

Price: \$9.24

# BASIC KEELBOAT



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# Welcome to Basic Keelboat Sailing!

This 4 day course is designed to prepare you to crew sailboats in the 20 to 25 foot range with fixed keels in protected waters. In taking it from Spinnaker Sailing School, you will become familiar with the San Francisco Bay with its stronger wind, larger waves, tides, currents and widely varied traffic.

By completing the course you will also earn the Basic Keelboat Certification (101) from the American Sailing Association. This certification is internationally recognized, and brings you halfway towards completing the requirements to skipper boats up to 30 feet.

Spinnaker is providing you with the ASA textbook, *Sailing Made Easy*, as well as our own instructional handout. Your lesson kit also contains a set of review questions to help you study for the written exam, an operational checklist, a rope for practicing knots, and your official ASA Log Book, which is where your certifications will be documented.

## The Lesson Routine

Each day begins with two hours of classroom instruction on Zoom from 9:00am to 11:00am. We break for lunch and then have on the water instruction from 12:30pm to 4:30pm.

You can see the list of objectives that will be covered each day in both the classroom and on the water lessons on the next page. You may notice that there isn't much new material in the second half of the course. Most of the material is introduced during the first two days; the last two are devoted to refining and mastering everything needed for certification. Our goal is to have you complete all necessary skills by the end of the fourth lesson.

## Getting Certified

You will take the written exam on the forth morning or by scheduling on a different day. After you complete the exam we'll score it and an instructor will explain any questions you missed. A minimum score of 80% is required to pass the written exam.

Next, we will check that you've learned how to tie the required knots during your time on the water. After lunch, you will go through the steps of checking out a Merit, demonstrate (without coaching) the various on the water skills, and then put away the Merit.

## Once You Pass

If you don't have access to a boat, a great way to continue learning and to meet other sailors is by joining the sailing club. With your certification, you can participate as a crewmember on races and day sails. If you would like to learn to skipper boats in the SF Bay, you will need to take Basic Coastal Cruising (103).

# Basic Keelboat Sailing Objectives

## Lesson 1

### Classroom

- Introductions
- Lesson Materials
- Lesson Routine
- Sailboat Nomenclature
- Standing & Running Rigging
- Parts of the Sail
- Sail Theory
- Downwind & Upwind Sailing
- The Sailing Quadrant
- Safety
- Introduction to Knots

### On the Water

- Operational Check List
- Safety Equipment
- Setting Up the Boat
- Introduction to Sailing Maneuvers
- Departure from Slip
- Raising the Mainsail
- Points of Sail
- Tacking & Jibing
- Unfurling the Jib
- Maneuvering with Main & Jib
- Returning to the Slip
- Putting Away the Boat

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## Lesson 2

### Classroom

- Wind Shifts
- Headers & Lifts
- Right of Way Rules
- Power vs. Power
- Power vs. Sail
- Sail vs. Sail
- Crew Overboard Recovery
- Knot Practice

### On the Water

- Using the Outboard Engine
- Pre-start Check
- Starting
- Steering with the Engine
- Docking Practice
- Sailing Practice
- P.O.S., Tacking, and Jibing
- Crew Overboard Recovery
- Channel Marker Familiarization

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## Lesson 3

### Classroom

- Review Questions
- Introduction to Reefing
- Knot Practice

### On the Water

- Reefing
- Docking Practice
- Practice Sailing Skills

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## Lesson 4

### Classroom

Written Test

### On the Water

Complete Skills & Knot Test  
Evaluations

## Lesson 1

# NOMENCLATURE

An important part of learning to sail is learning the commonly used terms. We'll start with the important parts of the boat. (See page 20 in the ASA textbook, *Sailing Made Easy*.)

<b>Bow:</b> The front end of the boat.	<b>Tiller:</b> The lever that controls the rudder.
<b>Stern:</b> The back end of the boat.	<b>Winch:</b> Cylindrical device that gives mechanical advantage in the pulling of lines.
<b>Port:</b> The left side of the boat when facing forward while aboard the boat.	<b>Cleat:</b> Device used for securing lines.
<b>Starboard:</b> The right side of the boat when facing forward while aboard the boat.	<b>Fairlead:</b> A fitting specifically made to guide a line at a certain angle to a part such as the jib.
<b>Cockpit:</b> The open area where the crew operates the boat.	<b>Lifelines:</b> Wire lines to help keep the crew aboard.
<b>Cabin:</b> The sheltered part inside of the boat.	<b>Stanchions:</b> Vertical posts that hold lifelines in place.
<b>Keel:</b> The weighted fin at the bottom of the boat that keeps the boat from tipping and keeps the boat from slipping sideways through the water.	<b>Pulpit:</b> The metal railing around the front of the boat.
<b>Rudder:</b> The spade-like object under the stern of the boat that steers the boat.	<b>Gooseneck:</b> The fitting that connects the boom to the mast. It works like a swivel, allowing the boom to move up and down and swing from side to side.

## **STANDING RIGGING**

**Mast:** The large vertical spar that supports the sail and boom

**Boom:** The projecting horizontal spar used to hold and extend the foot of the main sail

**Forestay:** The wire (cable) that supports the mast from the bow and prevents the top of the mast from moving aft

**Backstay:** The wire that supports the mast from the stern and prevents the top of the mast from moving forward

**Shrouds:** The wires that support the mast from the sides and prevent it from moving athwartships (sideways)

## **RUNNING RIGGING**

**Halyards:**

**Sheets:** Lines or wires used to hoist the sails

Lines used to control the angle of sails by trimming and easing. **Trimming** is the tightening the sheet to make the sail move towards the centerline of the boat and **easing** is letting it out.

**Outhaul:**

**Downhaul:** Line used to tighten or tension the **foot** (bottom edge) of the sail

Line used to tighten or tension the **luff** (forward edge) of the sail by pulling downward at the **tack** (bottom forward corner)

**Boom Vang:**

**Topping Lift:** Line used to pull the boom down. It prevents the boom from lifting, which causes the top part of the sail to twist.

**Pigtail:**

Holds the end of the boom up and prevents it from falling into the cockpit when the main sail is lowered.

**Mainsheet  
Traveler:**

A short wire that holds the end of the boom to the backstay when the boat is stored in the marina

**Cunningham:**

A bar or track secured athwartship to the deck allowing the mainsheet to travel sideways. It is used to control twist of the mainsail.

**Reef Outhaul:**

**Reef Downhaul:** A type of downhaul that pulls through a reinforced hole near the bottom of the sail

**Reef Points:**

Functions as outhaul to the reefing clew when sail is reefed (reduced)

## **OTHER PARTS**

**Turnbuckle:**

Functions as downhaul to reefing tack when sail is reefed

**Chainplate:**

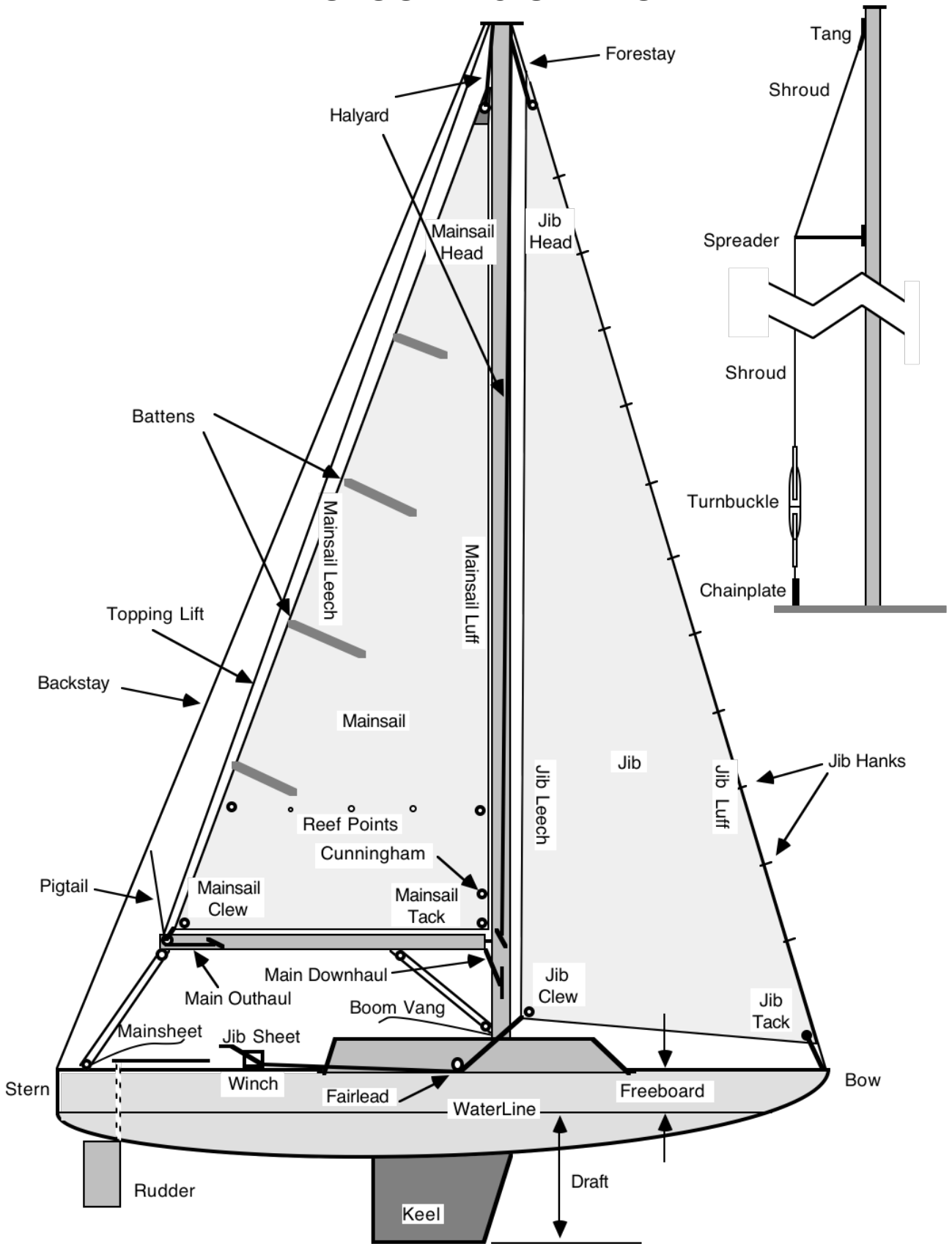
Used to tie up the excess sail to the boom when the sail is reefed

**Tang:**

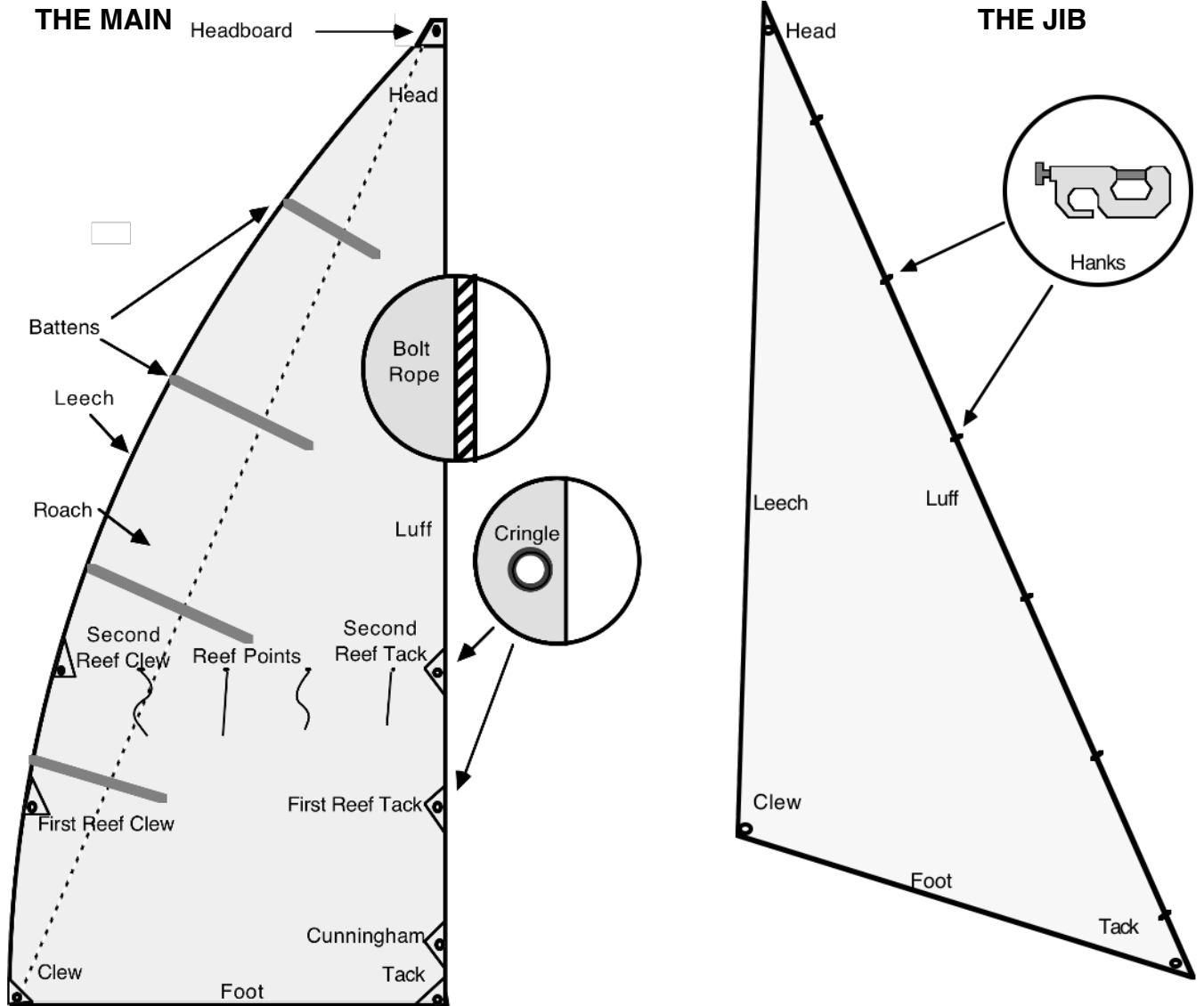
Device for adjusting tension on shrouds and stays

**Stem Fitting:**

# A SLOOP RIG SAILBOAT



# PARTS OF THE SAIL



**Battens:** Wood or plastic strips that stiffen the sail

**Batten Pockets:** Pockets sewn into the sail to hold the battens

**Roach:** The unmeasured sail area within a curved leech

**Cunningham:** A reinforced point just above the tack that can be pulled down to achieve more tension along the luff.

**Reef Points:** Reinforced points on the sail where lines or straps can be attached to tie up the unused part

**Head:** Top corner (where halyard connects to the sail)

**Tack:** The bottom forward corner of the sail

**Clew:** The bottom back corner of the sail

**Luff:** The forward (leading) edge of the sail

**Foot:** The bottom edge of the sail

**Leech:** The back (trailing) edge of the sail

**Bolt Rope:** The rope reinforcement at the luff (and sometimes foot) of the sail

**Cringle:** A metal reinforcement ring (sometimes called a grommet)

# The Sail as an Airfoil - Sailing Upwind

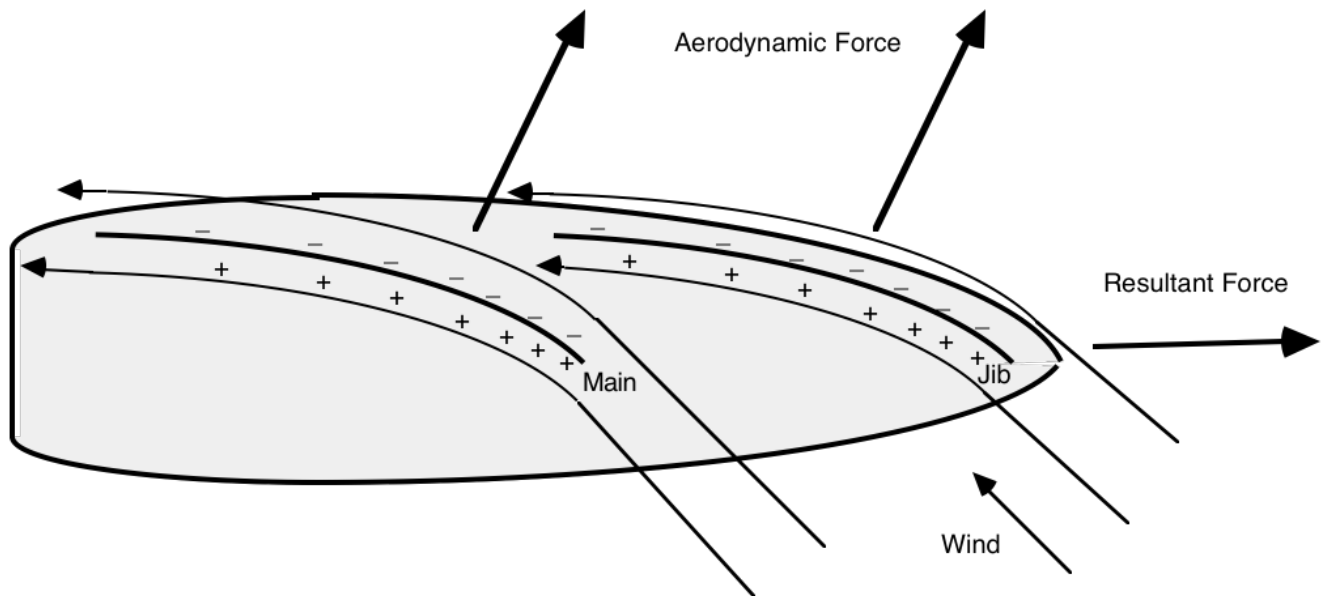
As a boat sails into the oncoming wind, the sail splits and then bends the airstream. As long as the boat does not turn too close to the direction of the wind (eye of the wind), the sail can bend the flow of air further aft. The wind's energy is utilized when the flow of air is bent this way, resulting in forward movement of the boat.

The windstream separates at the luff and the flow of air passes along both the windward and leeward sides of the sail. While the flow of air tries to go straight, it is forced to follow the contour of the sail.

The wind blowing across the windward side

produces a pushing force called **drive**. The wind flowing across the leeward (back side), tries to pull away from the surface of the sail creating a lower air pressure area along the back of the sail. This pulling effect is called **lift**. The lifting force accounts for as much as two thirds of the sailboat's power when sailing to windward.

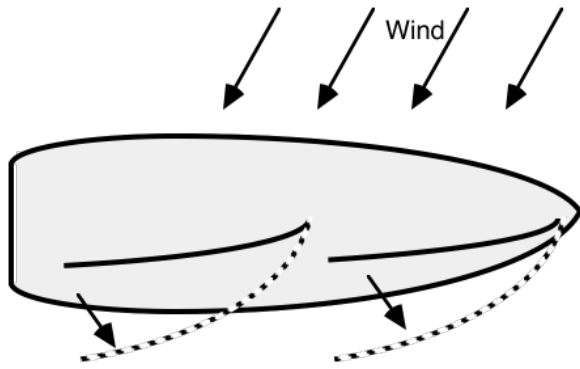
The jib in the illustration below makes its own lift and drive, and also helps increase the flow of air across the back side of the mainsail. This helps to create even lower pressure on the backside of the main, producing more lift.



A strong aerodynamic force is exerted mostly in a sideways direction but slightly forward (see above diagram). Meanwhile, the keel prevents the boat from moving sideways by creating a lateral resistance force almost like the tracks under a railroad car. These two forces combine to create the resultant force, which moves the boat in a forward direction. The interaction of forces is what propels the boat up wind.

The sails should be trimmed so as to create the

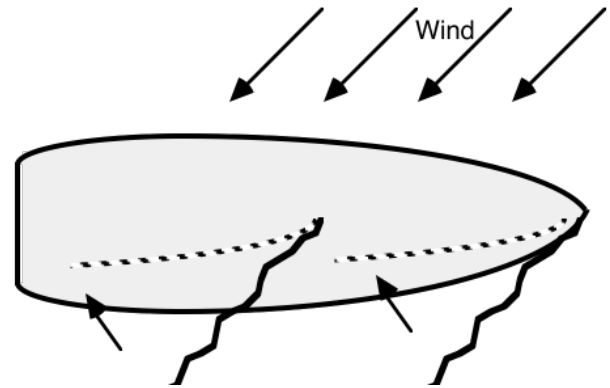
maximum lifting force in the best possible direction. If the sail is out too far, the flow of air will not be bent as much as possible. This reduces power. If the sail is in too far, the flow of air will break away from the backside of the sail. This reduces the lift. Either case will result in less than maximum lift and less than optimum performance for the boat.



### Over Trimmed

In the above illustration, the wind is coming from just slightly forward of the beam. (The beam is the direction sideways to the boat.) Here the sails are in too tight resulting in a condition called **over trimmed**. The wind is creating a pushing force against the sails but very little lift is created because the air can't flow smoothly across the sail's backside. As a result, the force tends to heel the boat and push it sideways, but does not provide much force to propel the boat forward.

The sails should be eased (or the boat turned toward the wind) so the air can travel across both sides of the sail smoothly. Then they will be able to generate lift and the boat will perform properly. The way to find the right trim is to



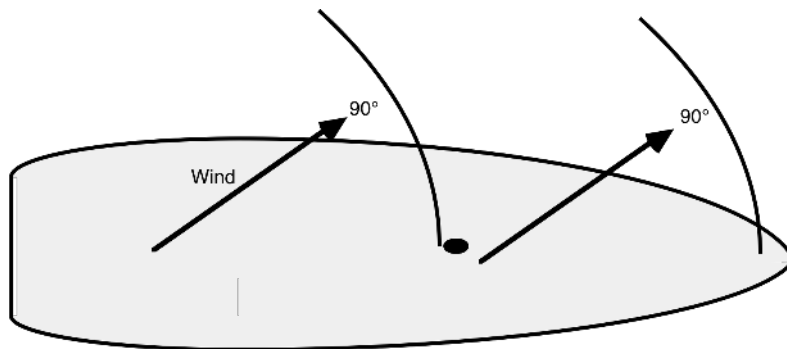
### Under Trimmed

The sails are under trimmed when they are eased out too far. The sail will luff and the boat will slow down and stand up straighter in the water. Here the sails need to be trimmed so they can fill with air, in order to get the boat moving. Luffing the sails can be done to slow the boat if desired, but should not be done too much or too long. *Sails are damaged by extensive luffing.*

### Sail Trim Guideline:

**"When in doubt, ease it out."**

(If you ease it too far, the sail will begin to luff and it will become obvious that it needs to be trimmed back in.)



ease the sail until it begins to luff, and then trim it back in until the luffing just stops.

## SAILING DOWNWIND

A different set of forces comes into play when the boat is sailing downwind. The wind is coming from abaft (behind) the beam. The lifting effect is minimized since little wind travels across the backside of

**Lesson 1**

the sail. Most of the force is drive, coming from the wind pushing on the sail. The best trim is obtained by making sure the sails are out far enough to present the maximum frontal area to the wind. The sails will be close to  $90^\circ$  to the direction of the wind.

## Lesson 1

# MORE SAILING TERMS

**Trim:** To pull in... as in trim a sheet (line).

**Ease:** To let out... as in ease a sheet (line).

**Over Trimmed:** A condition where the sail is trimmed in too tightly for the wind direction.

**Under Trimmed:** A condition where the sail is trimmed too loosely for the wind direction. The sail will luff if under trimmed.

**Heeling:** The leaning action of the boat due to the sideways pressure of the wind.

**Beat:** Sailing to windward by means of a series of tack changes.

**Reefing:** Reducing the area of a sail to compensate for strong wind.

**True Wind:** The wind speed and direction as observed by a stationary observer.

**Apparent Wind:** The wind speed and direction as observed by someone who is moving across the water.

**Weather Helm:** The tendency of a sailboat to head up (into the wind) if the helm is released.

**Lee Helm:** The tendency of a sailboat to bear away if the helm is released.

**Lift:** A change in the wind direction with the eye of the wind moving towards the bow of the boat.

**Beam:** A change in wind direction away from the bow of the boat.

**Abeam:** The widest section of a boat, generally across the middle.

**Underway:** The direction to either side of the boat (90° from the bow).

**Steerage Way:** When the boat is neither at anchor, made fast, or aground.

**No Way:** Enough speed through the water to allow the rudder to steer the boat.

**Forward (Fore):** When the boat is stopped.

**Aft:**

## **POINTS OF SAIL**

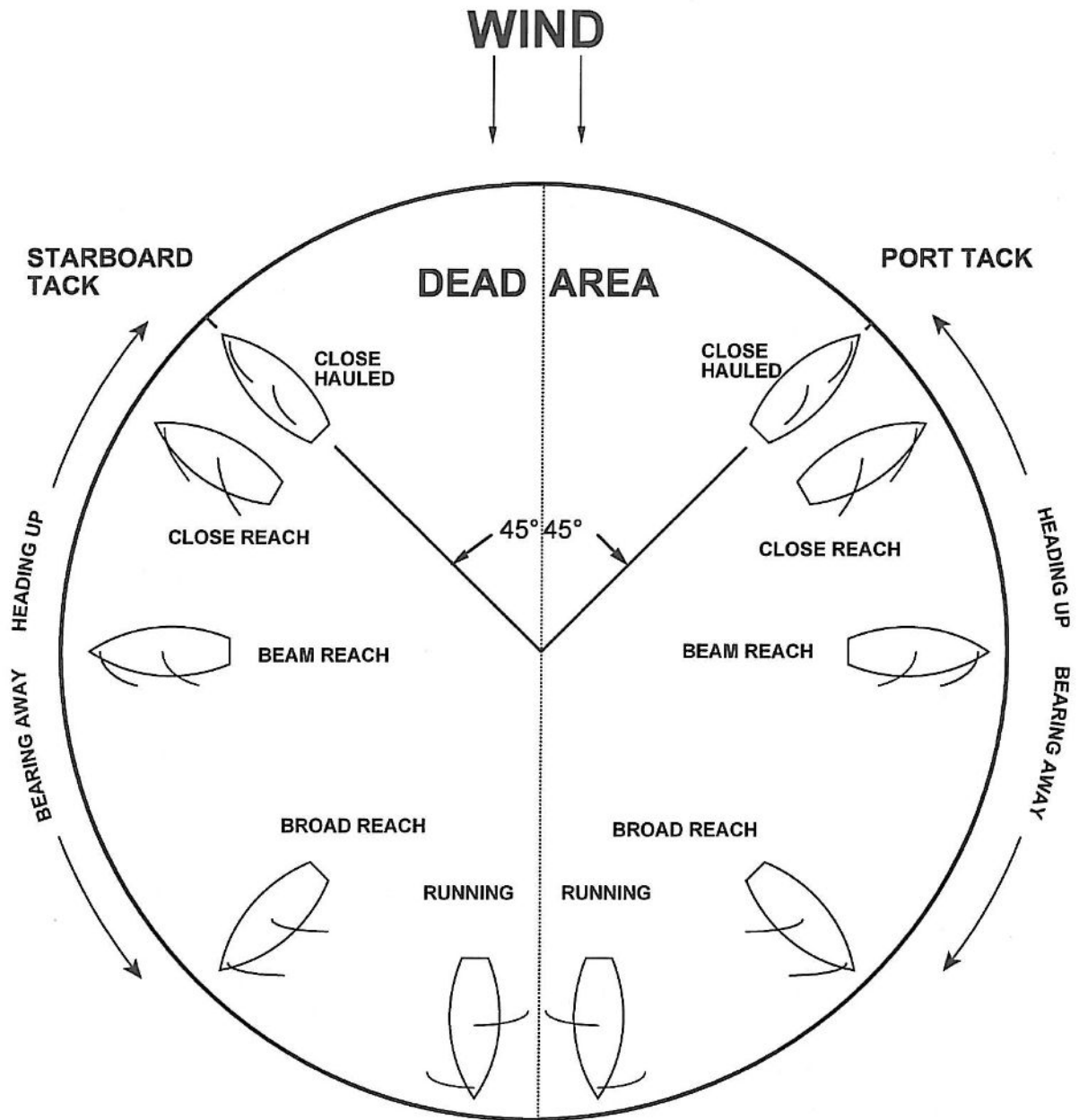
### **Lesson 1**

- Close Hauled:** Sailing as close to the wind as possible (pointing)
- Reaching:** Sailing across the wind - neither pointing as high as possible nor running with the wind
- Close Reach:** Sailing between close hauled and beam reach
- Beam Reach:** Sailing perpendicular to the direction of the wind (90°)
- Broad Reach:** Sailing so that the wind is abaft (behind) of the beam
- Running:** Sailing so that the wind is directly astern
- By the Lee:** Sailing so the wind is coming from the same side as where the main is carried... This could happen while running if there is a wind shift to the side of the boat where the main is. Sailing by the lee is discouraged because it could result in an accidental gybe.

## **OTHER TERMS**

- Eye of the Wind:**
- Dead Area:** The direction the wind is coming from
- Head to Wind:** The 90° (approximately) arc upwind that can't be sailed
- Windward:** Pointing the boat straight into the wind (the boat will stop almost immediately.)
- Leeward:** Toward the direction where the wind is coming from
- Starboard Tack:** The direction down wind or in the direction the wind is blowing (opposite of windward)
- Port Tack:** Sailing so the starboard side of the boat is windward... The mainsail will be carried on the port side.
- Tacking:** Sailing so the port side of the boat is windward... The mainsail will be carried on the starboard side.
- Gybing:** Changing tacks by turning the bow of the boat through the dead area and eye of the wind. Also called **coming about**.
- Luffing:** Changing tacks by turning the stern through the eye of the wind (also spelled: jibing)
- In Irons:** The shaking of a sail when the boat is pointed too close to the wind or the sail is eased out too far... Luffing will begin to occur at the luff and as the sail becomes more and more under trimmed, the shaking will spread aft towards the leech.
- Wing-and-Wing:** The condition when the boat is pointing into the dead area and forward motion for steerageway is lost.
- Heading Up:** The condition when the main and jib are carried on opposite sides while running
- Bearing Away:** Turning the boat towards the eye of the wind
- Helms-A-Lee:** Turning the boat away from the eye of the wind

# THE BASIC SAILING QUADRANT



The basic sailing quadrant illustrates all of the directions that are possible to sail plus the dead area: the 90° arc upwind that can't be sailed. Sailors use the points of sail to describe specific headings relative to

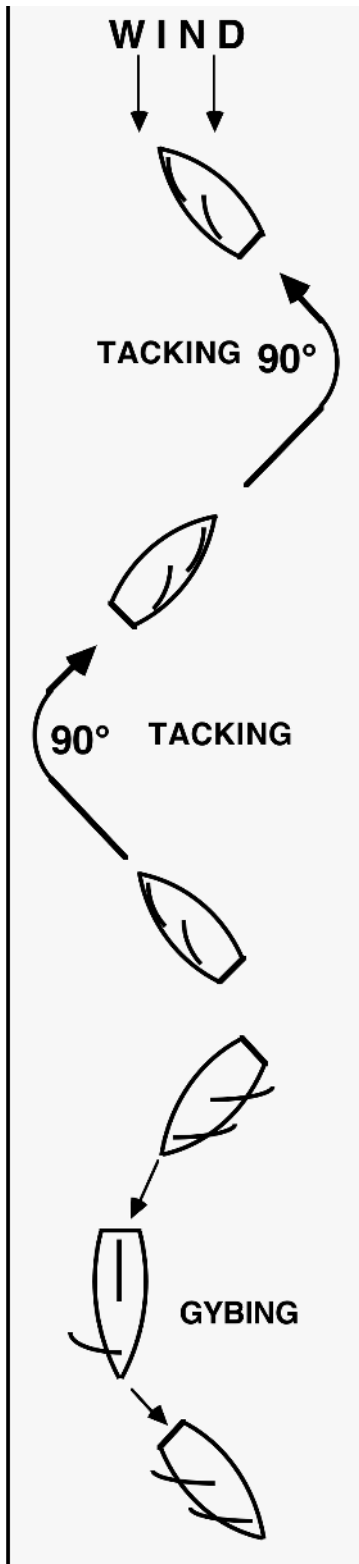
**Lesson 1**

the wind. Refer to the terms listed on the opposite page.

## Lesson 1

# TACKING TO WINDWARD AND GYBING DOWNWIND

The only way a sailboat can reach an upwind destination is through a series of tacks. This process is called beating, or beating to weather. Tacking (or coming about) is changing the boat's direction so that the bow comes through the eye of the wind. Since a 45° angle is about the best a sailboat can point into the wind, tacking requires a turn of at least 90° to get through the dead area completely.



### PROCEDURES FOR TACKING:

1. Helmsman makes sure the way is clear and gives the command: "**Prepare to tack**". This gives the crew a chance to get ready by setting up for the maneuver.
2. Helmsman points the tiller towards the side of the boat where the mainsail is and announces, "**Tacking**". This notifies the crew that the boat is being turned.
3. The moment the jib starts to luff, the crew releases the old jib sheet from the winch. Then the jib is trimmed on the new lee side. The mainsheet generally takes care of itself and does not require a readjustment unless a new point of sail is selected.
4. As the sails come across to the other side of the boat the helmsman switches his or her position to the other side of the boat. As the sails fill, the tiller is brought back to the middle of the boat to steer the new heading.

The gybe (sometimes spelled jibe) is the maneuver of changing tacks while the boat is sailing downwind. It involves taking the stern of the boat through the eye of the wind. As the boat turns and the stern comes through the eye of the wind, the sails must be brought across to the opposite side of the boat.

*Gybing is a maneuver that must be controlled!* As the boat is turned, the boom must be controlled as it passes over the boat. If there is more than a little wind, the boom can swing across the boat with tremendous force. Crewmembers could be injured or the rig could be damaged in an uncontrolled situation. You can prevent mishap simply by pulling in the mainsheet and easing it out again as the boom passes from side to side.

### PROCEDURES FOR GYBING:

1. When the boat is on a broad reach (wind off the stern quarter) or running, the boat will be turned to where the centerline of the boat will pass through the eye of the wind. The helmsman gives the command, "**Prepare to Gybe.**"
2. On that command, the main is trimmed in close to the centerline of the boat. The jib may be brought to the other side in advance of the gybe. It isn't really critical when the jib is brought over as long as both jib sheets aren't turned loose at the same time.
3. As the boat slowly turns downwind, the wind will cross to the other side. The leech of the main will be the first part of the sail to be blown over. When this happens the helmsman commands, "**Gybing!**" The mainsheet trimmer immediately eases the main and the helmsman and crew make the

## **Lesson 1**

final adjustments for the new heading. The most important part is to use the sheet to prevent the main from swinging on its own.

## Lesson 1

# SAFETY

Sailing can be safe as well as fun if you follow a few simple guidelines on and around the boat. Spinnaker Sailing will supply everyone with PFD's (life jackets). You don't have to wear a PFD by law, but we ask that during lessons everyone wear one. When sailing, the cockpit is the safest place to be unless you need to go elsewhere on the boat. When going forward while underway, keep your weight low, walk on the windward side, and keep a hold of something secure like a grab rail or a shroud. These things will reduce the risk of going overboard.

When docking, **don't jump!** Wait until the boat is close enough to the dock so that you can step off. Never get yourself between the boat and the dock. Many of the things involving safety are common sense. Your instructor will point out safety tips during your lessons. If you have any questions, ask your instructor. He or she has lots of experience and can steer you in the right direction.

The boats at Spinnaker Sailing are equipped with a number of safety items, some of which are required by the USCG and some are not. It is up to the skipper to make sure the safety equipment is aboard; in operational condition and that the crew can locate and use any of the equipment if needed. A checklist provided in the Basic Keelboat instructional packet contains a list of the required and additional safety equipment.

### SAFETY EQUIPMENT CHECK LIST

(For boats up to 26 feet)

#### USCG Required

- One PFD for each person (Type I, II, III)
- Throwable PFD (Type IV)
- Visual Distress Signaling Device(s)
- Sound Making Device
- Fire Extinguisher
- Running Lights (If boat is to be sailed at night)
- Registration (Not a safety item but still required)

#### ADDITIONAL SAFETY ITEMS (Not Required)

- First Aid Kit
- Flashlight
- Dock Lines
- Spare Line
- Bilge Pump or Bailer
- Fender
- Anchor with Rode
- Nautical Chart of Area (Supplied by skipper)

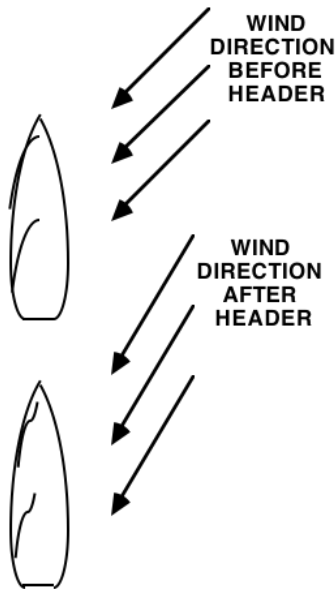
## WIND SHIFTS

As you have learned, it's important to be aware of the relative angle of the wind to the boat. This way you can keep the sails in the right configuration for the particular wind angle. You can have everything right but then the wind changes its direction. When this happens, you will have to re-adjust. Understanding the two kinds of wind shifts will help you adjust to them easily.

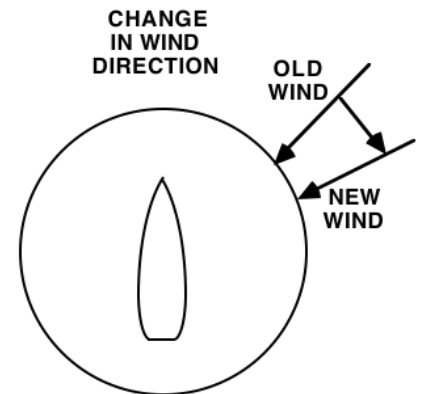
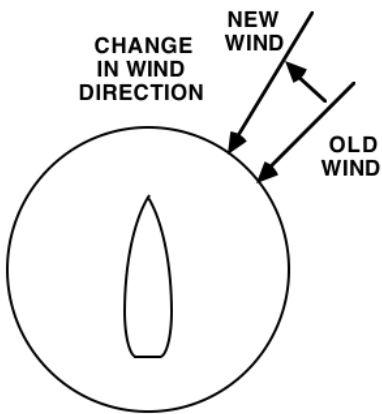
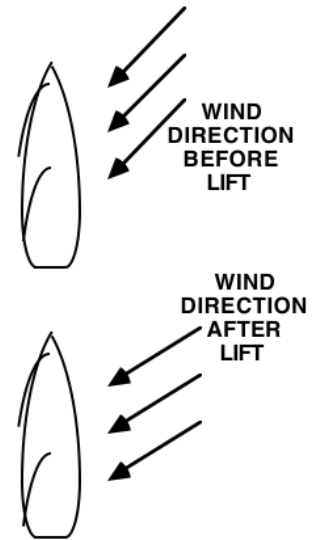
When the wind changes to a direction more towards the bow of the boat, it is called a **header**. A header will usually cause the sails to luff. You can do one of three things to respond for a header. One is to bear away until the boat has the original wind angle again. Another is to trim the sheets so that the trim is correct for the closer wind angle. If you are not in a position to trim or bear away, you can tack the boat.

When the wind shifts to a direction away from the bow, it is called a **lift**. When this happens the sails will become over trimmed for the new wind angle. Since luffing won't occur when over trimmed, you will have to notice the change elsewhere such as the wind vane or telltales. You can respond by heading up to the original wind angle, easing the sheets for the broader wind angle, or by gybing which will happen if the lift shifts the wind past the stern of the boat.

### HEADER



### LIFT



## Lesson 1

# RIGHT OF WAY

When two boats approach each other on a collision course, a right of way situation exists. According to the rules, one boat becomes obligated to give way to the other. The boat that is supposed to give way is called the **give way vessel**. The other one is called the **stand on vessel**. The stand on vessel should keep to its course so the give way vessel can get out of the way without confusion. There are specific rules to use in determining which vessel is which.

From a practical standpoint, it is much better to plan ahead and alter course early enough to avoid right of way confrontations before they occur. Being dead right is no consolation for being in the right. Additionally, it's vitally important to keep an adequate lookout so a boat or anything else doesn't surprise you. The lookout rule states: "Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision."

### **MOTOR VS. MOTOR**

The rules for motorboats with motorboats are very much like the rules for cars. (Exceptions are in the case of any "special circumstances".)

**Overtaking** – When one boat is overtaking another, the overtaking boat gives way. Overtaking can take place on either side so long as the overtaking boat stays clear of the boat being overtaken until completely clear of the overtaken boat.

**Head On** – When two motorboats approach each other head on, both boats give way by turning to the right to pass each other port to port.

**Crossing** – When motorboats cross, the boat on the right is the stand on boat and the one on the left is the give way boat. This is like two cars coming to a 4-way stop at the same time except that the give way boat will usually alter course to go behind the other boat rather than stopping.

### **MOTOR VS. SAIL**

A motorboat in the rules is any vessel using an engine, regardless of whether it is a sailboat or a motorboat. If the engine is running, a sailboat is considered a motorboat in the rules. A sailboat generally has the right of way over a motorboat so the sailboat is the stand on boat and the motorboat gives way.

But there are some exceptions:

**Large motor vessels** are given the right of way in channels where it is difficult for them to maneuver. In the case of ships, the whole San Francisco Bay is considered to be channeled so that ships always have right of way in the Bay.

In **narrow channels** such as Redwood Creek, even motor vessels as small as 65 feet may be limited in maneuverability enough to make them the "stand on" vessel.

Motor vessels that are **restricted in maneuverability** due to the special job they are doing are "stand on." This could be anything from towing nets to dredging, pile driving, or tending buoys.

**Sailboats that are motoring** are required to follow the regular motor boat rules. Therefore, sailboats that are motoring give way just like other motorboats when required.

Motor vessels that are experiencing **mechanical difficulty** are given the right of way.

## **Lesson 1**

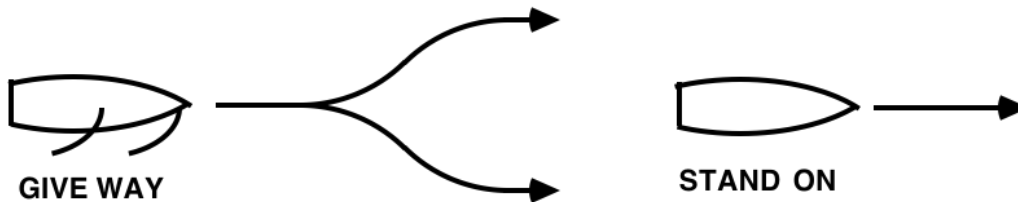
Sailboats give way when **overtaking** powerboats.

**Lesson 1**  
**SPECIAL CIRCUMSTANCES**

Various circumstances can give higher priority to certain vessels over ordinary vessels. One is when there are mechanical issues that prevent the vessel from being controlled in a normal way. An example would be a failure in the steering mechanism. This is called “not under command”. Another is a “restriction in ability to maneuver” due to some kind of work being done. Vessels engaged in dredging, fishing with nets, tending buoys, are examples of restricted in ability to maneuver. Another example is the priority given to large vessels in confined channels. Smaller boats all have to stay out of the way of the ships coming in and out of the Redwood City channel.

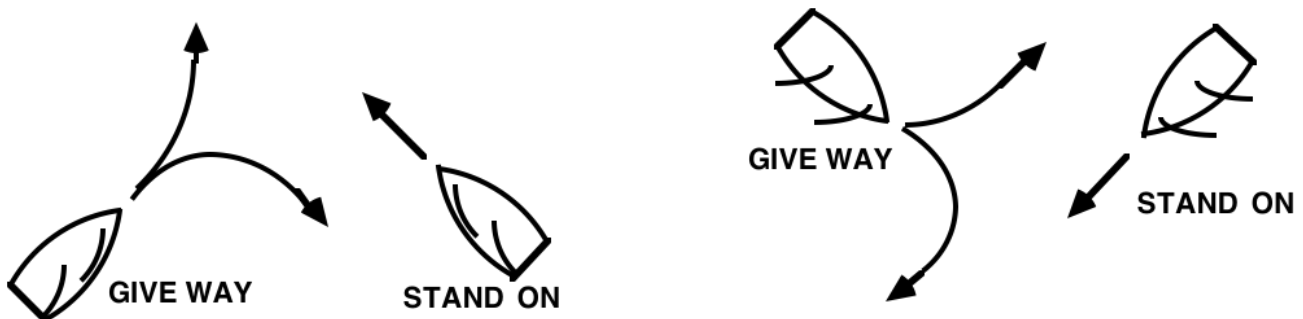
**OVERTAKING**

**Any vessel overtaking any other shall keep out of the way of the vessel being overtaken.**  
(There are exceptions to this rule such as in the case of vessels restricted in their ability to maneuver.)



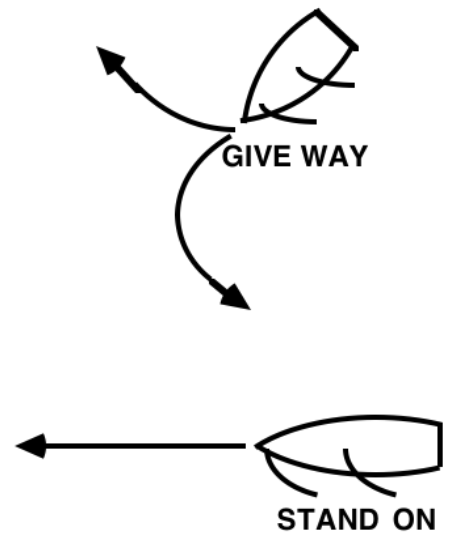
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**SAIL VS. SAIL**  
**STARBOARD TACK**  
**VS. PORT TACK**



**When each sailboat has the wind on a different side, the vessel that has the wind on the port side shall keep out of the way of the other.**

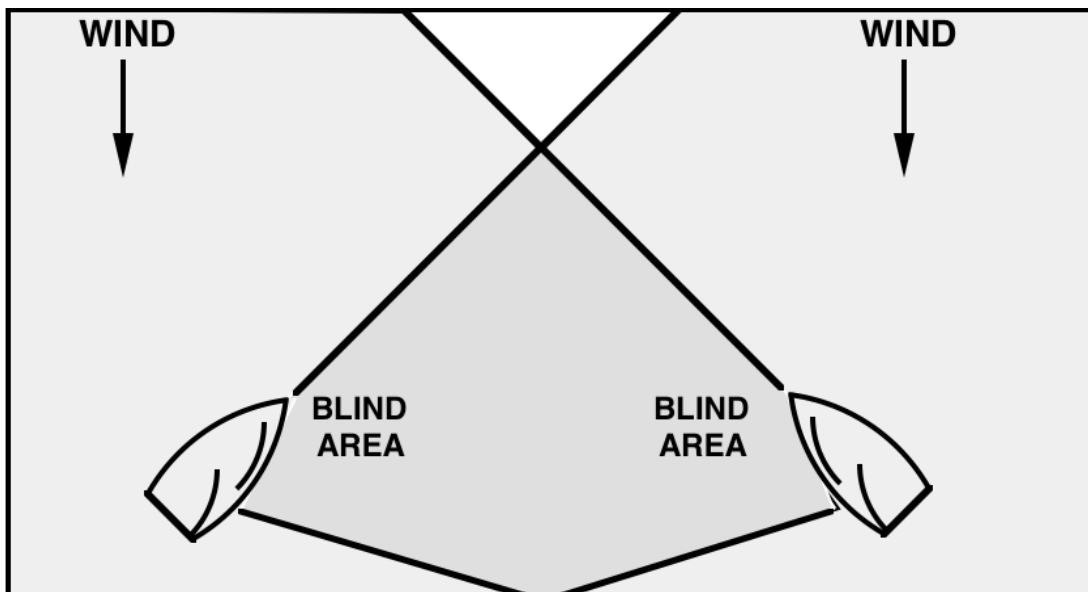
## WINDWARD VS. LEEWARD



**When both sailboats have the wind on the same side, the vessel that is to windward shall keep out of the way of the vessel which is to leeward.**

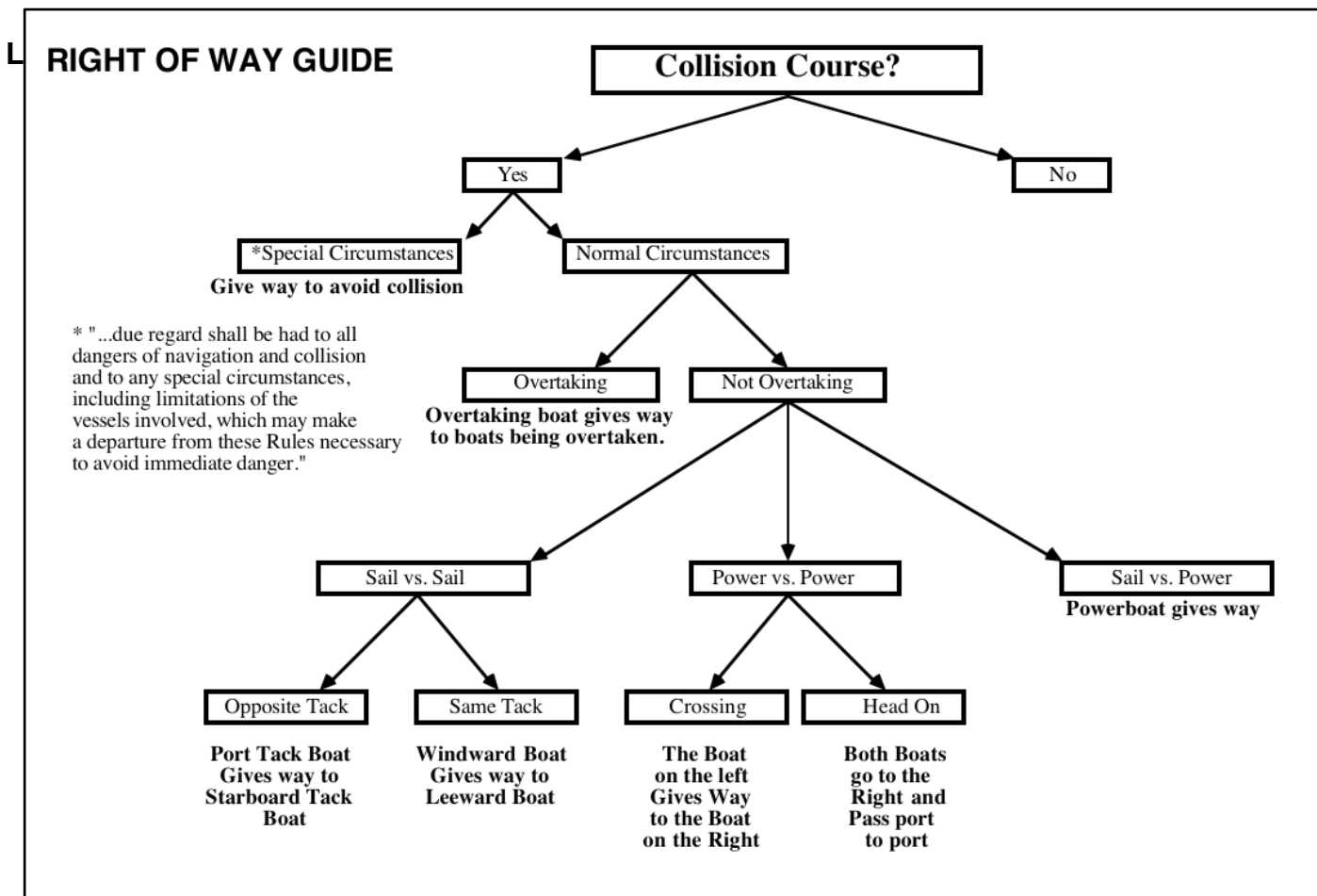
### IN GENERAL

When there is a risk of collision and it appears that the give way boat is not taking appropriate action, it is the duty of the stand on boat to avoid the collision by altering course. Alteration in course to avoid a collision should be made early and obvious enough so that the other skipper can see what you are doing. Sometimes you can tell if you are on a collision course by the compass bearing to the other vessel. If the bearing remains steady, collision is imminent unless someone changes course or speed.



### OVERLAPPING BLIND AREAS ON APPROACHING BOATS

Sometimes it is difficult to see in all directions on a sailboat, especially when sailing close hauled. The jib can block 25% of view from the cockpit. The area of obstruction occurs on the leeward side from straight ahead sometimes as far aft as abeam. It just so happens that when close hauled or close reaching, sailboats close hauled or close reaching on the opposite tack will remain within this blind spot sometimes right until the time of collision. It's important to have a crew member keep an eye out to leeward



\* "...due regard shall be had to all dangers of navigation and collision and to any special circumstances, including limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger."

## CREW OVERBOARD DRILL

The objective in a crew overboard situation is to maneuver the boat and stop it next to the victim, in order to get him or her safely back onboard. In Basic Keelboat Sailing you must learn to do this under sail since the motor may not always be available for use. The use of the motor also introduces an additional hazard to the person in the water. It takes some practice to develop and master the necessary skill, which you will gain by doing crew overboard drills. You will practice the Figure 8 method because it works in the greatest variety of situations.

### PROCEDURES:

1. Shout "**CREW OVERBOARD**" to let the crew know what has happened so everyone aboard can help.
2. Throw some kind of **FLOTATION** into the water to help the victim keep afloat. You can use boat cushions, life jackets, life ring, or even a beer chest - whatever is handy. Extra flotation will not only make it easier for the victim to stay afloat, it will help you see the victim. It can be very hard to see someone in the water when there are waves or when visibility is poor. Try

to throw the flotation as close to the victim as possible without hitting him.

3. Assign someone to be a **SPOTTER** so that you don't lose track of the victim. This will give the skipper a chance to pay attention to what must be done aboard. Note: The skipper should keep an eye on the victim as much as possible. The spotter's job is to point out the victim to the skipper should eye contact be lost.
4. If it's going to be too much trouble to control the jib, **LOWER THE JIB** and secure it to the deck. This will also help the boat stay put while pulling the victim back aboard. In a real

## Lesson 1

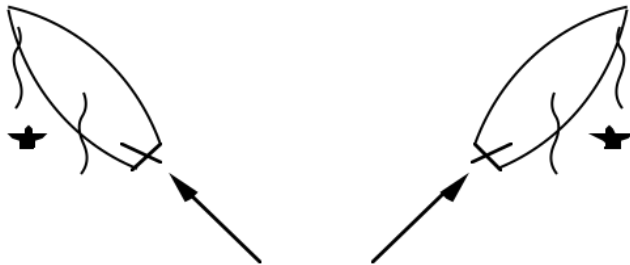
emergency you can let the jib luff by releasing the sheets. On large boats you will have to **SECURE THE VICTIM** with a line while getting ready to haul the victim aboard with a halyard or other line.

**Objective** - The primary objective is to get the boat situated so that you can make a final approach towards the victim on a close reach or close hauled. This way you can ease the sails and slow the boat down to a stop in order to get the victim aboard. It will take some practice to get the boat to stop where you want it to stop.

Always remain calm and orderly. Confusion will lead to mistakes that will make a successful recovery more difficult. Also, you don't want anyone else to get hurt or go overboard.

**Maneuvering into Position** - First note the wind direction. Then pick the victim up on the leeward (down wind) side of the boat. There are three basic approaches:

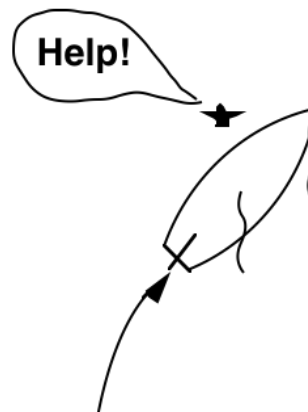
### CORRECT APPROACHES



- This protects the victim from the wind and the waves.
- The leeward side is usually the lowest side to the water. Using this side will make it easier to get the victim back aboard.
- The boat will tend to drift toward the victim. If you don't get close enough to him on the first try, the boat will drift closer to him.

**Stopping the boat** - It is essential that the boat be slowed to a stop for getting the victim back aboard even if there is still a bit of headway when reaching the victim. This can be accomplished by continuing to steer the boat in a close hauled position or slightly higher while letting the sails luff completely. As the boat slows, it will become necessary to hold the tiller further to the lee side to maintain heading. Eventually, steerage will be lost. At this point the tiller can be kept on the lee side and the boat will remain stopped.

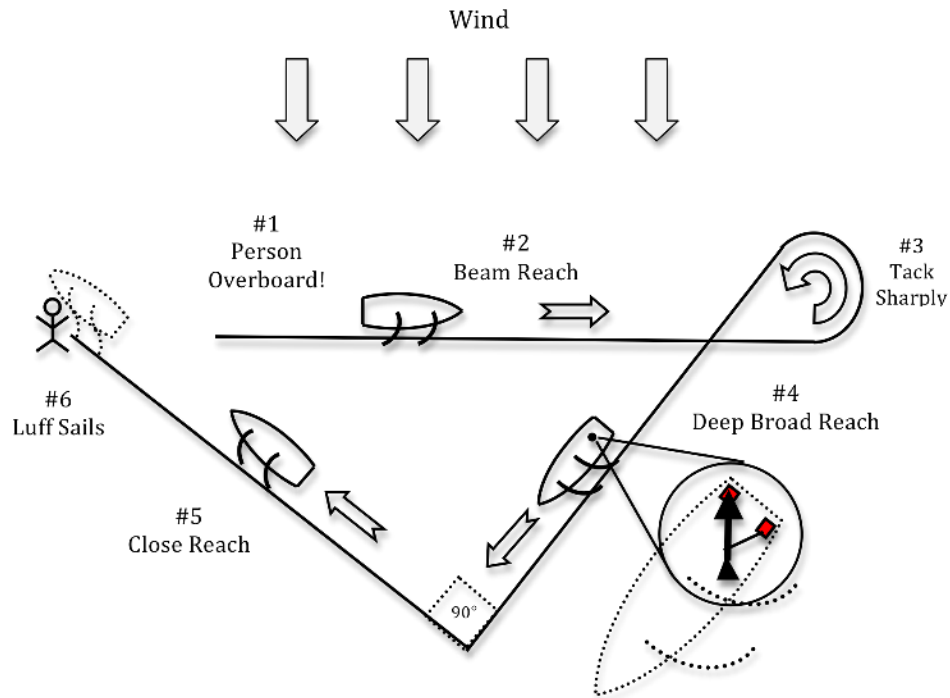
### WRONG SIDE APPROACH



## Lesson 1

# CREW OVER BOARD RECOVERY

## Figure Eight Method



1. **Upon COB, give alert**, throw flotation, appoint spotter.
2. **Change course rapidly to a beam reach.**
3. **Sail 5+ boat lengths** and **adjust trim.**
4. **Tack** and keep the boat turning to a deep broad reach.
5. **Sail on a deep broad reach** and remain on a deep broad reach
6. **Head up sharply** when **COB** is almost **90 degrees** from the bow.
7. **Steer a course to the COB**, heading just slightly windward.
8. **Adjust sails for moderate speed.**
9. **Ease sails to stop the boat** when COB is abeam and to leeward of the boat.
10. With **COB abeam of the boat**, **luff sails** completely and slowly turn the boat into a high close reach. The sails will luff and fill while the boat oscillates between a beam and high close reach. The boat should not be making significant forward way.
11. **Maintain position** until the COB is aboard

## AUXILIARY POWER - OUTBOARDS

**Fuel** - All of Spinnaker's Merit 25 engines are of the 4-stroke combustion cycle variety. This means they run on straight gasoline as opposed to a gas/oil mixture like older 2-stroke outboards. An outboard engine can be tilted and turned in a way that might allow the fuel to spill into places where it shouldn't go. Every engine is labeled with instructions on the correct way to place the engine when pulled up out of the water into the horizontal position.

**Tilt** - Outboards are made of lightweight alloy that will disintegrate if left in salt water continually. To avoid this problem, they each have a means of tilting the engine up so the lower part of the engine can be raised out of the water. The engine should always be raised when leaving the boat to protect it from corrosion. It should also be raised while sailing so the lower part doesn't drag in the water.

**Lower** - The engines are clamped to a mounting bracket bolted to the back of the boat. These brackets can have up to four positions. They enable you to raise and lower the engine to adjust how deep the propeller sits in the water. The propeller is more effective when it's located lower in the water. It's also useful to raise the bracket all the way when putting the boat away so the lower end can be tilted up enough to get it out of the water for storage.

Some boats are also equipped with a mounting bracket to raise and lower the engine vertically. These brackets have as many as 4 positions. Usually the bracket is put into the lowest position for operation. Sometimes when the boat is heavily loaded this will cause the top part of the engine to get too low to

### PRE START CHECK-OUT (Cold Engine)

1. Make sure boat is secure to the dock.
2. Check fuel supply and make sure tank is vented.
3. Un-tilt the engine into the vertical position.
4. Make sure clamps are tight and safety line is attached.
5. Kill button safety clip engaged if so equipped.
6. Lower engine bracket (normally) to the bottom position.
7. Connect fuel line to engine and prime by squeezing primer bulb.
8. Throttle closed.
9. Choke full on.

### STARTING

1. Pre-Start procedures done.
2. Pull starter cord gently to engage mechanism.
3. Pull firmly – repeat if necessary
4. When engine starts, push choke in slowly as engine begins to warm.
5. If it doesn't start right away, check primer bulb for firmness. If it's firm, the engine may be flooded. Try starting with the fuel line disconnected.
6. Check for cooling water coming out.
7. Check Forward and Reverse gears. Run fast enough in reverse to confirm the reverse down-lock functions correctly.
8. Do not run engine at idle more than 2 or 3 minutes if not ready to motor out of slip. Shut it down using the red kill button and re-start

## Lesson 1

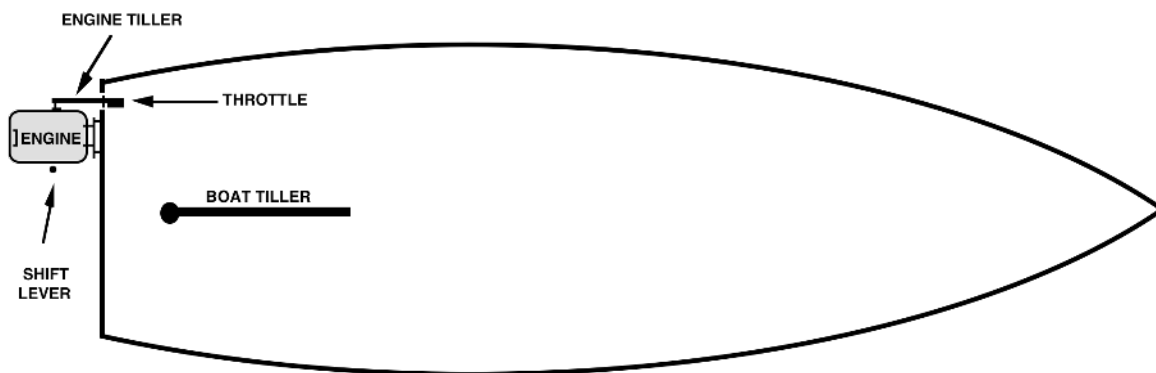
**Rough Water** - Care should be taken in the event of rough water or large wakes from other boats that the top unit doesn't get dunked in the water. If it does, water will get into the intake and the engine won't run again until after the internal parts dry out. If the boat is equipped with a lowering bracket you should be especially careful that the engine top remains high enough that it won't get wet.

**Kill Switch** - The engine can be stopped with the use of the kill switch. It usually is a black button located on the control panel or on the end of the tiller. To stop the engine, depress the button and hold it in until the engine stops completely. If the kill switch doesn't work, the

**Braking** - Reverse gear will help to slow down the boat, but the engine should not be depended upon to stop the boat in tight quarters. Bring the boat to the dock at slow speed so that braking isn't necessary.

### Steering With the Engine

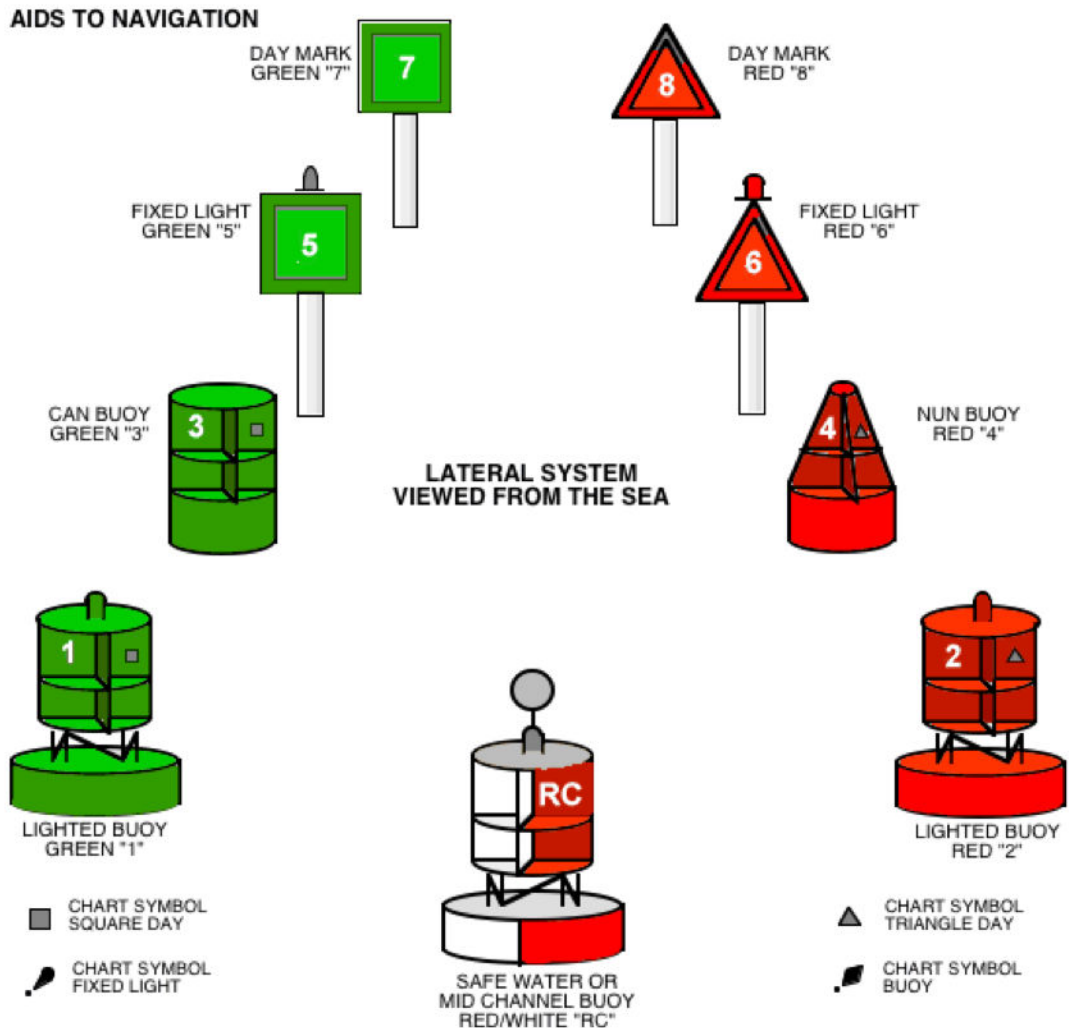
Outboard power has one important advantage over inboard power. The helmsman has the ability to steer with the engine. When the boat is not moving through the water fast enough for the rudder to function, the engine can do an excellent job of steering the boat by directing thrust at an angle from the stern of the boat. Outboard engine steering is also very useful in the event of a failure of the boat's steering



engine can be stopped by pulling out the choke lever or disconnecting the fuel line. system.

Outboard engines have their own tillers. Usually the throttle control is located on the tiller. When the engine is in forward the tiller works the same way as the boat's tiller. In reverse, the engine tends to pull the stern of the boat in the direction opposite the tiller. Another way to look at it is that in reverse, the engine will pull the stern in the direction toward the back of the engine. It's important to be able to steer with the engine in both forward and reverse when maneuvering in crowded places.

## Lesson 1



Just as in driving on the highway, signs are sometimes needed to direct traffic and show where it is safe to go. Signs on waterways are called aids to navigation. They can be buoys or markers on pilings or other fixed structures.

In the Lateral System of buoyage, the markers designate the sides of the channel, one from the other. When returning to a harbor from the sea, red markers with even numbers mark the right hand side of the channel. Green markers with odd numbers mark the left hand side. With the exception of buoys with lights on them, red markers are cone shaped or triangular. The numbering system starts with "1" or "2" at the beginning of the channel entering from the sea. Odd numbers mark the left hand side of the channel and even numbers mark the right.

Mariners in the Americas and Caribbean remember, "Red – Right – Returning." This means red marks the right hand side of the channel when returning from the sea. If you keep all the red markers on your right and green ones on your left when entering a harbor you will stay in the channel. Going between two reds or two greens will head you into trouble.

Other aids include the safe water buoy; to be passed on either side, junction markers where channels split into primary and secondary legs, and various kinds of non-lateral aids for information that have nothing to do with channel location.

# Lesson 1



## Lesson 1

# REGULATIONS AND SAFE BOATING

### Float Plan

A float plan is a document filled out by a boater before going out on the water. This gives another reliable person information about the operator of the boat, the boat's description, information about passengers and/or crew members, destinations(s), and trip expectations such as expected time of return. If the vessel fails to return, the holder of the float plan can notify the Coast Guard and pass along the pertinent information.

Unlike a flight plan, the float plan is not filed with any government agency but is left with a friend, relative, charter company, or sailing school. At Spinnaker Sailing the float plan is part of the normal charter paperwork that is left at the office before departing.

### Obtaining Local Knowledge

Exploring new places makes boating fun but it shouldn't be done blindly. The primary source of local knowledge is the nautical chart. Unlike land maps the chart shows the locations of hazards such as shallow water as well as aids to navigation and other features vital to navigation on the water. These days charts are not only available on paper but contained in nautical apps for smart phones and tablets such as INavx, Navionics, and IsailGPS. See <http://www.spinnakersailing.com/navigation-apps/> for more information about navigation and boating apps. Another way to get access to nautical charts is with a dedicated marine handheld GPS unit available in boating stores. The Garmin® 78SC is reasonably priced and comes with all the U.S. nautical charts built in at every scale.

### Display of Registration Numbers

Federal law requires numbers must be painted or permanently attached to each side of the forward half of the vessel and the validation

stickers must be affixed within 6 inches of the registration number.

### Small Craft and Gale Warning Signals

Small Craft warnings are issued whenever weather and/or sea conditions may prove hazardous to small craft. Most people are surprised to find out what defines a small craft. It is any vessel under 65 feet in length. Gale warnings are more serious and issued when wind is forecast to be in the 34 to 47 knot range. These days it's easiest to see if warnings are in place on the Internet.

The weather portal to the Bay Area is <http://www.weather.gov/mtr/>.

Sometimes triangular flags called pennants are displayed on harbor offices or yacht clubs.



One red pennant: Small craft warning  
Wind to 38 mph (33 knots)

Two red pennants: Gale warning  
Wind 39 to 54 mph (34 to 47 knots)

### Alcohol

Federal and California state law specifies that no person 21 years of age or older shall operate any vessel, water skis or similar device who has .08% or more, by weight, of alcohol on their blood. A level of at least .05% but less than .08% may be used with other evidence in determining whether the person was under the influence of alcohol.

### Accident Reporting in California

## Lesson 1

Boat operators involved in an accident must: (1) provide their name, address and vessel registration number to the other involved parties; (2) render assistance to any injured people; and (3) in case of a death or disappearance, report the accident without delay to law enforcement officials.

Boat operators or owners must also make a written report of a boating accident to DBW (Department of Boating and Waterways) within 48 hours when:

- A person dies within 24 hours of the accident, disappears, or is injured and requires medical treatment beyond first aid.
- Total damage to all vessels involved and other property is more than \$500 or there is a complete loss of a vessel.

In all other incidents requiring a written accident report, the report must be made within 10 days of the accident. Failure to comply with the above requirements is punishable by a fine of up to \$1,000 or imprisonment up to six months, or both.

The ABCs of California Boating contains an accident report form that may be used for such incidents. Forms are also available through some sheriffs' and harbor masters' office and police departments. They may also be obtained by contacting DBW or by visiting [www.dbw.ca.gov](http://www.dbw.ca.gov) and clicking on "PUBLICATIONS."

### Restricted Area and Warning Regulatory Buoys

Designated swim areas are prohibited to boating and can be marked by a buoy. The diamond with the cross symbol is used for all areas where boating is prohibited.

The diamond symbol is used in areas where boating is permitted but where extra caution is

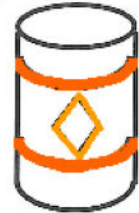
advised. This may be used where there is some kind of hazard. Buoys will often have the nature of the hazard or prohibition spelled out in addition to the symbol.

(Orange & White)



**S** Prohibited Area Buoy  
(Such as a swim area)

(Orange & White)



Warning Buoy

In areas where speed is controlled such as in harbors a buoy with a circle will be displayed.



### Assistance to individuals in Danger

Boaters are obligated to provide assistance to others on the water when it can be done without posing a danger to themselves, their vessel or their crew. In an emergency, boaters can call the U.S. Coast Guard for help. Coast Guard monitors VHF radio channel 16 and the San Francisco Sector operations office can be reached by phone using 911 or directly at 415 399-3417. In situations that are not an emergency, help from commercial towing services can be obtained.

Whenever someone calls for help in an emergency he/she should stay on the scene until help arrives. Should the situation be resolved before help arrives, whoever is on the way must be notified. Valuable resources have been wasted while the Coast Guard has searched for a vessel that had been helped already and returned to harbor without the Coast Guard knowing.

## Lesson 1

### Pollution Regulations in U.S. Waters

Discharge of sewage and all types of garbage is prohibited from vessels in inland waters and less than 3 miles from land in coastal waters.

Discharge of plastics is prohibited in all areas as well as the discharge of oil. Violators are subject to a penalty of \$5000 and/or imprisonment.

Ground food waste and sewage can be discharged at least 3 miles from the nearest land in U.S. coastal waters but not in inland waters. Lakes, rivers and bays such as the San Francisco Bay are all considered inland waters.

### Sound Signals

**Short Blast:** A horn or whistle blast of approximately one second.

**Prolonged Blast:** A horn or whistle blast of from 4 to 6 seconds.

The following maneuvering signals are used when vessels are in sight of another.

**One short blast:** Altering course to starboard or leaving another vessel to port.

**Two short blasts:** Altering course to port or leaving another vessel to starboard.

**Three short blasts:** Operating propulsion in reverse.

**One prolonged blast:** Entering a channel or approaching a blind turn in a channel. (Also as a fog signal for motor vessels underway in reduced visibility.)

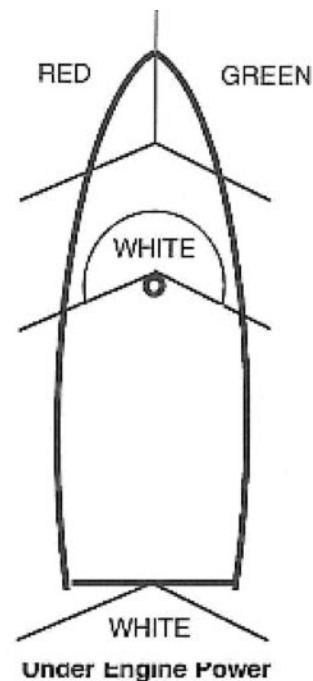
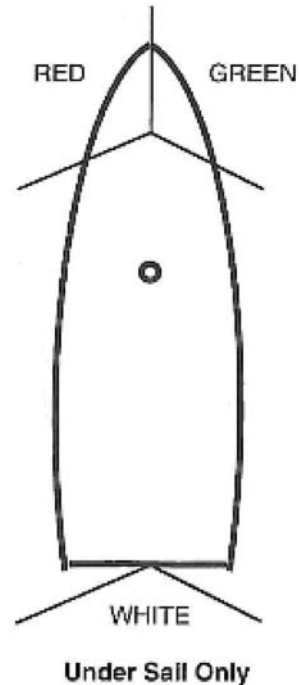
**Five or more short and rapid blasts:** Imminent Danger!

### Running Lights

Sailing vessels underway show a red light forward on the port side, a green light forward on the starboard side, and a white light shining aft from the stern. An easy way to remember is to think, **“Port wine is red.”**

When powering, an additional white light is shown facing forward from the mast. This light is usually facing forward at the front of the mast near the spreaders and is called the masthead

light or steaming light. Paradoxically it is not located at the top of the mast where the anchoring light is located. The masthead light is used when the engine is providing propulsion regardless of whether the sails are up or down.



# Lesson 1

## APPENDIX

### Knots

There are hundreds of knots that can be used on a sailboat but these basic ones will fulfill all the needs for Basic Keelboat and Basic Coastal Cruising sail-ors.

**Bowline** - Used to make a temporary non-slipping loop at the end of a line... most frequently as a means of tying on jibsheets.

**Figure Eight** - Used as a stopper knot to keep lines from slipping out of fairleads and other fittings.

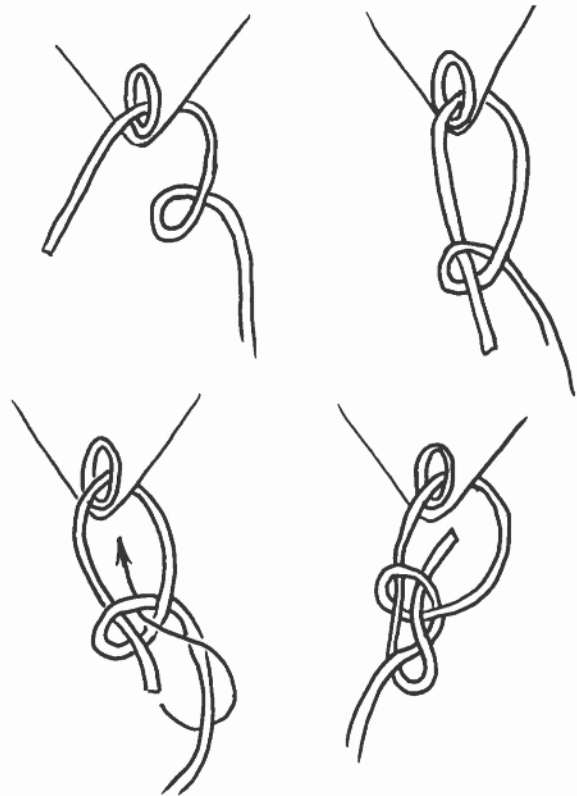
**Clove Hitch** - Used to temporarily tie lines to spars and other solid objects.

**Cleat Hitch** - Used to secure a line to a cleat.

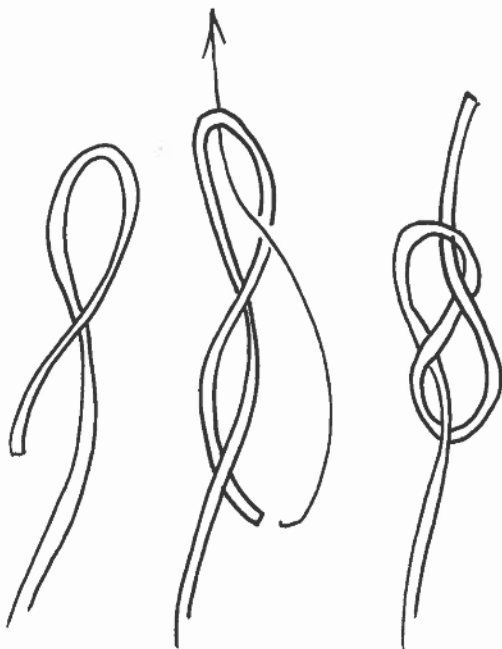
**Reef or Square Knot** - Used for tying gaskets (sail ties) for furling the sail and for reefing.

**Round Turn and Two Half Hitches** - Used for securing a boat to a piling or dock lines when se-cured to rings instead of cleats.

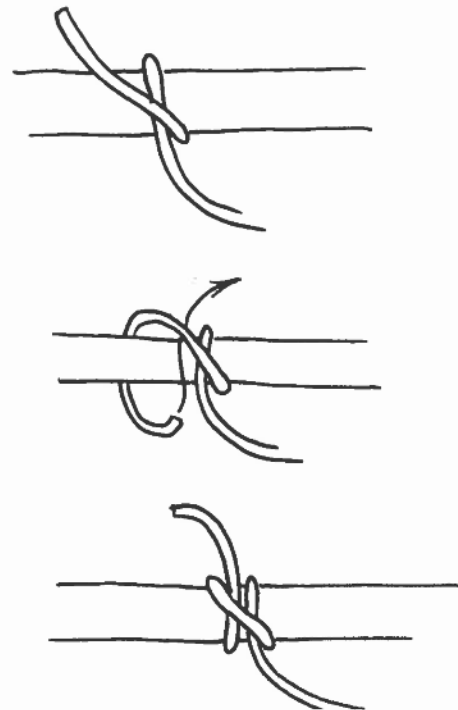
**Sheet Bend** - Used to tie the end of two differ-ent lines together.



**BOWLINE (TO JIB CLEW)**

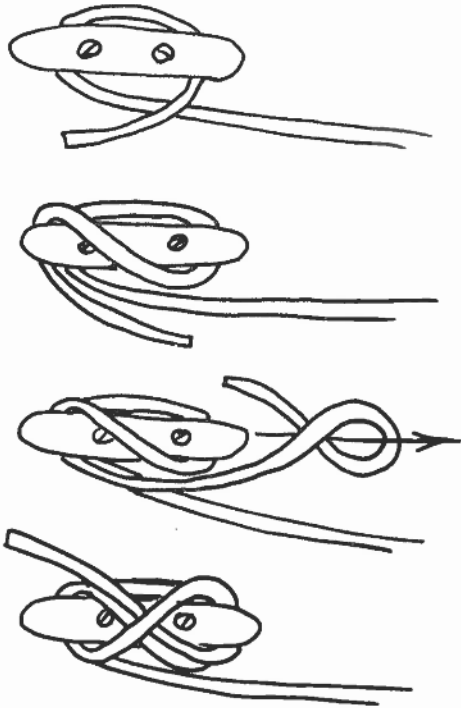


**FIGURE EIGHT**

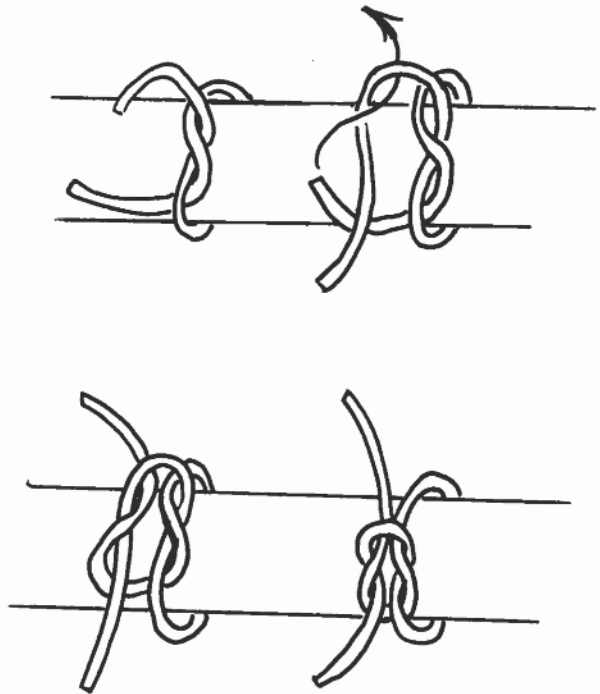


**CLOVE HITCH**

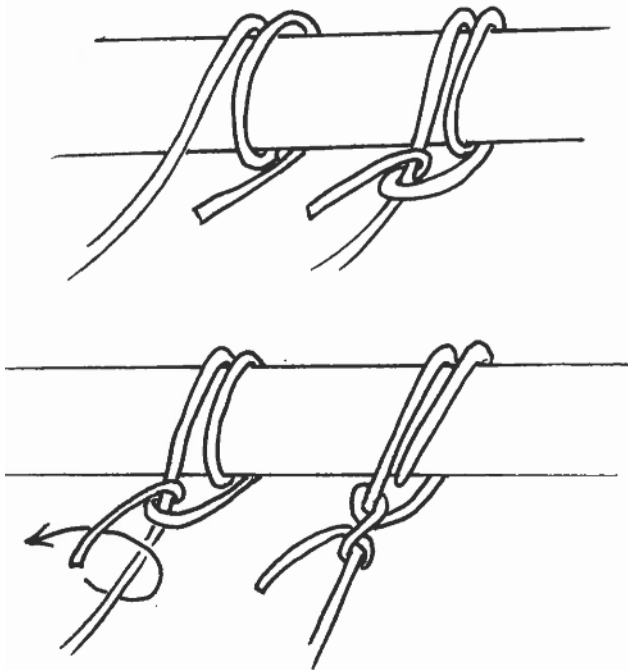
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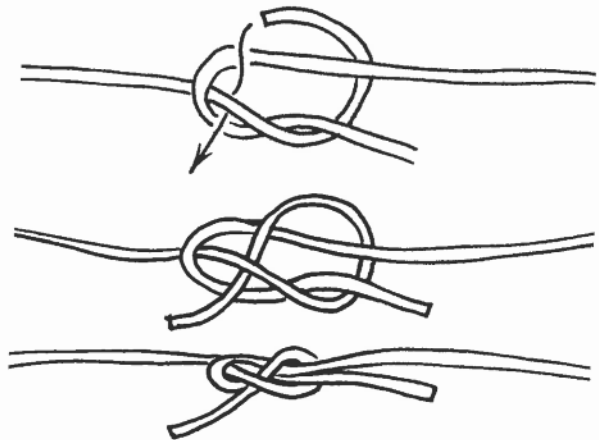
CLEAT HITCH



REEF KNOT



ROUND TURN AND TWO HALF HITCHES



SHEET BEND

# Lesson 1

# BASIC KEELBOAT SAILING EXAMINATION OF SAILING SKILLS

INSTRUCTOR: \_\_\_\_\_

STUDENT: \_\_\_\_\_

EXAMINATION DATE: \_\_\_\_\_

NOTE: If you desire ASA certification, make sure that your instructor fills out this form and returns it to the office. You

PRELIMINARIES

- 1. Demonstrate proper use of a PFD.
- 2. Select proper clothing for sailing.

HOISTING SAILS

- 3. Clear halyards and sails.
- 4. Check boom topping lift.
- 5. Hoist and set sails.
- 6. Tension the luffs.
- 7. Coil and hang halyards.
- 8. Check stopper knots in sheets and halyards.

PARALLEL DOCKING AND MOORING

- 9. Leave dock/mooring completely prepared.
- 10. Use correct approach.
- 11. Use slow speed and be under control.
- 12. Stop correct distance from dock/mooring without using lines.

DEMONSTRATE PROPER WINCH TECHNIQUES

- 13. Safety - is aware of high tension on halyards and sheets.
- 14. Proper wrapping techniques.
- 15. Removal of winch handle after use.

CLOSE HAULED - REACHING - RUNNING

- 16. As helmsman - selects and maintains proper course.
- 17. As crew - sets sails properly.

TACKING

- 18. As helmsman - proper commands.
- 19. As helmsman - selects, then sails new heading (steady course).
- 20. As helmsman - executes maneuver smartly.
- 21. As crew - gives proper responses.
- 22. As crew - releases sheets at proper times.
- 23. As crew - re-trims sheets correctly.

JIBING

- 24. As helmsman - proper commands.
- 25. As helmsman - selects, then sails new heading (steady course).
- 26. As helmsman - mainsheet control.
- 27. As helmsman - selected, then sailed new heading (steady course)

- 28. As Helmsman - executed maneuver smartly
- 29. As crew - releases sheet with proper timing.
- 30. As crew - mainsheet control.
- As crew - re-trims sheets correctly.

HEADING UP

- 32. As helmsman - sails closer to wind.
- 33. As crew - trims sails correctly.

BEARING AWAY

- 34. As helmsman - sails further from wind.
- 35. As crew - trims sails correctly.
- LUFFING UP, STOPPING, Getting out of Irons
- 36. As helmsman - brings boat to a close reach.
- 37. As crew - eases sheets to stop boat.
- 38. As helmsman and crew - Placed the boat "in irons" and , using proper rudder control and backing of the sails, sailed off in a predetermined direction
- 39. As crew - gave proper response, released jib sheet at proper time, properly controlled mainsheet.

STEERING (HELMSMAN)

- 40. Sails by-the-lee for 100 yards without jibing.
- 41. Powers backwards for 25 yards.
- 42. As helmsman - demonstrated proper basic steering and sailing rules as both a give-way and stand-on boat. (opposite tack, same tack, sail meeting power, and overtaking)

MAN OVERBOARD (HELMSMAN)

- 43. Assigned spotter/Called MOB/Deployed a Type 4
- 44. Controlled the event with confidence.
- 45. Figure 8 - modified
- 46. Quickly turns boat to a beam or broad reach.
- 47. Tacks under control.
- 48. Uses proper approach (close reach)with reduced speed and controlled contact.
- 49. Stopped the boat next to the victim.
- 50. Discussed bring an exhausted person aboard over the transom or over the side.

LOWERING SAILS

- 51. Brings boat near head to wind.
- 52. Lowered and secured jib and sheets.
- 53. Attended to topping lift.
- 54. Lowered and furled main neatly (with assistance)
- 55. Folded and bagged jib (with assistance)
- 56. Lowers and furls mainsail neatly.
- 57. Secures and coils halyards and other lines.

KNOTS

- 58. Bowline (20 seconds or less).
- 59. Figure eight (15 seconds or less).
- 60. Clove hitch (20 seconds or less).
- 61. Cleat hitch (15 seconds or less).
- 62. Reef or square knot (20 seconds or less).
- 63. Round turn and two half hitches (20 seconds or less).

## Lesson 1

# BKS Review Questions

These review questions will help familiarize you with all the questions found in the written exam. Using the ASA textbook, try to find as many answers as you can before your class review session. You may not be able to find a complete answer to every question. Please note which questions you need additional information on so your instructor can provide more information.

(#) Indicates where to look in Sailing Made Easy.

(H-#) Indicates where to look in the Spinnaker Sailing BKS handout.

### 1. Identify the following boat parts:

- (20) Lifelines \_\_\_\_\_
- (20) Keel \_\_\_\_\_
- (H-4) Cabin \_\_\_\_\_
- (20) Bow \_\_\_\_\_
- (20) Stern Pulpit \_\_\_\_\_
- (20) Stern \_\_\_\_\_
- (20) Bow pulpit \_\_\_\_\_
- (24) Shroud \_\_\_\_\_
- (24) Gooseneck \_\_\_\_\_
- (24) Mast \_\_\_\_\_
- (24) Headstay/Forestay \_\_\_\_\_
- (24) Spreader \_\_\_\_\_
- (20) Deck \_\_\_\_\_
- (123) Traveler \_\_\_\_\_
- (24) Boom \_\_\_\_\_
- (24) Backstay \_\_\_\_\_

### 2. Identify the following sail parts

- (23) Luff \_\_\_\_\_
- (23) Clew \_\_\_\_\_
- (23) Tack \_\_\_\_\_
- (23) Head \_\_\_\_\_
- (23) Leech \_\_\_\_\_
- (23) Foot \_\_\_\_\_
- (23) Battens \_\_\_\_\_
- (32) Bolt Rope \_\_\_\_\_
- (34) Hanks \_\_\_\_\_
- (23) Genoa \_\_\_\_\_
- (23) Mainsail \_\_\_\_\_
- (24) Storm Jib \_\_\_\_\_
- (24) Working Jib \_\_\_\_\_
- (25) Spinnaker \_\_\_\_\_

**Lesson 1**

3. Describe the function of the following parts:

- (67) Cleat \_\_\_\_\_
- (25) Blocks \_\_\_\_\_
- (20) Tiller/Wheel \_\_\_\_\_
- (25) Halyard(s) \_\_\_\_\_
- (25) Mainsheet \_\_\_\_\_
- (121) Fairlead \_\_\_\_\_
- (36) Winch \_\_\_\_\_
- (25) Jibsheet(s) \_\_\_\_\_
- (25) Shackle \_\_\_\_\_
- (20) Rudder \_\_\_\_\_

4. Describe the function of the following parts

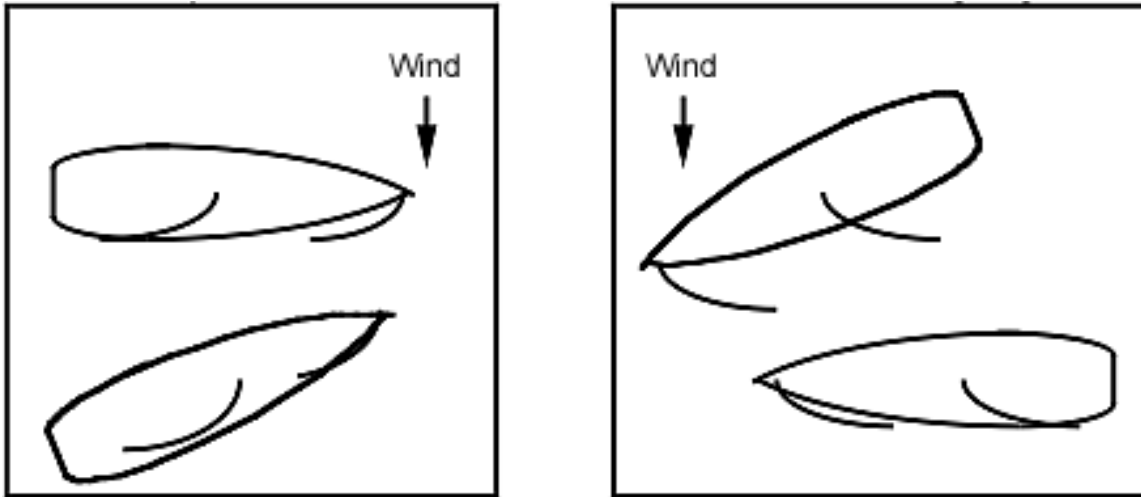
- (24) Boom Topping Lift \_\_\_\_\_
- (32) Outhaul \_\_\_\_\_
- (39) Downhaul/Cunningham \_\_\_\_\_
- (81) Fenders \_\_\_\_\_
- (24) Boomvang \_\_\_\_\_
- (104) Spring/Breast Lines \_\_\_\_\_
- (24) Stays \_\_\_\_\_
- (62) Telltales \_\_\_\_\_
- (24) Shrouds \_\_\_\_\_

5. Define the following terms:

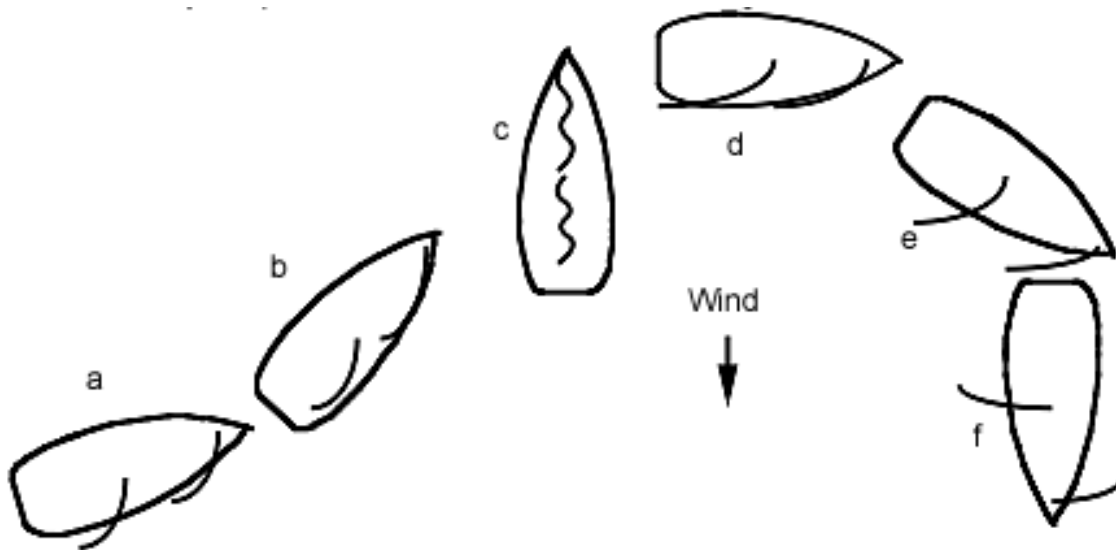
- (22) Windward \_\_\_\_\_
- (22) Port \_\_\_\_\_
- (22) Starboard \_\_\_\_\_
- (22) Leeward \_\_\_\_\_
- (22) Astern \_\_\_\_\_
- (22) Abeam \_\_\_\_\_
- (121) Helmsman \_\_\_\_\_
- (22) Ahead \_\_\_\_\_
- (70) Crew \_\_\_\_\_
- (70) Skipper \_\_\_\_\_
- (25) Running Rigging \_\_\_\_\_
- (20) Tacking/Coming About \_\_\_\_\_
- (122) Sailing by-the-lee \_\_\_\_\_
- (123) Standing Rigging \_\_\_\_\_
- (52) Jibing \_\_\_\_\_
- (63) Heel \_\_\_\_\_
- (120) Aft \_\_\_\_\_
- (121) Forward \_\_\_\_\_
- (120) Beam \_\_\_\_\_

**Lesson 1**

(22) 6. Identify the windward and leeward boat in each of the following diagrams:



(18) 7. Identify the point of sail for each boat in the diagram:



- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_

**Lesson 1**

8. Define the following terms:

(123) Starboard Tack

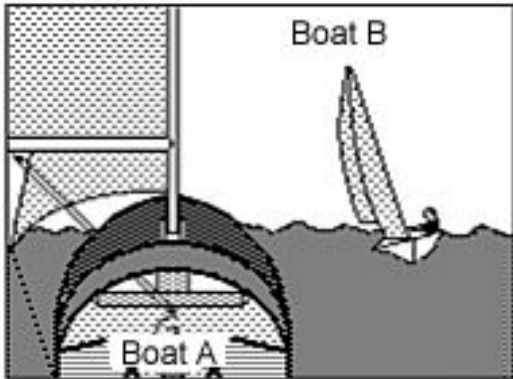
(122) Luffing

(122) Port Tack

(121) Heading Up

(120) Bearing Away/Falling Off

(94) 9. Which boat is the give way boat?



Describe the rule that applies:

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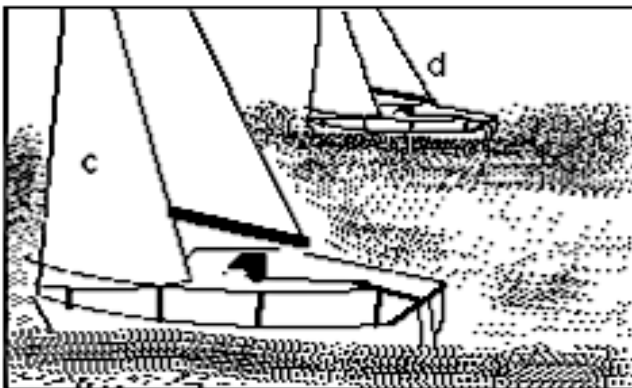
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(94) 10. Which boat is the give way boat?



Describe the rule that applies:

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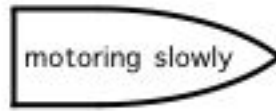
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**Lesson 1**

(94) 11. Which is the give way boat?



Describe the rule that applies:

(95) 12. Which is the give way boat?



Describe the rule that applies:

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(95) 13. Describe the action to be taken by sailboats when encountering vessels that are engaged in fishing, towing, large ships in confined channels, etc?

(111) 14. To whom should a float plan be filed?

(96) 15. What is the FEDERAL blood alcohol content sufficient for arrest for intoxication?

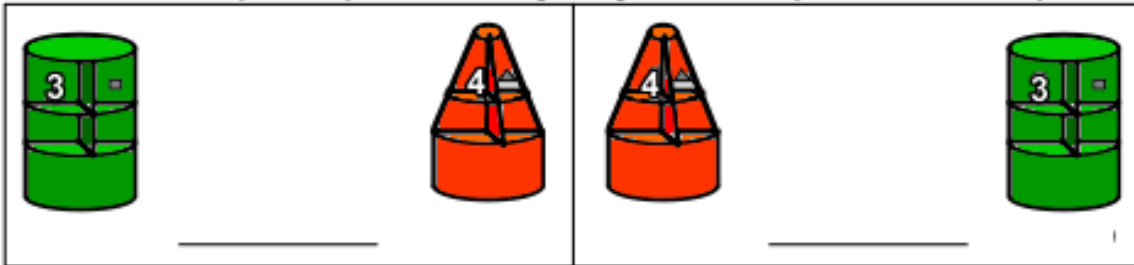
(H-27) 16. What is the number of days allowed for an accident report with damage of more than \$2000 or loss of a vessel? (Not for loss of life.)

**Lesson 1**

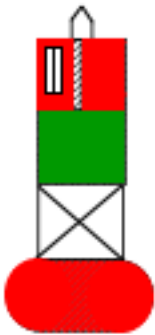
(H-26) 17. List three sources of navigation information for an area with which you are not familiar.

(H-26)18. Describe the pennants used for Small Craft Warnings and Gale Warnings.

(101) 19. Which way would you be traveling along a channel if you saw these buoys?



(101) 20. What does the following buoy represent?



\_\_\_\_\_

(H-27) 21. What do the following buoys represent?



(97) 22. List the required safety items for a 25 foot sailboat with outboard engine:

(H-27) 23. Where may plastics be disposed overboard?

(H-27) 24. Where may garbage be disposed overboard?

(H-27) 25. What is the fine for discharging oil in navigable waters of the US?

## Lesson 1

(96) 26. Where must registration numbers be located on a boat?

(H-27) 27. What is the restriction regarding operating a motorboat in a swim area?

(H-28) 28. What does five or more short blasts from another vessel indicate?

(H-28) 29. What does one short blast from another vessel indicate?

(H-28) 30. What does two short blasts indicate?

(H-28) 31. What color lights appear: Port side \_\_\_\_\_ Starboard side \_\_\_\_\_  
at the stern \_\_\_\_\_

(H-28) 32. What color light must be shown in addition to the above three when the  
vessel is  
under power? \_\_\_\_\_ Where is it shown? \_\_\_\_\_  
Which way does it face? \_\_\_\_\_

(92) 33. When does Rule 5, the "Lookout" Rule apply

34. What is the purpose for the following knots?

(66) Square Knot (Reef Knot) \_\_\_\_\_

(64) Bowline \_\_\_\_\_

(65) Cleat Hitch \_\_\_\_\_

(65) Figure Eight \_\_\_\_\_

(66) Round Turn & Two Half Hitches \_\_\_\_\_

(66) Clove Hitch \_\_\_\_\_

(H-11) 35. What is the primary danger of sailing by-the-lee?

(H-12) 36. On which points of sail are the greatest danger of an accidental jibe?

(62, 63) 37. While sailing on a close reach, name three observations to help determine proper sail trim.