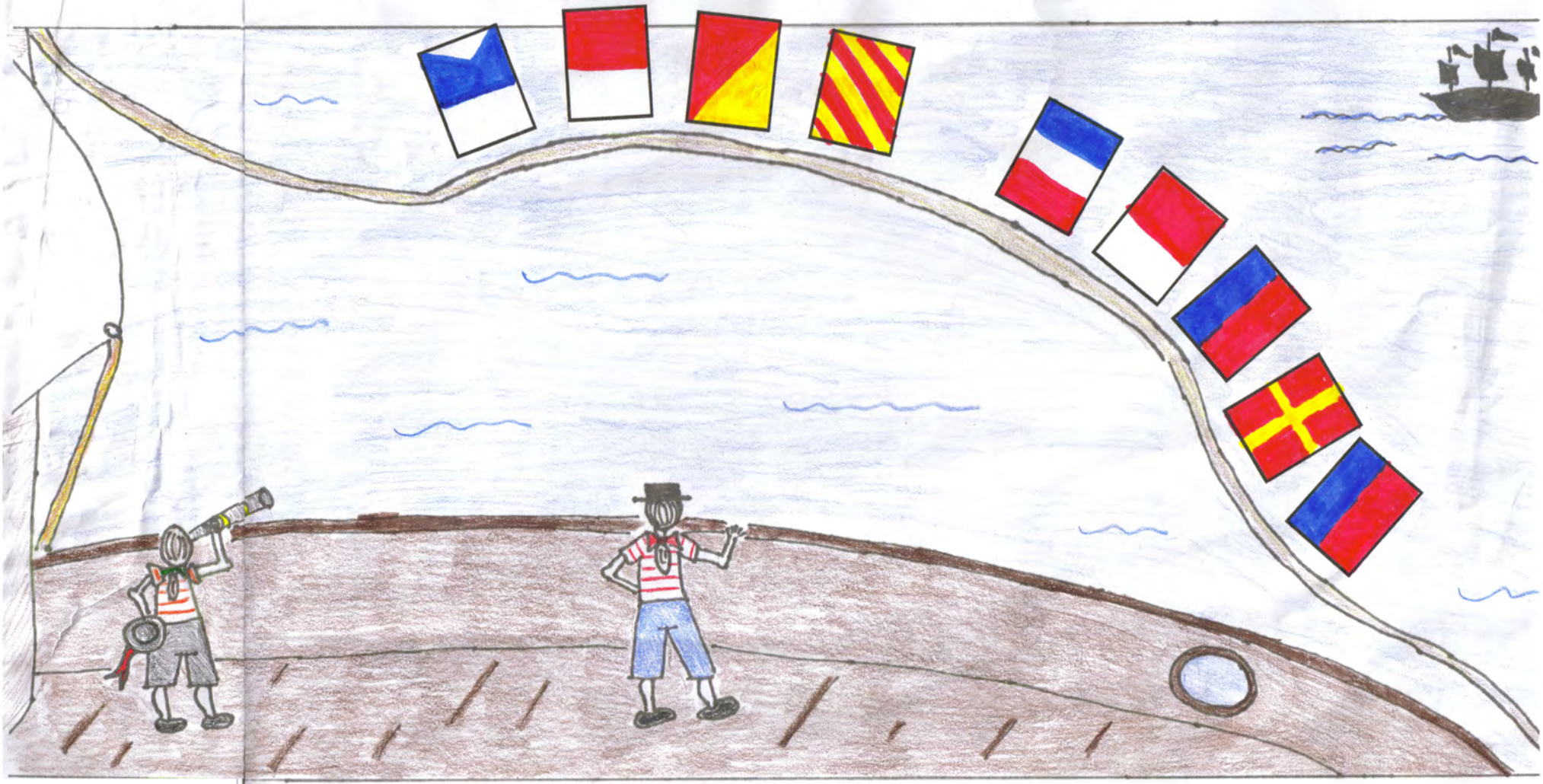


Message: Ahoy There!

Can you help these sailors send a message? Name:



Can youhelp these sailors send a message? Name: **ANSWER KEY**



Message: Ahoy There!

Writing a Friendly Letter

After the completion of the program, Ships to the Sea, writing a friendly letter is a great way to reflect on the experience and tell us (the staff of the U.S. Navy Museum) what they liked best about the program.

Quotes from previous friendly letters (from the Hat's Off Program):

"…my favorite hat was the helmet." Troy, 2nd grade

"Dear Mrs. Hockensmith, Thank you for sending us Field Trip in a Box. My favorite part was trying on the hats." David, 2nd grade

"Plus I also liked singing Anchor's Aweigh." Leena, 2nd grade

It was fun to make the hats. I put three gold stripes to be commander." Shelby, 2nd grade

We can't wait to hear what your students have to say!

Photos!

We are very interested in your class and their participation in Ships to the Sea! We would appreciate it if you would share any photographs that you take of your students participating in the program. After your students submit the completed photo release form, we will be able to use the photos in future promotion of the program, both in print form and on the web. If you are interested in sending photos, please include either the photograph or a CD of high resolution images. We look forward to seeing your class!

Mrs. Drake's 2nd graders, Redlands, California

U.S. NAVY
MUSEUM

Photo Release Form

By signing this form, I allow the staff at the National Museum of the United States Navy to use any photo of my child taken during his/her participation in _____ (name of program) in _____ (name of teacher) ____ grade class. Uses will include, but are not limited to, advertisements in print and on the internet, for promotion of the Field Trip in a Box series.

Name of child:_____

Name of Parent/Guardian (please print):_____

Signature of Parent/Guardian:_____

date:_____

National Museum of the United States Navy
805 Kidder Breese St. SE
Washington Navy Yard
Washington, D.C. 20374
www.history.navy.mil

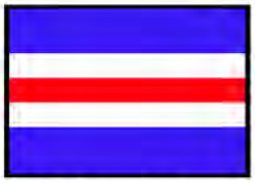
Supplemental Materials: Signal Flags

What do those flags mean? When flown alone, each flag gives an important message! The international meaning is in parentheses.

A: I have a diver down; keep well clear at slow speed.
B: I am taking in, discharging, or carrying dangerous cargo.
C: "Yes" or "affirmative".
D: I am maneuvering with difficulty; keep clear.
E: I am directing my course to starboard.
F: I am disabled; communicate with me.
On aircraft carriers: Flight Operations underway
G: I require a pilot.
H: I have a pilot on board.
I: Coming alongside. (I am directing my course to port.)
J: I am on fire and have dangerous cargo; keep clear.
K: I wish to communicate with you.
L: You should stop your vessel immediately.
M: My vessel is stopped; making no way.
N: No or negative.
O: Man overboard.
P: All personnel return to ship; proceeding to sea (Inport).
Q: Boat recall; all boats return to ship. (Ship meets health regs; request clearance into port.)
R: Preparing to replenish (At sea). Ready duty ship (Inport). (None.)
S: Conducting flag hoist drill. (Moving astern.)
T: Do not pass ahead of me. (Keep clear; engaged in trawling.)
U: You are running into danger.
V: I require assistance.
W: I require medical assistance.
X: Stop carrying out your intentions and watch for my signals.
Y: Ship has visual communications duty. (I am dragging anchor.)
Z: I require a tug.

Alpha

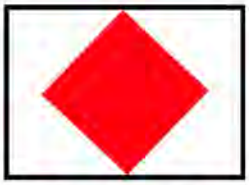
Bravo



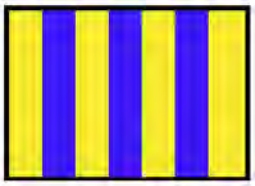
Charlie

Delta

Echo



Foxtrot

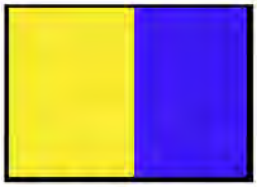


Golf

Hotel

India

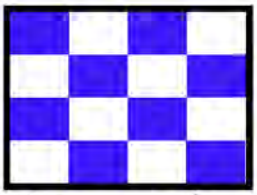
Juliet



Kilo

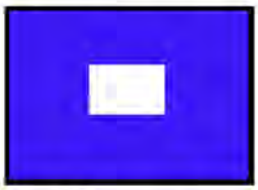
Lima

Mike

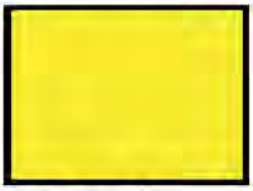


November

Oscar



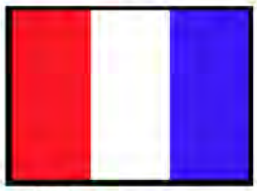
Papa



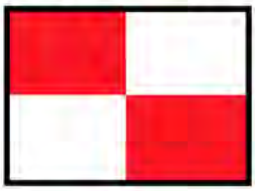
Quebec

Romeo

Sierra

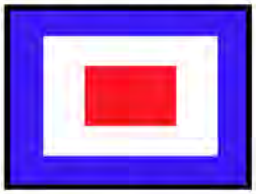


Tango

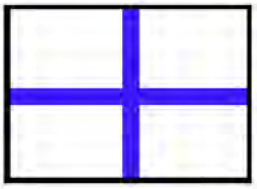


Uniform

Victor



Whiskey

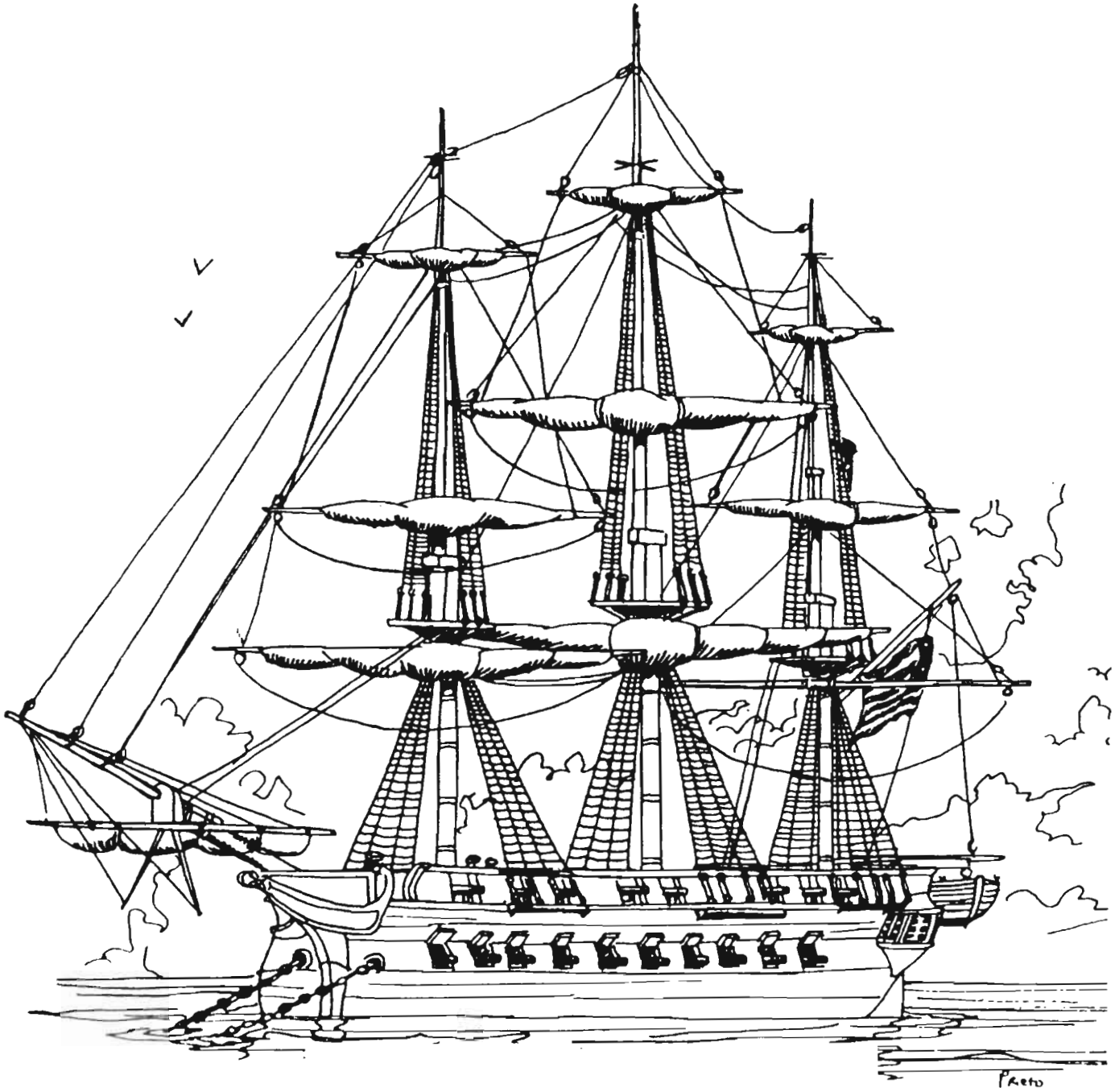


X-Ray

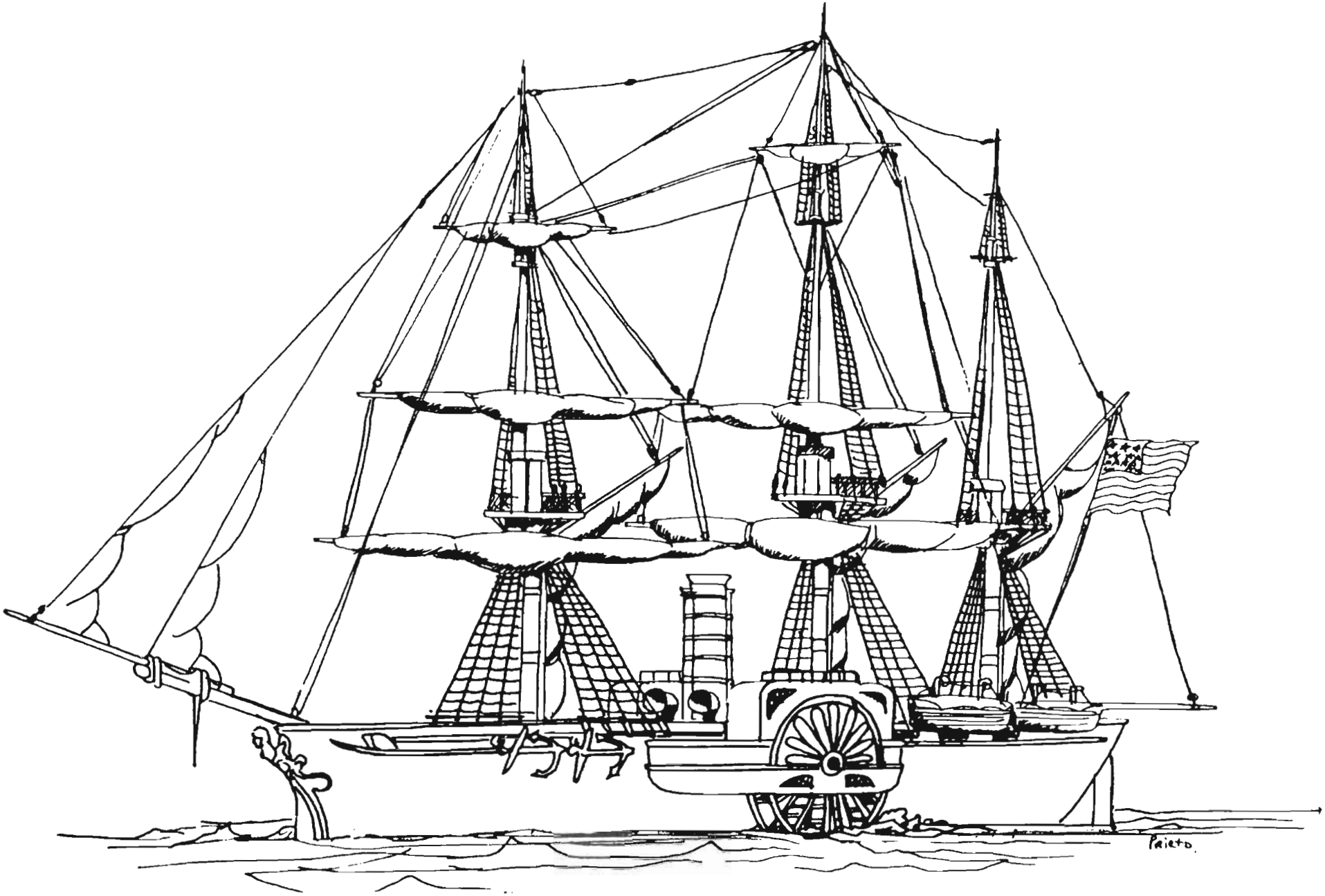
Yankee

Zulu

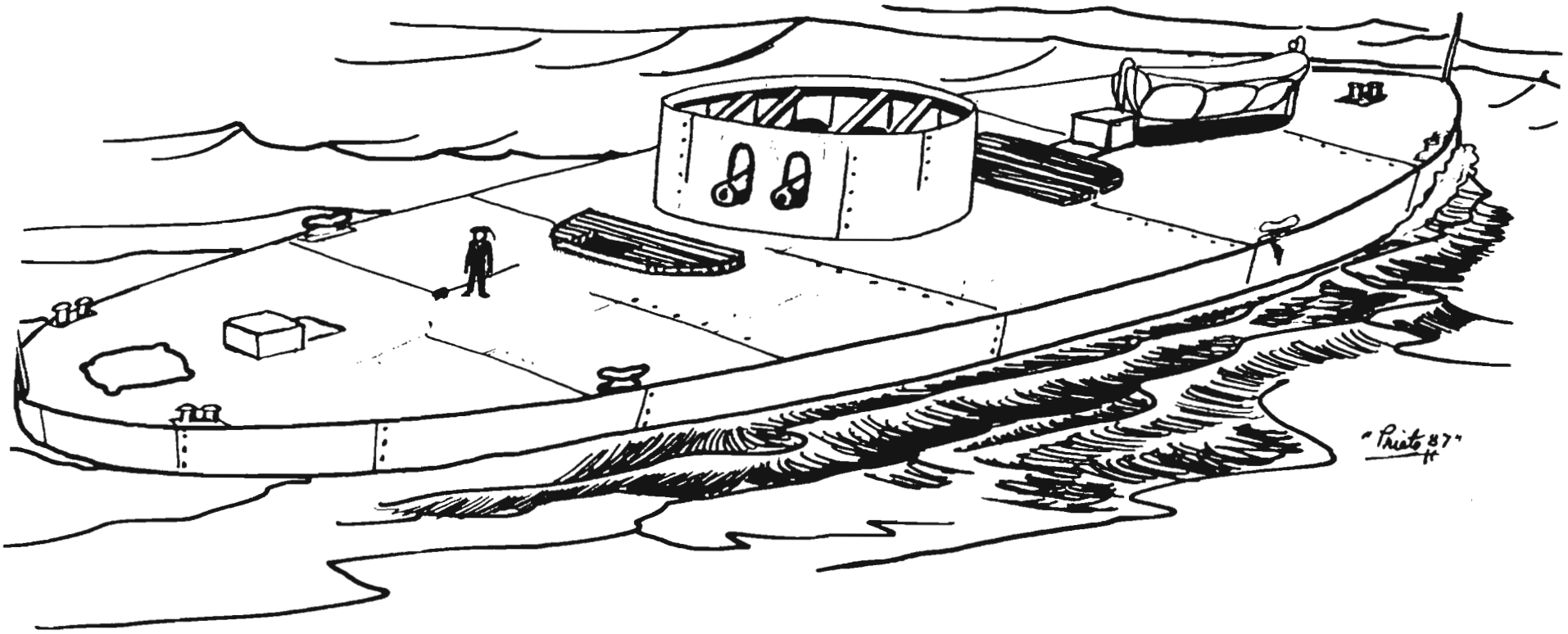
Signal Flag Reference Sheet



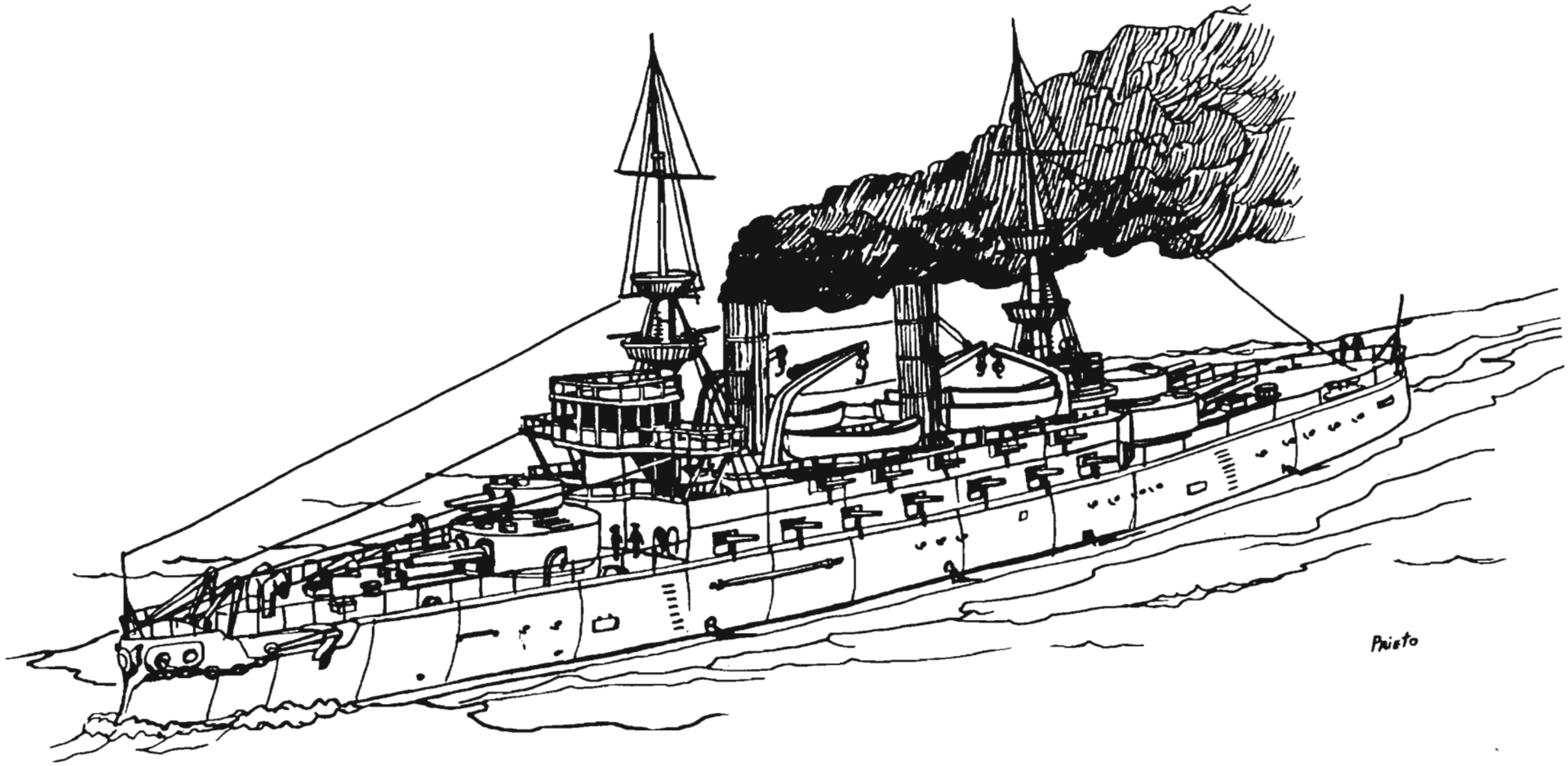
FRIGATE - 1800



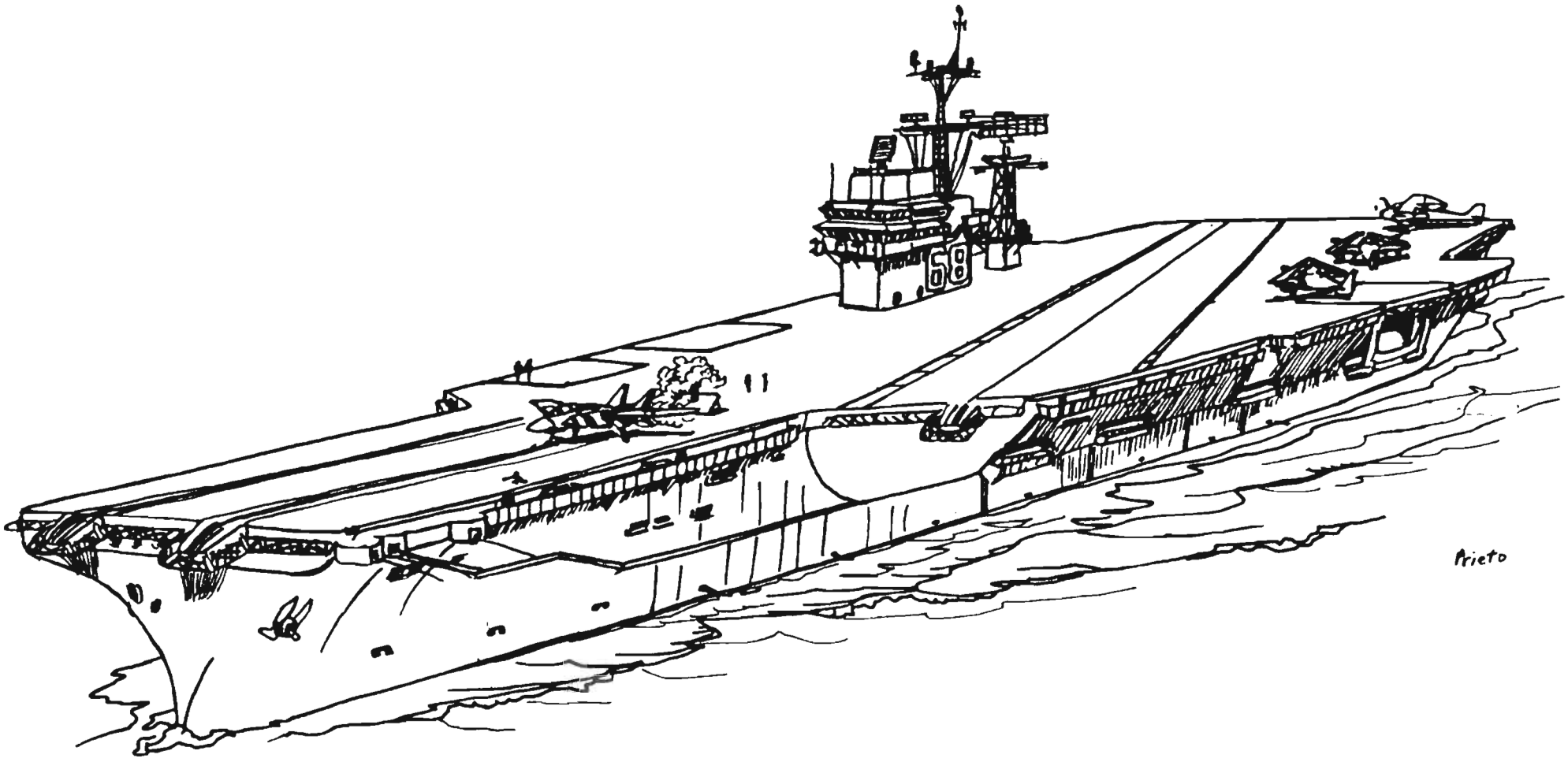
SIDEWHEEL STEAMER - 1854



MONITOR – 1862



BATTLESHIP – 1899



AIRCRAFT CARRIER – 1960

Ships to the Sea National Standards of Learning

Anchors Aweigh:

Fine Arts NA-M. K.-4.9 Understanding Music in Relation to History and Culture

Students identify various uses of music in their daily experiences and describe characteristics that make certain music for each.

Does This Job Belong in the Navy?

Civics NSS-C.K-4.5 Roles of the Citizen

What is the importance of political leadership and public service?

Social Sciences NSS-USH.K-4.2 The History of Students' Own State or Region

Understands the people, events, problems, and ideas that were significant in creating the history of their state

Ships to the Sea

Science NS.K-4.2 Physical Science

- Properties of objects and materials
- Position and motion of objects

Science NS.K-4.5 Science and Technology

- Abilities of technological design
- Understanding about science and technology
- Abilities to distinguish between natural objects and objects made by humans

Economics NSS-EC.K-4.5 Gain from Trade

- People voluntarily exchange goods and services because they expect to be better off after the exchange

Civics NSS-C.K-4.4 Other Nations and World Affairs

- How do nations interact with one another?

(5th grade) **World History** NSS-WH.5-12.6 ERA 6: The Emergence of the First Global Age, 1450-1770

- how the transoceanic interlinking of all major regions of the world from 1450 to 1600 led to global transformations

(5th grade) **World History** NSS-WH.5-12.7 ERA 7: An Age of Revolutions, 1750-1914

- the causes and consequences of the agricultural and industrial revolutions, 1700-1850.
- patterns of global change in the era of Western military and economic domination, 1850-1914.

Signal Flags

Language Arts NL-ENG.K-12.4 Communication Skills

Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.

Technology NT.K-12.4 Technology Communication Tools

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences

Writing a friendly letter

Language Arts NL-ENG.K-12.5 Communication Strategies

Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

Ships to the Sea Program Survey

Teacher's Name: _____ Grade Level: _____

Name of School: _____ Location:_____

Number of students participating in program: _____

1. Which of the included activities did you participate? (Circle all that apply)

   All Activities Anchors Aweigh Does this Hat Belong in the Navy?

   Ships to the Sea Signal Flags Writing a Friendly Letter

2. How long did it take to complete the program?

   One Afternoon One School Day Multiple Afternoons Multiple Full Days

   Other_____

3. How did you hear about the program?

   _____

   _____

4. Were the instructions clear and easy to follow? Y N why or why not?

   _____

   _____

5. Were the activities appropriate to your grade level? Y N why or why not?

   _____

   _____

6. Would you change anything about the program? Y N If yes, please explain:

   _____

   _____

7. Would you recommend this program to your colleagues? Why or why not?

   _____

   _____

8. Additional Comments:

   _____

   _____

   _____

Thank you for your participation and feedback!

Ships to the Sea Return Information

When you receive Ships to the Sea you will find the following in your kit:

- Teacher's Instruction Binder
- Photo flash cards (activity 2)
- Photos of ships (activity 3)
- CD of *Anchors Aweigh*
- Signal Flags (5x7)
- Signal Flag Memory Decks
- Brown ship hulls
- Sponges
- Ship decks
- Coffee stirrers
- Example of ship

All materials except for the materials to make frigates must be returned within 2 weeks of the completion of the program. Please return to:

Education and Public Programs Department
Attn: Laura Hockensmith
U.S. Navy Museum
805 Kidder Breese St. SE
Washington, D.C. 20374

Ships to the Sea Return Information