INTRO. TO SAILING

AGENDA

Saturday, March 3, 2007
Shorebird Park Nature Center
9:00 A.M. to 2:30 P.M.

9:00 Welcome / Coffee

9:10 Discussion of the days events. Pass out materials
Discussion of trip, Discussion of trip planning and preparation for
school groups.

10:00 Navigation and work with Cal Sailing Club Lido identifying
boat parts. Eat Lunch

11:30 Gather personal gear and board the Pegasus on K dock

2:00 Nature Center: changes or suggestions Overview of
packet materials.

Docents: BRING YOUR CALENDARS! Sign up for Boat Trips

2:00 Close
Program Overview.

The SAILING trip will support student study of geography, social studies, history, and marine / environmental science curricula via a direct, hands-on experience of sailing. Through hands-on activity and simple observation, students will gain an affinity and understanding of the forces of nature that determine how a sailing vessel dances through the wind and over the waves, currents, and tides. The class will be split into two groups, one aboard and one ashore, switching after 2 hours.

While aboard, some will steer the 50 foot vessel PEGASUS, others will stand as lookout, observe major environmental conditions and geographical features and log them, all students move around the deck and see below deck, and see how to use the hand-held compass and marine radio.

The shore group will be able to handle a LIDO on a trailer, it's a small sailing vessel on loan from the Cal Sailing Club. Here they will handle the lines, using the sailing terms reviewing the parts of the boat and how it works. The land school will be observing the PEGASUS as it sets sail and docks. Small groups will be used to impart valuable teamwork skills.

GOALS AND OBJECTIVES
Pre-trip Goals and Activities:

1. Introduce boating vocabulary and review boat diagrams.
   Change your classroom into a boat, or chalk out one on the playground. Have the kids label the boat and act out a sailing trip.

2. Discuss boat safety. Describe the harness, and life jacket and proper behavior. Provide an understanding of the importance of safety while aboard a boat, especially the necessity of teamwork.

3. Discuss sailing history. Increase knowledge of traditional sailing skills and wooden boat history in the United States and S.F. Bay.

4. Familiarize students with the stations that they will keep on the PEGASUS and namely sitting, steering, navigation, look out and observation, sail handling, knots, log keeping, and safe crew movement around the boat (forward and below decks); and the parts of the boat (sails, coordinates, etc).
5. Enlarge awareness of the links between home and land based activities and marine environmental pollution (by observing from the boat the location of storm water outlets, observing flotsam at tidal current boundaries, cataloguing jetsam at foreshore) and clean boating (by displaying PEGASUS' environmental performance upgrade as implemented).

6. Enhance physical skills by tying a basic knot; and technical skills (by using a marine radio for weather and scheduled boat to shore and/or boat to boat communications).

On Land Goals and Objectives:

1. Enhance geographical abilities to use maps by employing hand-held compasses and to plot the location of the vessel and Bay Area landmarks.

2. Improve comprehension of social studies by observing what people do on the bay with binoculars or not- look for various types of vessels (container ships, tankers, tugs, navy, barges, fishing boats, recreational boaters etc.), and major businesses and land uses etc. (freeways, university, commerce, financial district) on the foreshore.

3. Increase student knowledge of marine science in relation to physical phenomena such as: tidal changes (what tide is it; is it coming in or going out; why?); currents and boundaries (water cycle from Sierras to Golden Gate); winds and weather (Pacific High, fog cycle and Coriolis force); and the relationship of the above to sailing the vessel (points of sail relative to the wind, waves, currents).

Post-trip Goals and Activities:

- Recognize pollution impact on schoolyard and local surroundings.
- Identify storm drains in their communities.
- Local creeks: what goes into them and where do they go?
AGREEMENT & RELEASE OF LIABILITY

I, ___________________________ HEREBY ACKNOWLEDGE that I have voluntarily applied to allow my child ___________________________ to participate in THE BERKELEY MARINA BOAT EXPERIENCE PROGRAM.

I AM AWARE THAT THE BERKELEY MARINA BOAT EXPERIENCE PROGRAM IS A HAZARDOUS ACTIVITY AND I AM VOLUNTARILY PARTICIPATING IN THIS ACTIVITY WITH KNOWLEDGE OF THE DANGER INVOLVED AND HEREBY AGREE TO ACCEPT ANY AND ALL RISKS OF INJURY OR DEATH.

PLEASE INITIAL __________.

AS LAWFUL CONSIDERATION for being permitted by THE CITY OF BERKELEY or one of its affiliated organizations to participate in this activity and use their facilities, I hereby agree that I, my heirs, distributees, guardians, legal representatives and assigns will not make a claim against, sue, attach the property of, or prosecute THE CITY OF BERKELEY and or one of its affiliated organizations, for injury or damage resulting from the negligence or other acts, howsoever caused, by any employee, agent or contractor of the PEGASUS, the DEREK M. BAYLIS or its affiliates, as a result of my child’s participation in THE BERKELEY MARINA BOAT EXPERIENCE PROGRAM activity. In addition, I hereby release and discharge THE CITY OF BERKELEY and its affiliated organizations, from all actions, claims or demands I, my heirs, distributees, guardians, legal representatives, or assigns now have or may hereafter have for injury or damage resulting from my child’s participation in THE BERKELEY MARINA BOAT EXPERIENCE PROGRAM activity.

I HAVE CAREFULLY READ THIS AGREEMENT AND FULLY UNDERSTAND ITS CONTENTS. I AM AWARE THAT THIS IS A RELEASE OF LIABILITY AND A CONTRACT BETWEEN MYSELF AND THE CITY OF BERKELEY AND/OR ITS AFFILIATE ORGANIZATIONS AND SIGN IT OF MY OWN FREE WILL.

DATED: ____________

WITNESS ____________ SIGNATURE ________________________

DATE ____________
Assumption of Risk and Liability Release Agreement (Minor)

As a prerequisite for the Participant (a student or other minor of whom the undersigned is the parent or guardian) being permitted to be aboard the vessel PEGASUS (whether underway or not), we agree to the following assumption of risk and release of liability. In this agreement "Pegasus Project" means its affiliated partner organizations, the vessel PEGASUS, and all persons acting as officers or crew of the PEGASUS. In entering into this agreement, we do so on behalf of ourselves and our heirs, estates, personal representatives, and assignees.

1. Acknowledgment and Assumption of Risk.

We are aware that the Participant's being aboard the PEGASUS -- whether as a crew member, visitor, participant in a field trip, business invitee, or passenger -- involves activities on a boat that are hazardous in nature. The Participant is voluntarily boarding the PEGASUS with our full knowledge of the risks and dangers involved, and we agree to accept any and all such risks and dangers.

2. Physical Condition.

We confirm that the Participant does not have any medical, physical, or psychological condition that will expose the Participant or others on the PEGASUS to risk of illness or injury. We understand that the Pegasus Project will not make any special arrangements for any such conditions that the Participant may have.

3. Release and Agreement Not to Sue.

I, __________________________, hereby give my consent for my child __________________________ in the event of injury or illness while aboard the PEGASUS to receive first aid treatment including cardiopulmonary resuscitation. We voluntarily release and discharge the Pegasus Project, its agents, and its insurers from any and all liabilities, claims, and causes of action that arise out of or in connection with the Participant's being aboard the PEGASUS, including but not limited to: (a) those for illness, injury, death, and property damage; (b) those resulting in whole or in part from the negligent (including solely negligent) acts or omissions of the Pegasus Project or from any defect or unseaworthiness of the PEGASUS. We further agree not to sue or assert any claim against the Pegasus Project for any illness, injury, death, or property damage that arises out of or in connection with the Participant's being aboard the PEGASUS. We also agree to allow the Pegasus Project and its partners to gather and to publish visual images of my child from video or cameras for use in public education about the Pegasus Project and its activities as well as any post-voyage artwork or classwork that may be provided to the Pegasus Project or its partners.

4. Legal Fees.

Should any party sue to enforce this agreement, or to recover for breach of any provision of this agreement, the successful party in that litigation shall be entitled to all attorney fees and costs of the litigation, whether otherwise awardable or not.

We have carefully read this agreement, understand its contents, and agree to be bound by its terms.

Dated: __________________________, 200__
Signature of Participant:
Print Name of Participant:

Dated: __________________________, 200__
Signature of Parent or Guardian:
Print Name of Parent or Guardian:

Dated: __________________________, 200__
Signature of Parent or Guardian:
Print Name of Parent or Guardian:
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SIGNATURE ______________________________________ DATED: ________________

WITNESS ______________________________________ DATE ________________
PEGASUS PROJECT

ASSUMPTION OF RISK AND LIABILITY RELEASE AGREEMENT (Adult)

As a prerequisite for being permitted to be aboard the vessel PEGASUS (whether underway or not), I agree to the following assumption of risk and release of liability. In this agreement "Pegasus Project" means its affiliated partner organizations, the vessel PEGASUS and all persons acting as officers or crew of the PEGASUS. In entering into this agreement, I do so on behalf of myself and my heirs, estate, personal representatives, and assignees.

1. ACKNOWLEDGMENT AND ASSUMPTION OF RISK.

I am aware that being aboard the PEGASUS -- whether as a crew member, visitor, participant in a field trip, business invitee, or passenger -- involves activities on a boat that are hazardous in nature. I am voluntarily boarding the PEGASUS with full knowledge of the risks and dangers involved, and I agree to accept any and all such risks and dangers.

2. WELCOME ABOARD NOTICE AND SAILING INSTRUCTIONS.

I have read the "Welcome Aboard Notice"Sailing Instructions" for the PEGASUS. I understand its contents, and I agree to abide by it.

3. PHYSICAL CONDITION.

I confirm that I do not have any medical, physical, or psychological condition that will expose me or others on the PEGASUS to risk of illness or injury. I understand that the Pegasus Project will not make any special arrangements for any such conditions that I may have. Furthermore, I agree to notify the Pegasus Project Manager and Training Captain immediately if such a condition should occur. Failure to do so may result in the termination of participation in the project.

4. RELEASE AND AGREEMENT NOT TO SUE.

I, ____________________, hereby give my consent in the event of injury or illness while aboard the PEGASUS to receive first aid treatment including cardiopulmonary resuscitation. I voluntarily release and discharge the Pegasus Project, its agents, and its insurers from any and all liabilities, claims, and causes of action that arise out of or in connection with my being aboard the PEGASUS, including but not limited to: (a) those for illness, injury, death, and property damage; (b) those resulting in whole or in part from the negligent (including solely negligent) acts or omissions of the Pegasus Project or from any defect or unseaworthiness of the PEGASUS. I further agree not to sue or assert any claim against the Pegasus Project for any illness, injury, death, or property damage that arises out of or in connection with my being aboard the PEGASUS. I also agree to allow the Pegasus Project and its partners to gather and to publish visual images of myself from video or cameras for use in public education about the Pegasus Project and its activities.

5. LEGAL FEES.

Should any party sue to enforce this agreement, or to recover for breach of any provision of this agreement, the successful party in that litigation shall be entitled to all attorney fees and costs of the litigation, whether otherwise awardable or not.

6. CONSENT TO SCREENING PROCESS

I agree to complete a youth volunteer screening process, including a fingerprint based record check, as deemed fit by The National Collaboration for Youth.

I have carefully read this agreement, understand its contents and agree to be bound by its terms.

Dated: ___________________, 200__

Signature of Participant: ____________________________________________

Print Name of Participant: ____________________________________________
PROYECTO “PEGASUS”

ACUERDO DE ACEPTACIÓN DE RIESGO Y EXENCIÓN DE RESPONSABILIDAD (Menor)

Como un pre-requisito para que al Participante (un estudiante u otro menor por quien el padre o tutor firma abajo) se le permita estar a bordo del barco PEGASUS (sea que este en movimiento o no), estamos de acuerdo con el siguiente acuerdo de aceptación de riesgo y liberación de cargo de responsabilidad. Este acuerdo “Pegasus Project” significa sus organizaciones afiliadas, el barco PEGASUS, y todas las personas actuando como oficiales o tripulación del PEGASUS. Al entrar en este acuerdo, nos incluimos nosotros, nuestros herederos, estados, representantes personales, y designados.

1. CONOCIMIENTO Y ACEPTACIÓN DE RIESGO.

Estamos conscientes de que el Participante está a bordo de PEGASUS – ya sea como un miembro de la tripulación, visitante, participante en una excursión, invitado de negocios, o pasajero – envuelve actividades en un bote que son peligrosas por naturaleza. El Particpante está a bordo del PEGASUS voluntariamente con nuestro conocimiento completo de los riesgos y peligros envueltos, y aceptamos cualquier y dichos riesgos y peligros.

2. CONDICIONES FÍSICAS.

Nosotros confirmamos que el Participante no tiene ninguna condición física o fisiológica que exponga a un riesgo, enfermedad o daño al Participante u otros en el PEGASUS. Entendemos que el Proyecto “Pegasus” no hará ningún arreglo especial por ninguna de tales condiciones que el Participante pueda tener.

3. LIBERACIÓN DE CARGOS Y ACUERDO PARA NO DEMANDAR.

Por este medio, yo, , doy consentimiento para mi hijo/a , en caso de daño o enfermedad mientras está a bordo del PEGASUS para recibir tratamiento de primeros auxilios incluyendo resusitación cardiopulmonar. Nosotros voluntariamente liberamos y exoneramos al Proyecto Pegasus, sus agentes y sus aseguradoras de cualquier responsabilidad, reclamo, y causa de acción que pueda surgir o en conexión con la estadia del Participante a bordo de PEGASUS, incluyendo pero no limitado a: (a) por enfermedad, daño, muerte, y daño de la propiedad; (b) lo que resulte ya sea completo o en parte por negligencia (incluyendo únicamente negligencia) actos u omisiones del Proyecto “Pegasus” o de cualquier defecto o que Pegasus no pueda navegar. Nosotros también estamos de acuerdo de no demandar o mantener ningún reclamo en contra del Proyecto Pegasus por cualquier enfermedad, daño, muerte, o daño de la propiedad que pueda surgir o en conexión con la estadia del Participante a bordo de PEGASUS. También estamos de acuerdo de permitir al Proyecto Pegasus y sus asociados de colectar y publicar imágenes visuales de mi hijo(a) tomadas en videos o cámaras para uso en la educación pública acerca del Proyecto Pegasus y sus actividades como también cualquier trabajo de arte después del viaje o trabajo en clase que pueda ser provista al Proyecto Pegasus o sus asociados.

4. HONORARIOS LEGALES.

Podría cualquier grupo poner demanda para imponer este acuerdo, o cobrar por incumplimiento de cualquier provisión de este acuerdo, el grupo que tenga éxito en esa litigación tiene el derecho a todos los costos de abogado y costas de litigación, sea que se le otorgue o no.

Hemos leído cuidadosamente este acuerdo, entendemos su contenido, y estamos de acuerdo en cumplir sus términos.

Fecha: ___________________, 200_  
Firma del Participante: _____________________

Escriba el nombre del Participante: _______________________

Fecha: ___________________, 200_  
Firma del Padre o Tutor: _____________________

Escriba el nombre del Padre o Tutor: _______________________

Fecha: ___________________, 200_  
Firma del Padre o Tutor: _____________________

Escriba el nombre del Padre o Tutor: _______________________
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DATED: ____________

WITNESS ____________ SIGNATURE __________________

DATE ____________
PRE-TRIP SURVEY FOR MARINA EXPERIENCE PROGRAMS

Dear Teachers,

Our job, here at the Marina, is to make sure you and your students are going to have the best possible experience while participating in our programs. As you did with the walk, please provide us with the information requested below.

Several days before your scheduled SAIL trip, call either Patty or Denise or leave a message on the machine: 510 981-6720. Answer the questions below. Please be honest in your responses. We realize how busy you all are and know that it is sometimes impossible to cover all of the activities. We need to know what you have had time to do since our boat trip walk. Especially if any interesting issues or observations came up from their walk experience.

1. What additional activities have you done to prepare your students for their BOAT trip? (EXAMPLE: What specific things did you do or talk about? Which topics would you like reinforced? What were their questions or fears?)

2. How many children are under 90lbs? They need to be divided evenly between the two boat trips. How many adults will be helping with the land school? If you have less than 25 kids some could go out sailing? How many?

3. Do you have student who do not speak English or have a disability we need to be aware of?

4. Are there any children that are worried about going on the boat? Are there any parents that need to be reassured, so they sign the waivers? We can call them if you want us to.

5. Are all the waivers filled out and ready to give to us before you board?

6. Are the name lists ready? Remember we will put the names on the life jackets with masking tape and a permanent marker on board. Don’t try to pre make the tags, they blow off.

7. Do you have a snack, to bring on board? Remember to get food that doesn’t have a lot of paper or plastic waste- it blows away. A bag of Ginger snaps help with gastro intestinal awareness.

8. Please remind your students that they need to wear warm, waterproof clothes. We have some jackets and will insist they wear them so they will not be uncomfortable.

Thanks so much for taking a few moments to answer these questions. We look forward to having you and your class participate in the Marina Experience Boat Program!
Sailing Teachers Check List

___Order your bus to arrive here by 9:15-9:30 and pick up 2:00.

___Send home your permission slips and the two waivers (Pegasus and City of Berkeley)

___When your chaperones are confirmed, send them the suggestions for fieldtrip parents and the Job list for land school and sailing.

___(Two days before trip) Send home the letter to the student and the “what to wear”, stress warm clothes, if it is hot they can take them off.

___Day Before- Call the Nature Center with your pre trip survey.(510) 981-6720

PRETRIP ACTIVITIES

___Boat vocabulary- what you’ll hear
___Boat diagrams- what you’ll see, & how a boat works
___Chart of the Bay- Discuss depths and landmarks.
___Discuss what an Estuary is

ON THE DAY OF THE TRIP

___Bring waivers for each student and adult who is sailing
___Bring a snack for first group to eat on board
___Have the class divided into two groups with the under 90 lbs divided evenly.
___HAVE FUN- RELAX ENJOY YOURSELF; If you are, they will be too!

POST TRIP ACTIVITIES

___Make a compass
___Understanding an Estuary better, -Float an egg and density.
___Human impact on the bay- Don’t let your pollution leave home, & Trash time line
TO THE STUDENT:

Your Marina Sailing Experience trip on the sailing vessel PEGASUS and your land school with a Cal Sailing Club Lido Sailboat will be your opportunity to be crew, and sailor for a day. You will study local geography, estuarian education, map and compass, boat terminology, concepts and commands via a direct, hands-on experience of sailing and working on a small boat on land.

Bring with you a scientific attitude. Make your observations and listen to all commands. There is much to do and you need to be aware of what is going on around you at all times. Move carefully around the boats and ask questions when appropriate. Your job is to compare the two sailing vessels and understand how they function.

Remember that the natural world is governed by "cause and effect:" whatever you find, think about why it is there, especially when you see pollution. For example, think about how the street pollution ends up in the bay, and possible polluting factors that come from boats. Think of how weather effects the tides and currents and how boaters have to be aware of the weather all the time. Be prepared to use all of your senses.

Keep in mind that you, the student, are the researcher, crew and sailor on this expedition, so the quality of the experience we have depends on your attentive and careful participation. And, as with all learning, the more you become involved the more you will gain from your Berkeley Marina Boat Experience.

Welcome aboard!
**CHECKLIST OF WHAT TO BRING**

Please give and read this list to the class before they come.

* Wear non-skid shoes with rubber soles or wear rubber boots. It is slippery!

* Dress for the weather; it is often 10 to 20 degrees COOLER on the water. Dress in layers; wear a wool cap or hooded sweatshirt and waterproof windbreaker if possible. If children are not dressed properly they will not rotate up to the bow sprit if there is a chance they may get wet.

* Sun glasses and sunscreen

* Binoculars

* Cameras

**NOTE:** Binoculars and cameras brought on board the boat may get sprayed with saltwater.

**IMPORTANT RULES FOR SAILING ON THE PEGASUS**

1. Adult supervision will be required while students move around the boat.

2. Walk at all times.

3. Keep both feet on the deck and at least one hand hold on the boat or the lifelines at all times.

4. **NO** sitting on the lifelines around the edge of the boat.

5. Keep voices quiet.

6. **NO** throwing anything overboard, even food!

7. No one below decks without an adult present.

8. No one in the engine room.

**SPECIAL NOTE ABOUT LIFE JACKETS**

Students will be required to wear life jackets while on board the vessel. Please let us know how many of your children need small life jackets (children who weigh less than 90 lbs) and how many total (children and adults) are coming the morning of the trip (call 510-644-8623) so we can be prepared.
SAILING PROGRAM SCHEDULE

9:30 CLASS ARRIVES AT THE NATURE CENTER
description of the day

10:00 GROUP A - Walks to K DOCK- SAILS- snacks on board
GROUP B - Land School

11:15 GROUP B - LUNCH- get ready to board Pegasus

11:45 GROUP A – DISEMBARKS Groups Switch-
Group B Sails

1:45 GROUP B – DISEMBARKS- Return to Nature Center
HOW YOU CAN HELP – LAND SCHOOL

We welcome chaperones on the Land School portion of this fieldtrip. While ½ of the class is sailing on the Pegasus, the other ½ will participate in the Land School. Chaperones are not able to go on the sailing portion of this fieldtrip, so they stay with the Land School through both rotations.

ON THE PIER
We will watch the Pegasus depart, identify Bay landmarks and boats on the Bay, handle compasses, and use binoculars.

**Adults can help at this station by** suggesting things in and around the Bay to locate with binoculars or compass. Students especially need help using compasses.

CAL SAILING CLUB – working with a boat on a trailer
We will review boat parts, boating commands, and how a sailboat works. Then we will let the wind fill the sails, and we will move the boat on the trailer to simulate sailing maneuvers.

**Adults can help at this station by** assisting students in responding to sailing commands, and make sure that students are safely handling the boat. Enthusiasm for games and activities is also helpful.

(OVER)

HOW YOU CAN HELP – LAND SCHOOL

1. Please become actively engaged with the students.

2. Please assist students in using the equipment properly, staying focused, and following directions.

3. Please do not have private conversations with other adults when we ask the students not to talk.

4. Please turn your cell phone off during the program.

5. Please do not answer questions directed towards the students.

6. Please limit your questions to ones that the students can understand.

7. If staff needs to pass out or collect items, please help.

8. Please let Nature Center staff know if there are inappropriate behaviors that need to be dealt with.

(OVER)
PEGASUS WELCOME ABOARD NOTICE--SAILING INSTRUCTIONS

Introduction to the Pegasus: The Pegasus is a 45 foot ketch. It has 4 sails rigged. There are 4 cabins (rooms) below with berths (beds) for 7 people; there are 2 heads (toilets)—we use the aft head only, switched to the holding tank. Pegasus was designed by John Alden and Co and built in Maine by Baum Shipyard in 1972 of Philippine mahogany.

Captain: The captain will review these instructions, the day’s course, and assign tasks. The captain is in charge, legally and practically. Call the captain immediately if you see any danger of collision, unusual behavior, strange odors, malfunctioning or broken equipment, loose ropes, shallow depth, any injury, abrupt change in weather or sea conditions.

DO NOT DO SOMETHING IF YOU DO NOT KNOW WHAT YOU ARE DOING. ALWAYS ASK.

Safety First
- Keep one hand for you, one hand for the ship
- Note location of handholds
- Always wear a lifejacket whenever underway
- Stay inside the boat perimeter at all times
- Never, ever, get between the boat and something else

Safety Systems: MOB pole; horseshoe buoy; life sling and hoist; ladders; life jackets; life raft; radios; fire extinguishers; LPG solenoid and vapor alarm; lifelines and gates

Things To be Aware Of:
- Rocking and rolling of boat
- Stowing: Objects left around become missiles underway
- Moving Booms
- Flogging sheets, Sheet handling and rope burn,
- Sheets and lines under tension
- Verbal instructions: For example, “Ready about, helms a lee”
- Heeling, docking, steering,
- Winches
- Tripping, wearing proper shoes
- Anchors and windlass
- Falling overboard
- Sunburn, windburn
- stay dry and warm
Never walk on leeward side of boat; always go via windward side (the high side); wear a harness.

- Children should be alert, listening and use low voices at all times, especially at docking.

**Toilet/Head:**
Use the bathroom on shore before you board. Using the head requires some instruction and demonstration. Please ask first.

**Seasickness**

The night before: Do not eat any greasy foods, pasta, rice, beans are filling, go to bed early, have a filling non-greasy breakfast in the morning. Some people use ginger, bubbly sodas, dry biscuits and acupressure bands. Your teacher will provide a snack for you. If you are sick, ask for help. Don’t wait to feel green. Act early. If you get motion sickness, stay on deck, high up, look at something not moving like the horizon or land in the distance; below, close one eye; stay warm and do not get overtired.

**Drugs and alcohol**
Pegasus is a zero tolerance vessel. No illegal drugs of any kind are permitted aboard at any time.

**Weapons**
No weapons of any kind are allowed on Pegasus. The only knives permitted are those for culinary or sailing purposes.

Please read carefully and sign the legal indemnification form.
Body heat escapes from the top of the head. A weather-proof hat will help keep you dry. Tie it on so it doesn’t get lost overboard. A knit ski cap under the hood of your foul-weather jacket will keep you both warm and dry.

A nylon-fleece jacket with a tall collar will keep you warm and protect your neck from wind and spray. When worn over a turtleneck and sweater, you will be warm enough for most sailing situations.

Full-fingered sailing gloves make it easier to hold onto lines (ropes) and tiller on a chilly day.

Loose-fitting long pants over long underwear is usually enough to keep most people’s legs warm. If you’re still cold, you can wear your foul-weather gear pants on top. Loose pants also allow easier movement.

Cool Weather Dressing

Cold, wet weather offers more challenges to staying comfortable. Remember, just because a day looks dry and warm in the morning doesn’t mean it’s going to stay that way. Be prepared for a change in the weather, and carry your gear with you. The best defense against cold weather is a layered approach, from long underwear to a long-sleeved shirt and pants to a sweater or sweatshirt to an insulated jacket to foul-weather gear. Keeping your hands, feet, and head warm with gloves, wool socks, and a hat is essential for comfort.

The protection provided by the foul-weather gear keeps sailing pleasurable even in wet conditions. Two-piece foul-weather gear (pants and a jacket) is more versatile than a one-piece jump-suit. You will find weather conditions when you will want to wear only the jacket or only the pants. In selecting gear, make sure it:

- fits comfortably with enough room for movement and for extra clothes underneath;
- has flaps covering zippers and pockets;
- has velcro or elastic closures at the ankles and wrists;
- has abundant pockets;
- has a hood.
Warm Weather Dressing
If you want to enjoy sailing, you've got to be comfortable. Preparation is the key, so put together a sailing gear bag for yourself with clothing and gear that will protect you and make you feel at ease in all weather conditions. Whether it's cloudy or sunny, protect yourself with sunscreen, using Sun Protection Factor (SPF) 15 or higher. You can get burned even on a cloudy day, especially with the sun's rays reflecting off the water.

Life jackets, known as Personal Flotation Devices or PFDs in Coast Guard vocabulary, are essential. They must be carried on all boats, and US SAILING recommends they be worn during classes, and especially on cold windy days.

The Offshore Life Jacket, or Type I PFD, is very buoyant, but bulky. It is designed for moderately heavy seas and will keep an unconscious person's head face up. The Near-Shore Buoyant Vest, or Type II PFD, is less bulky but not as buoyant as the Type I. Common to many boats, the Type II turns some unconscious people to a face-up position. The vest type, or Type III PFD, is more comfortable and easier to swim in than the other two, but is not designed to keep a person's face out of the water.
At the Dock

The moment you step onto K dock where the *Pegasus* is berthed at K 128, you are walking on water.

Docks require a different sort of care than walking on ordinary roads. They are almost always slippery, there are ropes to trip over and docks have a nasty habit of suddenly ending in water. You will also find yourself in very close contact with rather large boats, with bows protruding over the dock. Two simple rules for avoiding accidents are:

- no running
- stay between the yellow lines

*Being prepared for the weather* Going out in the Bay requires a more careful look at the weather and your choice of clothing. Even on a warm and sunny day, the wind and waves always make it colder on the boat, and you need to be prepared for sudden changes of the weather. Common sense and the experience of thousands of sailors worldwide suggest that you bring/wear the following items:

- non-slip shoes, preferably with light colored soles
- long pants
- layers for the upper body: Shirt, sweater, wollen sweater/fleece, rain proof jacket
- scarf, hat (50% of body heat escapes through the head and neck!), gloves
- sunscreen, sun glasses

There is a definite trade-off between looking cool and staying warm. Staying warm is the prime objective, since inadequate clothing can result in hypothermia, the dangerous loss of body heat. You do not need to fall in the water to get it, and while we watch everybody on board for signs of hypothermia and carry some extra clothing, we rely on your good sense to come prepared.
As the crew prepares the boat for leaving, you will be told to BELAY IT, that is, to be quiet, to allow the crew to communicate a series of complex tasks along the length of the boat. Other frequently used terms and commands are:

**Glossary of frequently used sailing language** Over the centuries, a separate language has developed on the boats of English-speaking navies. Here are some of the most frequently used terms and commands aboard the *Pegasus*.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFT</td>
<td>near the back of the boat</td>
</tr>
<tr>
<td>BELAY IT</td>
<td>be quiet!</td>
</tr>
<tr>
<td>BOOM</td>
<td>wood spar sticking out from mast, holds the sail; “boom” is the last thing you hear as it hits your head</td>
</tr>
<tr>
<td>BOW</td>
<td>front of boat</td>
</tr>
<tr>
<td>COMING ABOUT, TACKING</td>
<td>changing course by turning bow of boat through the wind; helmsman calls “helms alee!”</td>
</tr>
<tr>
<td>FORE</td>
<td>near bow (=front) of boat</td>
</tr>
<tr>
<td>JIBE</td>
<td>changing course by turning stern (=back) of boat through the wind; helmsman calls: “jibe-ho!” as the booms comes across the deck</td>
</tr>
<tr>
<td>HELMSMAN</td>
<td>person steering the boat</td>
</tr>
<tr>
<td>PORT</td>
<td>left side of boat when facing forward</td>
</tr>
<tr>
<td>STARBOARD</td>
<td>right side of boat when facing forward</td>
</tr>
<tr>
<td>STERN</td>
<td>back of boat</td>
</tr>
</tbody>
</table>

*version of March 2, 1998*
Henceforth the jib will be referred to as the jib. (In truth it is not a genoa as we are twin headed and have no need for a lapping foresail).

commands:

Captain reports: "Going below to check all systems for engine start."
Deck safety person responds: "Agreed"
Capt'n reports: "All systems checked, I request confirmation."
Deck safety responds: "Agreed"
Deck safety reports to the capt'n: I concur, all systems ready for engine start (or I do not concur, systems not ready.)"

"Prepare to cast off. Crew goes to there assigned stations to ready the boat for leaving the dock.

"Ready for engine start. "All clear in the engine room." Calls for no response unless someone is in the engine room. Crew standby as engine is started.
"Engine started, check for exhaust water." Crew responds: "I see water," or not.

"Ready to cast off?" Crew responds: "Ready on the bow. "Ready astern. "Cast of stern line." "Cast off bow line." Depending on the wind conditions this command may be reversed. Assigned crew will move about the boat with a hand held, "walking fender" ready to fend of any possible collision.

Bow position will report: "Clear on the bow." Meaning that the front of the boat has cleared the dock and "Secure fenders and lines and stand look out" Assigned crew will assume the watch positions.

"Unfurl the main, mizzen jib." Depending on prevailing conditions, we may or may not give a command to unfurl a particular sail.
Crew will remove sail ties and standby for further instruction.
If conditions dictate: "Reef the main, mizzen, jib." Crew will lay in a reef (reduce the sail area by a system of lines and ties) and respond: "Main reefed, jib reefed, etc."

"Prepare to raise the main."
"Prepare to raise the jib."
"Prepare to raise the mizzen." Depending on the conditions these commands will not always be in this order.
Crew will go to the mainsail, mizzen halyard winch, and I or the jib furler, and respond:

"Ready on the main, ready on the jib, ready on the mizzen. "Raise the main, (jib, mizzen)."
Crew responds: "aye, aye."
Helmsman watches the deployment of the sails and orders: "Cleat and secure the main (jib or mizzen)."
Crew responds "Main (jib or mizzen) secured."

Once the boat is under sail:

"Stop the engine." "All clear the engine room." Calls for no response.

Boat going to windward or "tacking" and about to change direction through the wind to the opposite tack:

"Prepare to come about." Crew goes to assigned positions.
"Ready about." Crew responds: "Ready about!"

"Helms alee." Boat is turned through wind to the opposite tack or direction into the wind. Helms person will give instructions to either "Harden up or slack the sails." This is done at the discretion of the helms person, based on point of sail.

Helmsperson may decide to head down wind.

"Prepare to head down." Crew response: "Ready down."

"Ease the jib (main and or mizzen)"


Helms person decides to go to the opposite tack while going down wind:

"Prepare to gibe." Crew moves into position and brings the main and mizzen boom to center of the boat. Response: "Ready to gibe."

"Gibe ho," or "Gibo."

Boat is steered through the wind to the opposite tack. Simultaneously the sails are eased out to the opposite side of the boat from where they were brought in.


"Prepare to drop sails." Crew moves into position and reports: "Ready on the main (jib or mizzen)."

"Heading to windward." Boat is turned straight into the wind. "Drop the sails." They will be dropped and secured with no intermediate response from the crew. Crew response on securing sails: "Sails secured."

"Prepare for docking." Crew response: "Fenders down. Ready on the bow line, ready on the stern line, ready on the walking fender."

Helmsperson requests: "All quiet for docking."

As the boat is docked, helmsperson orders: "Bow line step off, stern line step off and secure."

"Engine shut down, secure all systems."
BOAT TRIP STATIONS

1. STEERING
   (sail control, maneuvering instruction)
   some kids not all

2. Stern Observation
   (signal flags, buildings, bridges etc.)

3. Bow Observation
   (geographic & hydrographic features)

4. Lookout
   (other vessels, possible hazards)

< Below decks>
   (first aid, head, food, get warm)
   only after trip unless emergency happens

Student stations and numeric order of rotation plus number of students at that station
Return to the Dock -- Going Below on Pegasus

Once Pegasus returns to the dock, the crew will take the students below deck in two orderly groups. Be sure to go down the companionway ladders safely: facing the ladder, with your back to the room you are entering, and holding on securely. To your right as you descend in the proper position, you can see the high water alarm, which is attached to hinged float switches in the bilge. There is also an engine alarm which monitors the oil pressure and temperature of the engine. You will descend into the aft cabin, first.

Aft Cabin

The galley (kitchen) is now on your right: there is a gimbaled stove which swings to counteract the heeling angle of the boat and a harness to keep you in place while cooking. The stove uses propane, a highly flammable gas. The propane tanks are stored in the two boxes on the aft deck. Below the sink, you can see a foot pump which draws clean water for rinsing from the storage tank. The vents above your head are called dorades, and they allow for ventilation in the cabin, crucial in a wooden boat which can easily rot due to excessive condensation. In the center of the cabin, the aluminum mizzen mast enters from the deck and runs through the cabin and down to the keel. The table edges are bounded by fiddle rails which prevent items from sliding off the table as the boat shifts around. Behind the door of the head, you can see a wooden pipe rack.

Aft Head

Living on a boat requires some modifications of the lifestyle we are used to on land. Practically all water has to be brought along, as salt water is only useful for washing (and even that only with special soap!) Hence, cruising boats like Pegasus require large water tanks: Pegasus carries 250 gallons of water. Similarly, there is no weekly garbage pick up and no sewers. So, waste from the head goes into a holding tank, not into the water outside. All trash gets taken along, as well. Coast Guard regulations prevent boaters from dumping anything into the water until they are 10-12 miles offshore. Although, even then, it would not be environmentally sound to do so. The holding tanks can be pumped out in most marinas, which are usually equipped with pump out stations.

Engine Room

On your right there are three tanks. The first is a holding tank for sewage pumped from the head (toilet.) The next two are a 65 gallon fuel tank and a 125 gallon water tank. There are two identical tanks to these on the far left side of the engine room. This gives Pegasus a total capacity of approximately 130 gallons of fuel and 250 gallons of water in two separate tanks for each. The split tanks allow for the possibility of leakage or contamination of one tank in addition to distributing the weight equally.

The four-stroke, four cylinder, diesel engine on your left provides propulsion for the boat while not under sail as well as power to generate electricity. Above the engine you will see a halon fire extinguisher which is activated automatically in case of a fire in the engine room. While Pegasus is using her engine, the doors on either end of the engine room are kept closed in order to contain a fire, should one occur. The small red flap on the facing wall of the engine covers a hole which permits the access of a fire extinguisher from beneath the main companionway ladder. The two twelve-volt batteries provide electricity for the entire boat (the "house bank"). There is a separate battery bank devoted solely to starting the engine (the "starting bank"). The cables above the engine are attached to a pulley system which links the steering wheel in the cockpit, to the rudder at the back of the boat.
Navigation Station

As you come out of the engine room, the navstation is on your right. Attached at the top of the navstation is a VHF radio. Each boat has its own call sign which is composed of letters and numbers. When communicating over the radio however, boaters use a special nautical alphabet to ensure that the letters are not misheard. The nautical alphabet begins: alpha, bravo, charlie and continues through the letter "z". Pegasus' call sign is "Whiskey, Charlie, Papa 4602." On the wall (called a bulkhead on a boat) to your right are the circuit breakers. At the back of the navstation, you will see a log (you probably know it as an odometer), the Heart Interface which monitors the battery banks, and above that, a gas vapor detector, known as "the sniffer". The box with the TV type screen attached above the left side of the station is the radar, and the barometer on the wall to your left gives information about atmospheric pressure. Inside the panel beneath the station are drawers for charts (maps) and ship’s logs; plotting tools; and the United States Coast Pilot, which provides navigational information about the latitude and longitude of potential destinations, as well as special conditions that boaters might want to be aware of, such as tidal swirls and rips.

Forward Cabins

To your left is the stateroom with a bunk that pulls out into a double, a desk, shelves, a hanging locker (closet), an EPIRB mount, a fire extinguisher, battery switches, and a deviation card for the compass. Deviation (the difference between the boat's magnetic heading and the heading shown by the compass) is caused by metals (iron, steel), electrical circuits, electronic equipment containing magnets, etc. that are close enough to the compass to cause the needle to deflect slightly. This error usually changes as the vessel changes course, but it can be measured accurately and a correction applied.

To your right is another bunk with a lee cloth which can be attached to the top of the cabin and prevent the sleeper from falling out of the bunk in heavy weather. The small opening above the bunk is a deck prism, which serves the same purpose as a window, except that the prism lets in more light. To the left of this bunk is the base of the main mast, filled with wires for the navigation lights and antennas.

The forward head is behind the door on your left, following the main mast. It has a sink and a shower.

Forepeak

The forepeak is equipped with a V-berth for sleeping and to your right, just inside the door, you can see a gimbaled oil lamp. There are special fold-away metal steps to enable you to climb into the bunks. The bronze porthole at the front is hooked to another dorade. At the very front of the forepeak, you can actually see the hull planking in the "locker", along with the anchor chain. The sampson post runs down onto the keel.

Back on the dock

Once on the dock, it is safe to remove lifejackets and harnesses. Stepping off a boat even after a short time can be quite tricky. The "sea legs" grown in reaction to the rocking and rolling of the boat make for a stilted walk on land, and people have even been known to fall over!
GOALS
Through hands-on activities, students will become familiar with the parts of a sailboat, how a sailboat works, navigational equipment, boating vocabulary and sailing commands.

CHAPERONES
We welcome chaperones on the Land School portion of this fieldtrip. While ½ of the class is sailing on the Pegasus, the other ½ will participate in the Land School. Chaperones are not able to go on the sailing portion of this fieldtrip, so they stay with the Land School through both rotations. Give the “How You Can Help” sheet to chaperones.

LAND SCHOOL – A.M.

INTRODUCTION IN THE NATURE CENTER (10 mins.)
Present the big picture – Bay is an estuary (hydrometers), habitats, animals in Bay (aquarium), depth (chart), tides (computer program), currents, weather (marine radio)

CAL SAILING CLUB – boat on trailer (1 hour) 2 groups for 30 minutes each
While one group is at the boat, the other is using compasses and binoculars.
• Team building activity
• Review boat parts
• Label parts of the boat
• Go over how the boat works
• Review commands
• Practice using commands
• Compare Lido to Pegasus

LUNCH – prepare to sail (20 mins.)

WALK TO DOCK – to board Pegasus (10 mins.)

LAND SCHOOL - P.M.

LUNCH (20 mins.)

DEBRIEF SAIL (10 mins.)

INTRODUCTION (10 mins.)

CAL SAILING CLUB – boat on trailer (1 hour) – Students tie in their sailing experience
LAND SCHOOL TERMS AND CONCEPTS

Students should be familiar with these terms and concepts before they come on the fieldtrip. The stated references will help with this preparation.

**Parts of boat** - bow, stern, port, starboard, hull, deck, centerboard, helm, tiller, rudder, cockpit, mast, boom, cleat, lines, sheets (Refer to Lido Diagram and Vocabulary)

**Sails** - jib and main (Refer to Vocabulary)

**Commands** - belay it, ready to come about, helms a lee, ready to jibe, jibe ho, haul the mainsail, haul the jib (Refer to Nautilus Institute/Pegasus Project page)

**Concepts** - points of sail, no sail zone, tack, jibe, heading up into the wind, falling off of the wind, steering with rudder, navigation, heeling over, windward, leeward, trimming the sails, lookout directions system (Refer to Vocabulary, System for Pointing Out Directions, and How a Sailboat Works)

ABOUT CAL SAILING CLUB

Cal Sailing Club is assisting with the Land School. They are providing a sailboat and a volunteer to give students hands-on dry land “sailing” experience. The Cal Sailing Club located in the Berkeley Marina provides low cost access to sailing and windsurfing on the San Francisco Bay. The club is a nonprofit volunteer run organization. Members are involved with giving free rides to the public, including various youth groups. Membership costs $55-$60 for three months of unlimited access to sailing and windsurfing lessons. Free sailboat rides for the public are given during Open Houses once or twice a month. Students are encouraged to bring their families to participate in this free sailing. Contact Cal Sailing Club for specific dates and times. Cal Sailing Club Website: [www.cal-sailing.org](http://www.cal-sailing.org)

RAINY DAY LAND SCHOOL OPTIONS

We will sail rain or shine, but the Land School will be modified on rainy days. These are some of the activities that we can offer, depending on the interest level of the students and teacher.

- Introduction to the Bay/Estuary System
- Review boat parts, terminology, how a sailboat works
- Hydrology experiment (mixing salt and fresh water to observe density)
- Knot tying
- Aquarium Discovery
- Touch Table
- Pegasus video
- Secrets of the Bay video
DOCENT JOBS FOR THE SAILING EXPERIENCE PROGRAM

You are responsible for knowing this information. Denise will be leading the Land School and Patty will be crew on the sailing boat. **You will be assisting with the Land School.** While 1/2 of the class is sailing on the Pegasus, the other 1/2 will participate in the Land School. You will help when and where we cannot be. Your personal touch and conversation reaches the students better than we can.

9:00 Meet at the Nature Center and get your nametag.  
Listen to description of class.

9:30 As the kids arrive, have those who will be sailing first sit in the chairs in the back of the room with their gear. Those doing the Land School first will sit in the front of the room after hanging their gear on the hooks in the back.  
Help identify parents and give them the “How you can help” cards. Ask them to stop talking and sit down so we can begin.

10:00 After we have given them the overview, and when its time to go, help the first group get geared up with their personal gear. Take kids to the restroom. Do a head count.

LAND SCHOOL SPECIFICS

Students will be divided into two groups, one group at the boat, and one working with:

- **Binoculars** – Students will be instructed on proper use of binoculars. They will examine landmarks, identify animals (particularly birds), and look for boats and buoys.

- **Compasses** – Students will be instructed on basic use of a compass. They will use a chart to navigate, and they will try to follow specific compass settings.

Adults can help at this station by making sure that the students are using the equipment properly, staying focused, and following directions. Adults can suggest things in and around the Bay to locate with binoculars or compass. Help gather equipment and put it away. Adults can let Nature Center staff know if there are inappropriate behaviors that need to be dealt with.

AT CAL SAILING CLUB –working on a boat on a trailer

1. Cal Sailing Club and its volunteers will be introduced.

2. Nature Center Staff will review parts of the boat with the students, and then we’ll play a game. We will stress working together to succeed. Give students labels, and they put labels where they belong on the boat. Have students switch labels and try it again. Time them.

3. Cal Sailing volunteers will then explain sailing concepts and how a sailboat works.

4. We will discuss and practice lookout directions system.
5. Students will then gather around the boat and we will all practice giving sailing commands. Students will take turns in a number of roles: captain, hoisting the mainsail, hoisting the jib, handling the sheets for the mainsail and jib, handling the tiller, and, lookout.

6. We will let the wind fill the sails and we will move the boat on the trailer to simulate sailing maneuvers.

7. We will make comparisons between the Pegasus and the Lido: tiller vs. wheel, keel vs. centerboard, winches vs. cam cleats, mizzenmast.

SAFETY RULES
Lead staff will be responsible for these rules, but all adults should help enforce them.

- Raise sails with boat pointing into the wind.
- If winds are heavy, reef the mainsail, point more directly into the wind, keep the sails tight, spill wind from the sails if needed.
- The trailer may move when wind fills the sails, so be aware.
- No rolling the boat trailer unless an adult tells students to.
- Watch out for the boom.
- No students inside the boat.
- If you are inside the boat, don't stand further back than the middle of the cockpit.
- Keep students from resting their arms on the stem of the boat - they can get pinched by the pulleys.

Adults can help at this station by making sure that the students are staying focused, and following directions. Adults should assist students in responding to sailing commands, and make sure that students are safely handling the boat. Enthusiasm for games and activities is also helpful. Adults can let Nature Center staff know if there are inappropriate behaviors that need to be dealt with.

Go back to the Nature Center and have lunch. After lunch the group will be taken to the dock and exchanged with the group that just sailed.

ON K DOCK HELPING WITH THE FIRST SAILING GROUP AS THEY DISEMBARK

- Walk over with Denise and keep the students busy until the boat docks.
- Try to keep the two groups from intermingling. Let Patty know if there are any behavior problems with the group you were just with.
- Docents can be the most helpful assisting children that have been sailing off with the life jackets and harnesses and spreading them on the dock ready for the next group.

Thanks for all your help!
COMPASS STATION

1. Treat the compasses gently – don’t drop them please. (Then pass one to each student.)

2. Hold the compass flat on your hand, observe and move the parts to see how they work. (Let the kids manipulate the compasses quietly as you discuss them.) The needle is suspended so that it swings freely. Which color points which way? Why? (The red end points to magnetic North.) The black outer ring has letters and numbers, what do they mean? The numbers are compass degrees, they indicate a bearing or direction. The black ring rotates, and has black lines and a red arrow on it. Now turn the compass so that the red magnetized needle lines up with the red arrow. Now your compass is properly oriented. (A potentially useful analogy for kids is to tell them to put the “dog” (red magnetic needle) in the “dog house” (the red outlined arrow on the base).

3. Following a compass heading: Line up the READ BEARING HERE arrow with the direction or bearing you want by rotating the black ring. (For example, “E” to go east.) Now rotate the entire compass so that the red needle points to “N”. (“Put the dog in the dog house.”) Then rotate your body so that you are facing the READ BEARING HERE arrow. (Keeping the “dog in the dog house.”) You will now be facing east. Look up into the distance, and pick a prominent landmark directly in front of you. You can now maintain your direction, or that of your boat, by aiming for this landmark.

4. Navigation using a map or chart (a chart is a map of a body of water):
   (a) Locate North on the chart (“up”). Note the lines of longitude.
   (b) Place the chart flat, put a compass on the chart and orient it so that the needle points north. Now we need to make the chart and compass agree, so turn the chart under the compass so that the lines of longitude point north to south as indicated by the compass.
   (c) Optional - depending on the interest level of students and timing: Magnetic north is not the same as true north. The lines of longitude indicate true north. There will be a compass rose on the chart that shows magnetic north.
   (d) Finding your bearing: Pretend that your compass is a boat on the bay. Place it on the chart somewhere in the bay, oriented to north. Turn the base until READ BEARING HERE points to the Berkeley Marina. The number it is pointing to is the bearing you need to follow to get home. Note that the bearing is different depending on where you start from. When would you need to follow the compass heading instead of a landmark? (When it is extremely foggy or you are out of sight of land.)
   (e) Relate to early explorers: To explore the globe, out of sight of land, the early sailors needed more than a compass. They needed to keep track of where they were – how could they do this? They used a sextant to find their position relative to the stars, and they needed an accurate clock to determine how far they had traveled. (They could measure speed by throwing an object in the water; speed multiplied by time equals distance.)
Parts of the Hull
Let's begin by learning some of the important parts on a boat and their names. Knowing some of these sailing terms will allow you to communicate better when on board the boat.

Cockpit
The low space in the deck where the crew sits and the tiller is located.

Port
Left side of the boat.

Starboard
Right side of the boat.

Hull
The "body" of the boat that floats in the water.

Keel
The weighted vertical fin at the bottom of the boat. Its weight reduces tipping (heeling) while its shape keeps the boat from sliding sideways through the water.

Tiller
The wooden (usually) lever arm attached to the rudder that allows you to steer the boat.

Helm
The tiller, wheel, or other steering gear.

Cleat
A rigging fitting to which lines are temporarily attached.

Rudder
The flat steering foil, directed by a tiller, that is used to turn the boat.
Parts of the Hull
Let's begin by learning some of the important parts on a boat and their names. Knowing some of these sailing terms will allow you to communicate better when on board the boat.

The body of the boat that floats in the water.

The weighted vertical fin at the bottom of the boat. Its weight reduces tipping (heeling) while its shape keeps the boat from sliding sideways through the water.

The flat surface area on top of the boat.

The front of the boat (the "pointy end").

The low space in the deck where the crew sits and the tiller is located.

The back of the boat.

The flat steering foil, directed by a tiller, that is used to turn the boat.

The wooden (usually) lever arm attached to the rudder that allows you to steer the boat.

A rigging fitting to which lines are temporarily attached.

The tiller, wheel, or other steering gear.

Worksheets
Fill in the blanks.

The "body" of the boat that floats in the water.

The weighted vertical fin at the bottom of the boat.
Mast
The big pole in the middle of the boat from which the sails are set.

Jib
The forward sail that is attached to the forestay.

Mainsail
The sail hoisted on the back side of the mast and attached to the boom.

Jib sheets
control the jib. They run from the bottom corner of the cockpit. They are pulled in (trimmed) or let out (eased) to change the shape and angle of the jib.

Boom
The horizontal spar extending back from the mast. The bottom (foot) of the mainsail is attached to it.

Parts of the Rig
Now that you know your way around the deck, it’s time to look up. The rig includes sails (mainsail and jib), spars (mast and boom), supporting wires (standing rigging) and sail controls (running rigging).

The mainsheet controls the angle and shape of the mainsail. It runs through a series of pulleys (blocks) which give the crew mechanical advantage while they pull in (trim) or let out (ease) the sail.
The big pole in the middle of the boat from which the sails are set.

The forward sail that is attached to the forestay.

The sail hoisted on the back side of the mast and attached to the boom.

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Parts of the Rig

Now that you know your way around the deck, it's time to look up. The rig includes sails (mainsail and jib), spars (mast and boom), supporting wires (standing rigging) and sail controls (running rigging).

_____ controls the angle and shape of the mainsail. It runs through a series of pulleys (blocks) which give the crew mechanical advantage while they pull in (trim) or let out (ease) the sail.

The horizontal spar extending back from the mast. The bottom (foot) of the mainsail is attached to it.

control the jib. They run from the bottom corner of the jib back to the cockpit. They are pulled in (trimmed) or let out (eased) to change the shape and angle of the jib.

---

WORKSHEET

Fill in the blanks.

- The sail hoisted on the back side of the mast and attached to the boom.
- The big pole in the middle of the boat from which the sails are set.
- The forward sail that is attached to the forestay.

The sail hoisted on the back side of the mast and attached to the boom.

Parts of the Rig

Now that you know your way around the deck, it's time to look up. The rig includes sails (mainsail and jib), spars (mast and boom), supporting wires (standing rigging) and sail controls (running rigging).

_____ controls the angle and shape of the mainsail. It runs through a series of pulleys (blocks) which give the crew mechanical advantage while they pull in (trim) or let out (ease) the sail.

The horizontal spar extending back from the mast. The bottom (foot) of the mainsail is attached to it.

control the jib. They run from the bottom corner of the jib back to the cockpit. They are pulled in (trimmed) or let out (eased) to change the shape and angle of the jib.
WIND ACTING AT CENTER OF PRESSURE TO HEEL THE BOAT

GRAVITY ACTING AT CENTER OF GRAVITY TO RIGHT THE BOAT

SAILS

JIB
MAINSAIL
MIZZEN

LOW
KEEL
STERN

PARTS OF A SAIL

HEADING
LUFF
MAINSAIL
TACK
JIB
TACK
CLEW
FOOT
LEACH
MAST
A boat can not sail directly up into the wind
This direction of sail is called the NO SAIL ZONE.

When a boat sails off to the side of the wind, or a little upwind the wind pressure pulls on the sails and the boat moves forward. A boat sailing up towards or just to the side of the wind is said to be on a REACH.

When a boat sails downwind, the wind pushes on the sails from behind. This pushes the boat downwind. A boat sailing downwind is said to be on a RUN.
INTRODUCTION TO THE HISTORY OF BOATS ON THE BAY

The history of boating is as vast as the history of the whole world. It is not possible to give anything but a brief and very abridged history.

No one knows who the first voyagers were. They poled their boats in shallow water, then advanced to paddling, then used a sail. It is thought that the Phoenicians in the Mediterranean Sea were the first people to cover large distances with sail powered canoes. There is evidence that Polynesians in the Pacific area traveled thousands of miles using currents in wooden, twin hulled, sail powered craft long before the Europeans began their explorations.

The Ohlone Indians inhabited the Bay area for 1,400 years. They used boats made of tulle reeds to navigate by paddling in the Bay. About 170 years ago all sea going vessels were built of wood and used canvas of flax material for the sails. Today huge quantities of goods and materials are shipped around the world on massive vessels made of steel. The vessel Pegasus that we will be sailing on, is but a small reminder of the grand days of sailing's past when all ships were wooden.

San Francisco Bay was discovered by Juan Manuel de Ayala in 1775. He was the first to sail an ocean-going vessel into the bay, explore and chart it. Spanish control over the Bay continued from 1776-1822. Then Mexico assumed control. In 1846 began the American occupation. Almost immediately after the first ship arrived, the bay became a center of commerce and a center for the construction and repair of vessels, from the scows that carried hay and other goods to villages around the greater Bay Area, to clipper ships that brought goods from around the world. But it was the great gold rush of 1849 that put San Francisco on the map and changed forever the character of the Bay both geographically and ecologically.

Because of the lust for gold, ships carrying prospectors were abandoned by officers and crew and left to rot and sink along the waterfront of San Francisco and to a lesser degree, Oakland. These ships became part of the land fill that has contributed to reducing the bays' original size by a good 40%.

Along the Berkeley shoreline, in 1853, Captain Jacobs built a pier at the foot of Delaware St. This provided access for a variety of vessels which were the main mode of transportation for people who wanted to go across the Bay. In 1866 Jacobs expanded this pier to ship lumber. A new 1200 foot pier was built in 1874 at the foot of University now known as the Berkeley Pier. In 1929 the Golden gate ferry company extended this pier for their ferry service to hold car traffic. This ended in 1936 when the bay bridge was built and ferry service was put out of business.

Today, the Berkeley pier is but a reminder of how much we utilized boats for transportation. Wooden vessels are primarily limited to pleasure craft, although you will still see some old wooden tug boats working the San Francisco Bay. On occasion you may see a beautiful wooden fishing boat pulling its nets through our waters. Boats made of wood take a considerable amount of skill and craftsmanship to build, a great quantity of wood, and are no longer an economic or ecologically sound way to move goods from place to place.

Today, we sail wooden boats for the joy that it brings us, and the knowledge that we are but a small representative of a maritime heritage that spans thousands of years. When you sail on the Pegasus, think about all the women and men and children who worked on wooden ships and how this country changed because of them. Think of the evolution of watercraft in the bay from simple tulle canoes to huge sailing vessels. Go to the library later and look up the history of wooden boats. There is a great deal to be discovered about our sea going heritage that affects us to this day. Have fun!
The breakthrough of controlled power and steering control happened long before recorded history. The ocean currents were probably used as the first medium of propulsion when they happened to go exactly where needed. Oceanic currents, for example, helped the trade winds to pull the *Kon-Tiki* across the Pacific; but the raft was equipped with sails, tiller, movable centerboards, and a pointed bow. For any serious venture in sea travel it was necessary to have means to propel and control a vessel at the whim of the sailors.

The shape of a boat's hull is in part a controlling device; it is, for example, the centerboard on a small sailing vessel that prevents side-slip and allows tacking and most maneuvers. The earliest ships were probably poled through shallow water; these were followed by paddled boats and rowed boats (after the invention of the tholepin). Then someone put together the set of ideas that produced the sail. Because the oldest extant ship pictures show pointed bows, we realize streamlining occurred very early. In spite of this, some recent boats (such as round American Indian bullboats) are conspicuously unstreamlined. Whatever was the sequence of invention, the concept of controlling motion while afloat was the turning point in practical water travel. Refinements such as motors, hydrofoils, outriggers, catamarans, as well as the ancient additions of sails and paddles, are simply logical extensions of the central concept of controlled motion at sea.
Open-Sea Navigation

The term to navigate has several meanings, two of which are “to steer” and “to travel” (usually by ship). Navigation began with dead reckoning: direction by sightings of land. This technique was practical when visibility was adequate and the boat stayed close to shore. If a course was plotted on the basis of a single point, current and wind drifts could run the ship far astray. It is in the sense of steering out of sight of land, in the open ocean, that navigation was a significant turning point in ocean sciences. It was a two-stage development: using the stars and using the magnetic field of the earth with a compass. Correlating the positions of the stars with the location of the observer involved an elaborate understanding of cosmology. At first the North Star (the polestar) was used as a simple indication of direction North. The principle of triangulating bearings followed the inventions of devices for accurately measuring distances on the ocean or land surface, and angles with respect to celestial objects. When observations are made with two or more objects, the position of a ship can be continuously determined by the change in the angular relationship with the observed points. The quality of the technique depends on the accuracy of the angular measurements, and the knowledge of their true positions. When the early astrolabe and sextant later made their appearances, measuring the angle from the polestar to the observer and to the horizon gave a quick and accurate measurement of latitude. But the calculation of longitude needed an accurate knowledge of time, and it was only possible with the invention of chronometers. The accuracy of ships’ chronometers could mean life or death, and the maintenance of this precious clock was the captain’s privilege. For centuries with the aid of the sextant and the chronometer ships determined their position, within one mile, by measuring the angles of two or more stars or of the sun at two different times. The little magnetized needle called the compass, a Chinese concept, allowed ships to steer accurately between two sets of astronomical measurements. Modern improvements such as the satellite or inertial navigation are simply evolutionary technological achievements. Knowing where you are at sea is the real turning point.

*Fast sailing ships (below) reached their commercial peak in the late 19th century. Today they may be revived because they do not consume petroleum.*
History of the Berkeley Pier

We also get close to another East Bay landmark, the Berkeley Pier. It extends 3,000 feet into the waters of the Bay. Its original length of three miles designates the extent of the planned landfill in the East Bay. Fortunately for humans and sealife alike, the Save San Francisco Bay Association under the leadership of Sylvia McLaughlin, Catherine Kerr, Ester Gulick, managed, in 1969, to stop the Army Corps of Engineer’s plan to fill in 2,000 acres of open water by the year 2020.

Historically, the politics surrounding the Pier have always been difficult. Berkeley’s first pier, Jacobs Landing, was built in 1853 by Captain James Jacobs, an immigrant from Denmark who transported freight between San Francisco, Sacramento and other shoreline communities. In 1874, a small municipal pier was built to provide a short-lived ferry service to San Francisco. Both of these piers are have now been covered by landfill and the remains are located under University Avenue. In 1926, the Golden Gate Ferry Company built another pier which allowed motorists to drive directly from University Avenue, three miles into the Bay and take a car ferry to San Francisco. This service was so popular that police reportedly encouraged drivers to maintain speeds of 60 miles per hour on the pier in order to keep the ferries full. It now belongs to the City of Berkeley. As it slowly rots, opinions are divided as to what to do with it. On the one hand, the logs coming slowly undone in the continuous onslaught of earthquakes, currents, and wind constitute a hazard to pleasure and commercial craft. On the other hand, fish, mussels, crabs and other marine animals and plants have started colonizing this artificial reef and contribute to the variety of biological species found in the Bay.

To most humans, who use it for walking and fishing, it is merely a marker of a historical era when ferries were the main mode of transport across the Bay, before most of the major Bay bridges were built. The perpetual car traffic on nearby freeways is a reminder of a more pressing contemporary concern: people fishing off the Pier as well as fishermen in other parts of the Bay have to contend with fish stocks affected by toxins, resulting in mutations and depleted stocks.

Questions, activities and links

1. What famous buildings and landmarks can you see?

2. Why is part of the Berkeley Pier falling down? Do you think it should be left to fall down, or removed?

3. What do most people do on the Berkeley Pier?
As we go out into the Bay, more and more vessels and landmarks become visible. On clear days, the skyscrapers in San Francisco are visible, as are Alcatraz, the Golden Gate bridge, various radio towers, Mount Tamalpais, etc. Think of the many professions and activities represented on the Bay, and how they reflect on the Bay as an economic, ecological and cultural region: tug operators, water taxis, ferries, sightseeing boats, charter boats (both power and sail), fishermen, the Baykeeper and his staff, Coast Guard, Navy, Vessel Assist, boat bottom cleaners, pilot boats, boat salesmen, sailmakers, boatyards, nature conservators, marine biologists of all kinds working for both environmental organizations and for corporations.

Ocean water enters the Bay through the Golden Gate. The deepest part of the Bay is right under the Golden Gate Bridge, with 330 feet of water. Other parts can be as shallow as 7 feet, making it necessary to know when the next ebb (low water) or flood (high water) is due to occur. Also, regular dredging of the shipping channels is necessary, so that all the big container ships and oil tankers coming into the Bay do not run aground. The gravitational force acting on all objects on Earth, winds and the spinning of Earth around its own axis cause large bodies of water to move in certain, well-known directions. These horizontal movements of water are called currents.

Tides are the relative high and low water levels. Twice a day, water leaves the Bay (ebb), and roughly six hours later it returns (flood). These four distinct stages are repeated everyday during the moon's 24 hour orbit around the Earth. The movement of water is caused by the relative gravitational pull acting between Moon, Sun and Earth, literally pulling water away from its location on Earth.

Inside the Bay, currents and tides result in whirlpools and gyres. The tides for any given area can be calculated and are published in tide tables. These tables are widely used by a variety of sailors, such as:

- sailboat racers to determine the best course to steer,
- pleasure boaters anchored near shore for the night to make sure they will have enough water under their keels as the tide falls,
- and ship captains to be sure they have enough vertical clearance for their ships to pass safely under...
Exiting the Breakwater

The Marina is protected by an artificial breakwater. Around it you can observe birds feeding, and all kinds of rubbish and froth floating on the water. On some days, the boundary between fresh water from the river delta and the incoming ocean water is visible right around here, too. Ocean water contains much more salt than river water, resulting in a higher density.

California’s hydrological cycle

Water in the San Francisco Bay is regularly exchanged by natural forces. On the one hand. The brown/muddy river water sitting on top of the incoming blue/green ocean water is the end result of a long sequence of events starting with rainfall in hills close by in Berkeley and as far away as the Sierras:

Buoys and Markers

Coming out of the breakwater, you can see the Berkeley Reef marker. It is one of many buoys and other navigational aids used to draw sailors’ attention to hazards. Buoys are color coded to refer to different kinds of hazards; some are racing buoys used in weekend regattas, others indicate a fishing net or divers under water. Some markers have acoustic signals, for bad weather or fog. Also, a number of lighthouses in the Bay Area make sure that ships can find their way even in low visibility. In the US and Canada, red markers indicate the right side of a safe and sufficiently deep channel as you approach shore. Sailors remember this by the line "red right return". In the rest of the world, the marking is reversed on the approach to shore, assumed to be more dangerous than leaving an anchorage, and is then consistent with red designating port (left) and green designating starboard (green). All boats also carry lights at night, with a green and red light on their starboard and port sides respectively and white mast and stern lights. There are even different formations of these lights to indicate different types of vessels and their size!
An easy way of referring to dangerous objects in the water or interesting sea life is to picture the bow of the boat to be pointing at 12 o’clock on an analog clock face. The direction of objects can then be identified by the "hour" this would constitute on the clock. For example, the smaller boat in the picture below would be at "2 o’clock", the seal would be at about "4 o’clock", and the buoy would be at "10 o’clock".

**System for pointing out direction in relation to Pegasus**

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**Questions, activities and links**

1. Check the weather for the day of your voyage: satellite pictures on the following webpages show the predominant weather systems for the Bay Area. Do you know what the cloud formations look like from the ground? How does wind chill?

2. Below are webpages that provide information and more links to sites about the current weather of the bay:
   - **San Francisco Bay Wind Pattern**
     - USGS' real time (every two hours) map of SF Bay winds; you can click on Berkeley on the map and it will give you wind strength and direction.
   - **Weather Satellite Image**
     - Real time West Coast weather satellite image.
   - **Yahoo's Bay Area Weather Forecast**
     -Clickable map of San Francisco Bay weather forecast.

3. What sort of objects float and why? What materials are boats built of? Why are boats referred to as "she"? (think of the time sailors would have spent out at sea during the long voyages of the past)

4. Why doesn’t everybody have the same say on boats (democracies)? Why did a separate language develop on boats?
AIDS TO NAVIGATION ON NAVIGABLE WATERS
except Western Rivers and Intracoastal Waterway

LATERAL SYSTEM AS SEEN ENTERING FROM SEAWARD

PORT SIDE
- GOOD NUMBERS AIDS
- BLACK OR WHITE LIGHTS
- FLASHER
- OCCULTING
- QUICK FLASHERS
- GROUP FLASHING

NO CHANNEL
- NO NUMBERS—MAY BE LETTERED
- WHITE LIGHTS
- RED OR WHITE LIGHTS
- FLASHER
- OCCULTING
- QUICK FLASHERS
- GROUP FLASHING

NO NUMBERS—MAY BE LETTERED
- WHITE LIGHTS
- RED OR WHITE LIGHTS
- FLASHER
- OCCULTING
- QUICK FLASHERS
- GROUP FLASHING

SPECIAL PURPOSE
- DUAL PURPOSE MARKING
- INTERRUPTED QUICK FLASHING
- FIXED
- OCCULTING
- FLASHER
- QUICK FLASHERS
- GROUP FLASHING

DUAL PURPOSE MARKING USED WHERE THE ICW AND OTHER WATERWAYS COINCIDE
- FIXED
- OCCULTING
- FLASHER
- QUICK FLASHERS
- GROUP FLASHING

BUOYS HAVING NO LATERAL SIGNIFICANCE—ALL WATERS
- SHAPE HAS NO SIGNIFICANCE
- NO NUMBERS—MAY BE LETTERED
- ANY COLOR LIGHT EXCEPT RED OF GREEN
- MAY BE LIGHTED

DAYMARKS HAVING NO LATERAL SIGNIFICANCE
- MAY BE LETTERED

AIDS TO NAVIGATION ON THE INTRACOASTAL WATERWAY
AS SEEN ENTERING FROM NORTH AND EAST—PROCEEDING TO SOUTH AND WEST

PORT SIDE
- GOOD NUMBERS AIDS
- BLACK OR WHITE LIGHTS
- FLASHER
- OCCULTING
- QUICK FLASHERS
- GROUP FLASHING

NO CHANNEL
- NO NUMBERS—MAY BE LETTERED
- WHITE LIGHTS
- RED OR WHITE LIGHTS
- FLASHER
- OCCULTING
- QUICK FLASHERS
- GROUP FLASHING

NO NUMBERS—MAY BE LETTERED
- WHITE LIGHTS
- RED OR WHITE LIGHTS
- FLASHER
- OCCULTING
- QUICK FLASHERS
- GROUP FLASHING

DUAL PURPOSE MARKING USED WHERE THE ICW AND OTHER WATERWAYS COINCIDE
- FIXED
- OCCULTING
- FLASHER
- QUICK FLASHERS
- GROUP FLASHING

JUNCTION
- MARK JUNCTIONS AND OBSTRUCTIONS
- INTERRUPTED QUICK FLASHING
- WHITE OR RED LIGHTS
- GROUP FLASHING
- DUAL PURPOSE MARKS

BUOYS HAVING NO LATERAL SIGNIFICANCE—ALL WATERS
- SHAPE HAS NO SIGNIFICANCE
- NO NUMBERS—MAY BE LETTERED
- ANY COLOR LIGHT EXCEPT RED OF GREEN
- MAY BE LIGHTED

DAYMARKS HAVING NO LATERAL SIGNIFICANCE
- MAY BE LETTERED

When following the ICW from New Jersey through Texas, a skater should be kept to your starboard hand and a j should be kept to your port hand, regardless of the color of the aid on which they appear.
WANTED:
a healthier San Francisco Bay

If you see:

☐ Oil Slicks
☐ Fish or Bird Kills
☐ Filling of Marshes or Wetlands
☐ Floating Sewage
☐ Water Discoloration
☐ Leaking Land Fills
☐ Vessels Discharging Oil or Waste

If you catch or find:

☐ Deformed Fish
☐ Fish with Fin Rot, Ulcerations, Parasites
☐ Clams or Mussels with Tumors
☐ Crabs or Shrimp with “Burn” Holes
☐ Deformed Ducks, Shorebirds or Seabirds

Record the date, time, location, a description; take a photo and CALL 1-800-KEEPBAY

If you care about the Bay and Delta:

☐ Become a BayKeeper Hotline Volunteer
☐ Take our course which trains certified BayKeepers who will patrol the Bay and Delta

The Baykeeper program is a project of the San Francisco Bay-Delta Preservation Association, a non-profit organization dedicated to the protection and enhancement of San Francisco Bay and Delta. Our work supplements that of the enforcement branches of regulatory agencies and will detect & document violations of environmental regulations.

The BayKeeper is designed to raise public awareness concerning threats to the Bay and Delta by providing accurate information to agencies, advocacy groups & the media. The program will also serve as an antenna for citizen complaints and act as a deterrent to illegal activities on the Bay and Delta.
SAILING INTO THE WIND?

Figure 8.01 A sailboat cannot sail directly into the eye of the wind, but modern sailboats usually can sail to within 45 degrees of the wind, or closer, when close-hauled. A reach is the fastest point of sail, with the sails eased about halfway out. A run is aerodynamically simpler, but can be the most dangerous point of sail. The sails are extended as far out over the sides of the boat as possible, and can swing across with tremendous force.
TACKING

The boat begins its turn at the bottom of the diagram.

Starsboard Tack

Sails begin to luff (sail flutters) as the bow heads into the wind.

Momentum carries the boat over onto the new tack (portion of course) in this case, starboard (right side of boat) and the sails are trimmed (adjusted).

Port Tack

Jib and Mainsail Luff

Jib Luffs

Port Tack
Tacking along a course

It often happens that a sailboat must travel some distance to windward, in a direction which makes a direct heading to the destination impossible. In a situation like this, the sailboat skipper zig-zags in a series of tacks toward his mark, as shown in the illustration.

If the mark is directly upwind, the tacks will be of equal distance, except perhaps for the last one or two. Since it takes time to come about, a series of a few long tacks is faster than many short ones — yet it's sometimes much easier to keep the mark in sight with shorter tacks.
**Tacking Step-by-Step**

You've already learned that tacking is changing a boat's direction by first turning the bow toward the wind (*heading up*), then through the wind and No-Go Zone, and away from the wind (*heading down*) to a new direction. Also you've learned that whenever the bow turns through the wind, the sails will cross from one side to the other. Now you'll learn how to tack.

In sailing always remember that preparation and communication are key to the safety of your crew and enjoyment of your sail. These two factors are essential in all phases of the sport, including leaving the dock, anchoring, responding to emergencies, and tacking and jibing. Know what you are going to do and how you are going to do it. Talk to your crew…and listen.

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**Preparing to Tack**

The boat is on a beam reach with the wind coming over the left side of the boat. Heilmsman checks for anything that might be in the way, selects a reference point to steer for after completion of the tack, and then calls out, "Ready about!" The crew checks to make sure the jib sheets are clear and ready to run out, then uncleats the working jib sheet and gets ready to sheet in the lazy jib sheet before responding, "Ready!"

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**Tack Is Completed**

Once the tack is completed the helmsman centers the tiller and steers for the reference picked at the beginning of the tack. The crew adjust the mainsail and jib for the new direction. The jib sheets are then coiled and readied for the next tack.
Turn Toward the Wind (Heading Up)
After the crew have announced they are ready, the helmsman calls out, "Tacking!" or the more traditional "Hard a-lee!" to announce the beginning of the tack, and starts to turn the boat into the wind (tiller toward sail). As the boat turns into the wind the sails begin to luff. When the forward edge of the jib is luffing, the crew releases the former working jib sheet so the jib can cross over to the other side.

Heaving-to
If you want or need to stop sailing for awhile, for instance to check a chart, or relax for lunch, the best way is to heave-to. This holds your position with the sails and rudder countering each other as the boat drifts forward and to leeward (downwind). Always check that you have plenty of room to drift downwind before heaving-to.

1. To heave-to, steer your boat so it is sailing close to the wind.
2. Tack the boat, but do not uncleat the jib sheet so the jib will become "backed."
3. Move the tiller toward the mainsail and secure it by tying off the tiller.
4. Trim the mainsail so the boat lies at an upwind angle.

Turn Away From the Wind (Heading Down)
As the helmsman steers through the wind, the jib blows across the bow and the former lazy sheet is sheeted in (a couple of wraps around a winch may be necessary to hold it against the load). The helmsman crosses over to the other side as the mainsail crosses over the cockpit.

Mainsail sheeted in.
You may need to trim the main differently on different boats. Experiment and learn.

Tiller tied to turn the boat toward the wind.
JIBING

In the bottom figure the boat begins to turn her stern (the back of the boat) into the wind, preparing to jibe (change direction).

The wind catches the mainsail (generally the center sail) and whips it across the boat, under control of the main sheet (line controlling the mainsail).

In this diagram, the jib (most forward sail) has remained on the starboard (right) side and has not been jibed (changed direction).
Your First Sail

Turn Away from the Wind (Heading Down)
After the crew respond, "Ready!" the helmsman calls out "Jibing!" or "Jibe-ho!" and slowly turns the boat away from the wind (tiller away from sail). The crew members ease the working jib sheet and start to sheet in the mainsail.

Turn Stern Through the Wind
Helmsman continues to turn the boat, and the main is sheeted into the center. As the stern crosses the wind, the jib crosses over to the other side, and the former working jib sheet is released. Just before the boom flops across, the helmsman calls out "Jibing!" or the more traditional "Jibe-ho!" as a warning that the boom is coming across. In lighter winds the crew may simply grab the mainsheet or the boom and throw the sail to the other side of the boat. As the main crosses the center, the helmsman briefly steers against the turn. **EVERYONE KEEPS HIS OR HER HEAD SAFELY DOWN AS THE BOOM CROSSES THE COCKPIT!**

Turn Toward the Wind (Heading Up)
As soon as the boom has crossed the cockpit the crew let the mainsail run out to keep the boat from rounding up (turning too much) and sheet in the former lazy jib sheet. The helmsman heads up the boat toward the wind and steers for the reference, while the crew adjust the sails.
Jibing Step-by-Step
As you have already learned, jibing is changing the direction of the boat while passing the stern through the wind. Again, preparing and communicating with your crew is essential for a smooth, controlled, and safe maneuver.

In light winds during a jibe, a crew member can grab the mainsheet and simply pull the boom over to the other side of the boat. Do NOT try this in moderate to heavy winds.

Preparing to Jibe
Helmsman checks wind direction and selects reference to steer for after completion of jibe, and then calls out, "Get ready to jibe!" The crew check the sheets to make sure they are ready to run out, and unceat the working jib sheet and mainsheet before responding, "Ready!"
Most people tend to place Pegasus legends under the general of "Mythology." Actually, their stories and legends fall into a number of categories.

PEGASUS is a constellation of the Northern Celestial Hemisphere, found well up in the evening sky of Autumn.

A large square called "The Great Square of Pegasus" marks the square in the sky. A line drawn down the east side of the square and extended an equal distance south indicate the point where the sun stands on March 21, the day spring begins. The name Pegasus comes from mythological winged horse that turned into a constellation.

PEGASUS:- In astronomy, one of the original 48 ancient constellations of Ptolemy. It is bounded by Andromeda, Lacerta, Equuleus, Delphinus, and Aquarius. It is noted for its great square, which is formed by Alpha, Beta, and Gamma Pegasi, and the Alpha of Andromeda.

Standing high in the eastern sky, just below Cygnus we find Pegasus.

PEGASUS, PEG uh sus, was a winged horse in Greek mythology. Perseus, a son of Zeus, cut off the head of Gorgon Medusa, and Pegasus was born from the trickling blood. The horse flew up to join the gods, and was caught by the goddess Athena. Athena tamed the horse with a golden bridle.

Athena gave this bridle to Bellerophon before he started out to fight the Chimera. Bellerophon also tamed Pegasus with it, and rode the horse to conquer the Chimera and the Amazons. But Bellerophon became proud. Pegasus threw him off and flew into the sky. Zeus made the horse into a constellation.

Another legend about Pegasus is that the Muses were holding a contest of song. The music charmed the streams and made Mount Helicon grow toward the heavens. The God Poseidon ordered Pegasus to make it stop growing by striking it with his hoof. Pegasus did this, and the fountains of inspiration, Aganippe and Pieria, were also made by the hoof of Pegasus.

Muse: One of the nine goddesses of the fine arts and sciences. They were Calliope (epic poetry), Clio (history), Erato (love poetry), Euterpe (lyric poetry), Melpomene (tragedy), Polyhymnia or Polymnia (sacred song), Terpsichore (dancing), Thalia (comedy and pastoral poetry), and Urania (astronomy). In this way, Pegasus is connected with poetry. A poet is said to "mount his Pegasus" when he writes.
I'M A FRAYED KNOT

BOWLINE
Tied by forming an overhand loop in the standing part of rope then passing the end through the loop, around the standing part, then back through the loop.
This is the basic knot for tying a fixed loop which will not slip or jam.

SQUARE KNOT
Tied by bringing ends of ropes over and under and then bringing them back above over and under, being careful that the end and standing part of one rope come out on the same side of the bight (loop) formed by the other rope.
This is the basic binding knot used to tie two ropes together. It ties and unties easily, yet holds securely.

OVERHAND KNOT
Tied by forming a loop and passing the end through the loop.
This is the most simple end knot. It is used to keep the rope from sliding through a hole or part of another knot.

SLIP KNOT
Tied by passing rope around an object and then tying an overhand knot around the standing part.
This is a holding knot which is easily undone when the object is removed, by pulling on one end and standing part.

FISHERMAN'S KNOT
Tied by forming a overhand knot in each rope (line), passing the loops over the other rope.
This is used to join two rope ends, making a small, neat knot.

TWO HALF HITCHES
Tied by passing rope around object and then making two underhand loops around its standing part.
This is a basic holding knot, used to secure a rope to an object.

FIGURE-OF-EIGHT KNOT
Tied by passing the end of the rope around the rope and back through the loop formed.
This is an end knot, larger than the overhand knot, often used at the ends of a lariat to prevent fraying.

(1) In cleating a line, start with a turn around the cleat,
(2) then go around the cleat so that the line passes under each horn one more time,
(3) Finish with a half-hitch over one horn.

CLEATING A LINE