

WELCOME TO PUSHES AND PULLS DOCKSIDE DAY PROGRAMS

Come aboard one of our historic tall ships to explore some of the properties of physics with your 2nd grade class! Students will have the opportunity to participate in four activities that demonstrate the California Physical Science Standards as they relate to pushes and pulls (forces and movement).

Have a great field experience!

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RREQUIRED FORMS

1. Acknowledgement of Risk and Waiver
2. Crew List – Pushes and Pulls



A. ADMINISTRATIVE CHECKLIST

Immediately upon receiving this package...

- Carefully review the Teacher Preparation Package
- Arrange your transportation

Two months prior to your trip...

- Confirm student and adult numbers with the Ocean Institute
- Arrange for safety officers—we require a minimum of 4 adults (including the teacher) and a maximum of 8 adults (including the teacher)

One month prior to your trip...

- Assign students to crews
- Copy and distribute Acknowledgement of Risk and Waiver to each student and adult safety officer

Two weeks prior to your trip...

- Mail program payment to the Ocean Institute—full payment must be received a minimum of 10 days before your program
- Collect Acknowledgement of Risk and Waiver from each student
- Contact parents to remind them to sign and return the Acknowledgement of Risk and Waiver
- Fill out and sign the Acknowledgement of Risk and Waiver for yourself

One week prior to your trip...

- Review behavioral expectations with students
- Discuss Things to Bring list with students
- Contact the Ocean Institute with any last minute questions or changes

24 hours to go!!!...

- If inclement weather is expected, contact the Ocean Institute for status of the program
- Prepare nametags for students and adults

When you arrive for your program...

- Unload the bus in front of the Ocean Education Center's Student Services Building
- Check in at the Student Services building with a final head count
- If necessary, students may use the restroom facilities. Please limit use to 7 girls and 7 boys at a time.



B. DESCRIPTION OF ACTIVITIES

Pushes and Pulls

Students have the opportunity to see and experience some of the ways sailors use simple machines to apply pushes and pulls to the daily workings on an historic tall ship! They will each have the chance to participate in the following activities:

- **Hoisting a Cargo Barrel**

By working together as a crew, students maneuver a barrel to a desired location and understand how a block and tackle (pulley) makes work easier.

- **Raising Sail**

Students work together as a crew, under the leadership of their mate, to raise and lower the sail to different positions using a simple machine (block and tackle).

- **Halyard Races**

Students apply different levels of force (pulls) while racing to raise flags on the halyards.

- **Barrel Push**

Students are challenged to apply force (push) in moving barrels from one place to another using an inclined plain.

C. LINKS TO 2nd GRADE CALIFORNIA SCIENCE CONTENT STANDARDS

- 1.a. Students know the position of an object can be described by locating it in relation to another object or to the background.
- 1.b. Students know an object's motion can be described by recording the change in position of the object over time.
- 1.c. Students know the way to change how something is moving is by giving it a push or a pull. The size of the change is related to the strength, or the amount of force, of the push or pull.
- 1.d. Students know tools and machines are used to apply pushes and pulls (forces) to make things move.

D. ADMINISTRATIVE PREPARATION FOR DOCKSIDE DAY PROGRAMS

ADMINISTRATIVE CONTACT

For questions regarding programs, please contact:

Karin Wyman, Maritime Director
Telephone Number: (949) 496-2274, extension 218
E-mail: kwyman@ocean-institute.org

INTRODUCTION

Thank you for choosing the Ocean Institute as your field trip destination. We appreciate the time and effort it takes to prepare your students for their program, and we will do everything we can to make their experience as rewarding as possible.

Please make sure that all of the participating teachers have a copy of these teacher materials. The information contained here can help you find answers to your questions, develop your preparation timeline, and prepare both your students and safety officers. This packet also contains directions to the Ocean Institute as well as contact phone numbers—please call us at any time with any questions you may have about your field trip.

TEACHER INFORMATION: BEFORE YOUR PROGRAM

You can do several things before you arrive to help make your program run as smoothly as possible:

- Review the program goals, station activities, and expected behaviors with the students before you arrive. Complete the classroom activities with your students, and make sure they have a clear understanding of the educational concepts they will explore during the program
- Spend some time choosing and preparing your safety officers. Review the program goals, station activities, and expected student behaviors with them before you arrive. Make sure that they have a clear understanding of their role as a safety officer.
- Divide the students into four crews, and provide each student with a nametag.
- Have a signed Acknowledgement of Risk and Waiver for each student and adult before boarding the bus.
- Notify the Ocean Institute staff of students with any special health or behavioral considerations.
- Send program payment to the Ocean Institute at least 10 days before the scheduled date of your field trip. Please mail a single check for the total amount of the program minus the deposit you have already paid. **Please make checks payable to Ocean Institute.**

TEACHER INFORMATION: DURING YOUR PROGRAM

Ocean Institute instructors are all well trained to work with students of different ages and abilities. Both you and the safety officers can help the instructors monitor student behavior and safety. There are several things that you can do to help facilitate the smooth running of your educational program:

- Work cooperatively with Ocean Institute instructors and your safety officers to manage students during the program
- Work cooperatively with Ocean Institute instructors and your safety officers to solve student and safety officer management problems
- Report any problems to the Ocean Institute staff as soon as possible

RECRUITMENT OF SAFETY OFFICERS

At least four adults (including at least one teacher or leader) are to accompany the participants on their voyage. The safety officers will be responsible for keeping an eye out for safety problems

The maximum number of safety officers for *Pushes and Pulls* is 8 adults (including teachers).

The safety officers need to know that they will be required to participate in all aspects of the program and must remain with their assigned crew for the entire voyage. Safety officers will not be permitted to leave the ship or crew to make telephone calls, smoke, etc.

We do not allow cell phones, pagers, or smoking onboard our vessels.

PAYMENT

Payment must be received 10 days before your program date. Please mail a **single check** for the total amount of the program minus the deposit you have already paid. Please make checks payable to **Ocean Institute**.

FINAL COUNT

Call the Ocean Institute two days before your program if the number of students or adults changes. When you arrive at the Ocean Institute for your program, you must have an accurate count of total students and adults

participating in the program. If the number of participants listed on your Confirmation Form is not accurate, call the Ocean Institute immediately.

STUDENT AID

The Ocean Institute maintains a student aid fund for students who are unable to obtain sufficient funding to attend the program. Please call (949) 496-2274, extension 0 for more information and to receive the necessary forms for student aid.

TRANSPORTATION

Student transportation should be arranged well in advance. **It is important that you arrive on time.** Please schedule yourself to arrive at least 15 minutes before your scheduled program start time. If you arrive late, your program time may need to be shortened.

Buses can unload in front of the Student Services building. After the students have unloaded, the drivers will be notified of where to park the buses.

NAMETAGS

Each student needs to wear a sturdy nametag throughout the field trip. The tag should have only the student's name and the crew to which he/she belongs.

For the student's safety, the nametag should attach to the clothing and not hang around the student's neck, as the tag could become entangled with a line the student is using.

LUNCH

You may eat lunch before or after your program at the tables and grassy areas around Baby Beach adjacent to the Ocean Institute. **PLEASE REMIND THE STUDENTS THAT THEY MUST NOT FEED THE GULLS OR PIGEONS.**

FORMS

Acknowledgement of Risk and Waiver

Each student must have this form signed by a parent or guardian to participate in the program. Please make sure that you have one signed form for each student, safety officer, and teacher when you check in with the Ocean Institute staff. **Participants without a signed form will not be permitted to participate.**

Crew Lists

Please divide your class into four groups and complete the *Pushes and Pulls* crew list form.

STUDENT BEHAVIORAL EXPECTATIONS

Please take time to discuss the academic nature of their field experience with your students before arriving at the Ocean Institute. When at the Ocean Institute, we expect that your students will follow the same behavioral rules you have in your classroom.

STUDENT PREPARATION

The more familiar the students are with program concepts and content before they arrive, the more they will benefit from and enjoy their experience.

APPROPRIATE CLOTHING / THINGS TO BRING

All participants need to wear clothing that is safe (long pants and closed-toed shoes with good traction). Clothing should be comfortable for work and old enough that parents will not mind if the student gets dirty or wet. **SHORTS, DRESSES, AND SANDALS WILL NOT ADEQUATELY PROTECT THE STUDENTS AND WILL NOT BE ALLOWED DURING THE PROGRAM.** If inclement weather is predicted, make sure the students have proper rain gear (waterproof poncho with hood, boots). **Dockside day programs will continue rain or shine.**

CHAMBERS GIFT AND BOOK STORE

The Chambers Gift and Book Store is a non-profit museum store and is open daily from 9:00 AM to 5:00 PM. The revenue is directed toward lowering tuition for schools that participate in Ocean Institute programs.

You and your class are encouraged to visit the store. To help accommodate all of the schools that would like to shop each day, please have one teacher from your school check-in with a store staff member before your students begin shopping.

There will be a limit on the number of students allowed to shop at one time as well as a three-minute time limit for each student. This is to ensure that all of your students will have time to shop. Please have two or three adults in the store to help supervise your students. One adult should stand at the door to monitor the students waiting in line. The other two adults should supervise the shoppers and remind them that they must make their selections quickly. Please ask the students to leave food, drinks, and backpacks outside with a friend while they are shopping, and **remind your students that sales tax will be added to their items.**

DIRECTIONS TO THE OCEAN INSTITUTE

The address of Ocean Institute:
24200 Dana Point Harbor Drive
Dana Point, CA 92629
(949) 496-2274

Directions from Los Angeles:

- Travel south on Interstate 5
- Exit on the Pacific Coast Highway Exit
- Stay in the right lane of the exit ramp and go north on P.C.H.
- Turn left onto Dana Point Harbor Drive
- The road ends in the Ocean Institute parking lot

Directions from San Diego:

- Travel north on Interstate 5
- Exit on the Beach Cities Exit
- Stay in the left lane of the ramp and go north on P.C.H.
- Turn left onto Dana Point Harbor Drive
- The road ends in the Ocean Institute parking lot

E. STUDENT PREPARATION FOR THE DOCKSIDE DAY PROGRAMS

Preparing your students for this program is extremely important. We want the students to have fun as they learn, but they must understand that their tasks are not always easy. They need to know that they will be expected to work hard, work together, and listen to and follow directions. The better the students are prepared, the more they—and you—will gain from the program.

ACADEMIC PREPARATION

At minimum, students should have been introduced to the physical science concepts of movement and force.

CREWS FOR PUSHES AND PULLS

Divide your class/group into four crews: Starboard, Port, Forward, and Aft. These crews are named after the right, left, front, and back areas of the ship.

SAFETY CONSIDERATIONS

We will teach you all you need to know upon your arrival. All participants must wear rubber-soled shoes and long pants. Students will be told to stay out of the rigging, do as they are told, stay away from the rails, do not

run, and stay onboard the ship. Most dangers aboard will become readily apparent once the program has begun. For anyone who does not see them, the staff will enthusiastically point them out.

Should an emergency arise, please remain calm. All of our staff members are certified in First Aid and CPR and have been trained to handle emergencies. Additionally, the ship has excellent communication equipment and help is only a few minutes away.

F. RESOURCE MATERIALS

PROGRAM BACKGROUND

Students have the opportunity to see and experience some of the ways sailors use simple machines to apply pushes and pulls to the daily workings on an historic tall ship! They will have the chance to hoist cargo and raise a sail using a block and tackle system to make their work easier. They will race each other to raise flags on the halyards, and move cargo by order of the captain using an inclined plane.

HISTORY OF THE BRIG *PILGRIM* AND THE SCHOONER *SPIRIT OF DANA POINT*

It is important to note that both vessels are used for our maritime programs and each vessel lends a unique perspective to the sailors. *Spirit of Dana Point* and *Pilgrim* are rigged differently and, because of this, they are used differently.

HISTORY OF THE BRIG *PILGRIM*

"One by one the few remaining sailing ships are disappearing. They drop away, and are heard of no more. With them goes much that is worthy and incalculable. It passes like a high squall sinking beyond the horizon, wind and sea, motion and color, romance and inspiration, a whole range of human endeavor, all vanishing to leeward with the tall ships in their midst. . . The sailing ship stood for a means whereby men were brought to their fullest development. She stood for a profession in which only merit could endure. She stood for things the world cannot afford to lose."

Master Mariner, Lincoln Colcord

Pilgrim is a full size replica of the hide brig immortalized by Richard Henry Dana, Jr. in his American seafaring classic novel Two Years Before the Mast. Dana said of the *Pilgrim*, "The vessel I am going on is small, but strong and a remarkably fast sailor having been built for the smuggling trade."

The original *Pilgrim* was built in 1825 at a cost of \$50,000. Her length was a mere 90 feet compared to the average 110 feet for other vessels of the same class. The purpose of its 1834 voyage was to participate in the California cattle hide trade for her Boston owners, Bryant and Sturgis. It is not known in what other trades *Pilgrim* engaged after her voyage to Alta California, Mexico. However, it is recorded that she was lost in a fire at sea in 1856. By this time, the hide trade had also suffered its demise.

Length of Deck:	98'
Beam:	24.6'
Mainmast Height:	98'
Net Tonnage:	64
Built:	1945, Denmark

HISTORY OF THE SCHOONER *SPIRIT OF DANA POINT*

Spirit of Dana Point is a full size replica of a Baltimore Clipper schooner once used as a patrol vessel against smugglers, pirates and the British navy. The Baltimore Clipper was a hull design that developed over several hundred years of Dutch and English history and culminated around the 1760's in and around the waters of Virginia. The marriage of a bow-shaped hull, a heart-shaped midsection, short keel, and a raking stern, with the large schooner-style fore and aft sail rig and one or two square top-sails, provided for one of the fastest ships of the era.

Due to the narrowness of the hull, cargo space was limited, yet as a Letter of Marque, naval support craft, fleet supply ship, coast-guard cutter, or exploratory vessel, the Baltimore Clipper was prime. The first vessels ordered by George Washington at the outbreak of hostilities with England were clipper schooners, and privateer schooners of this design were easily found and commissioned into the Continental Navy when extra vessels were needed.

Between the Revolutionary War and the War of 1812, there were a number of small conflicts that required U.S. naval presence. These conflicts centered around the suppression of pirates along the Gulf of Mexico, the removal of the threat on merchant shipping from the Barbary pirates in the West Indies, and the protection of U.S. merchants from the French and British, who were unreliable allies at best. In all of these conflicts, Baltimore schooners were employed for service to supplement the few frigates capable for action.

After the conflicts were resolved, the navy typically sold the schooners to merchants where they carried nearly 9/10th of all American foreign borne trade. Most trade was with China and the Indies for products such as spices, rare cloths, slaves, and opium. These exotic, and sometimes illegal goods, were suited for the small cargo capacity of the clipper schooner, since they resulted in a high payoff. When it was time for the US government to enforce laws against the slave and opium trade, it was the Baltimore Clippers that were employed by the Revenue Service, since it took a fast ship to catch a fast ship.

Although the Baltimore Clipper schooner design was replaced by larger clipper ships, brigs, and barques for the larger cargo capacities, the navy, smugglers, and coast guard retained the famous design well into the 19th century.

Length Overall:	118'
Beam:	24'
Draft:	9'6"
Design by:	Howard Chapelle
Built by:	Dennis Holland, Costa Mesa, CA
Launched:	Nov. 19 th , 1983

