

# A Teaching Guide

to responsible boating

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# Teaching the Boating Safety Course

## Preparing To Teach

Follow these steps to teach confidently and effectively.

- ◆ Master the subject matter, and plan how to present it.
- ◆ Familiarize yourself with the instructor aids available to you:
  - Class Plan (see pages 4-5). A two-page quick reference including recommended schedule for an eight-hour class, aids available, and activities.
  - Lesson Plans (see pages 6-29). High-level summary of the Student Manual, including the following:
    - Objectives. Statements of what students should have learned at completion of the lesson. These will help you set goals and keep on course.
    - Lesson Material. Key points from the Student Manual, presented in outline form, that should be covered in class instruction or the classroom video. In the margins for each topic, you will see these icons:



indicates the page number of the Student Manual on which the material is covered.



indicates that there are also illustrations in the Student Manual you may want to use.

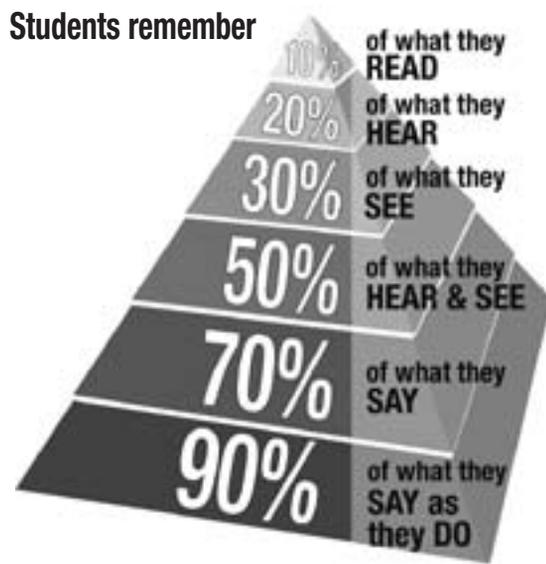


indicates that this topic is covered in the Boat Ed classroom video.

- Review Questions. Questions to ask during instruction to determine students' comprehension.
- Summary. A review to use at the end of each lesson to summarize the most important points.
- Student Manual. You should study all of the material in the Student Manual before you teach.
- ◆ Decide what level of printed instructor aids is appropriate for you. Your teaching experience and familiarity with the material will determine which printed aids you need to use to prepare to teach and what to have in front of you while teaching.
  - Experienced. If you have taught this course before and are well acquainted with the material, the lesson objectives, and classroom activities, you may only need to use the Class Plan. This plan will help you keep on schedule and remind you of the key topics to be covered in each lesson.
  - Familiar. If you are familiar with all of the material in the Student Manual but have not taught the material before, you will want to use both the Class Plan and the Lesson Plans provided in this guide. The Lesson Plans will help you focus on the key information, plan how to present it, and give you ideas for questions and activities to reinforce the learning.
  - Novice. If you are new to some of the material and have not taught this course before, you will want to use the Class Plan and the Lesson Plans provided in this guide, as well as the Student Manual. You may want to organize a three-ring binder and put each chapter of the Student Manual behind the Lesson Plan for that chapter.
- ◆ Choose and obtain the teaching aids you want to use. Variation in the presentation of the material is essential to holding the attention of students and helping them retain the information. Even adults have an attention span of only 20-30 minutes, so breaking up the class routine with various teaching aids is critical. Consider using:
  - Props. Bring in examples of the equipment being covered: personal flotation devices, fire extinguishers, diver-down flags, visual distress signals, etc.
  - Audio/visual aids. In addition to the video, you may wish to copy illustrations from the Student Manual to transparencies to display using an overhead projector.
  - Sample documents. Get samples of documents such as a registration form, a certificate of registration, a validation decal, an accident report form, the U.S. Coast Guard's *Navigation Rules*, and a float plan.
  - Guest speakers. Ask a U.S. Coast Guard officer, law enforcement officer, or marine industry professional to speak for 10-20 minutes. The guest appearance of a law enforcement official is an excellent way to reinforce the message that boating safety isn't just a good idea—it's the law!

## Principles of Learning Methods

Discover how people learn by studying the principles of learning methods. These principles demonstrate that to teach effectively, we must use different teaching techniques to reach all individuals.



## Teaching Techniques

- ◆ For each chapter, do the following:
  - Tell the students what you will teach them.
  - Teach the lesson.
  - Summarize what they should have learned.
- ◆ An effective way to achieve this is by doing the following.
  - Introduction. Briefly state the lesson's objectives.
  - Visual instruction. Show the segment of the Boat Ed video for the chapter.
  - Lecture and questions.
    - Reinforce the key safety, responsibility, and legal topics.
    - Encourage discussion and questions from students.
    - Use props, sample documents, or visual displays as needed.
    - Ask review questions aloud, and have students answer aloud. If there is any confusion, clarify the material.
  - Summarize. Restate key points.
- ◆ Observe these teaching "do's."
  - Teach with confidence. Remember, you know the material better than anyone else in the room.
  - Treat the students courteously. Let the students know that there are no "dumb questions."
  - Speak clearly and loudly enough to be heard in the back of the room.
  - Vary your voice to avoid monotony. Use volume, inflection, and pauses to emphasize key points.
  - Divide course material with other instructors, if possible. The "break" for students will avoid monotony and help with the responsibility of teaching a class.
  - Maintain eye contact with your students. This keeps their interest and helps you assess their comprehension.
  - Encourage discussion; for example, ask the students to explain the benefits of boating safety practices or the dangers of unsafe practices.
  - When releasing the students for a break, clearly indicate when you plan to resume the class.
  - Be punctual when you start class and resume after breaks. Take a 10-15 minute break at least every 1½ to 2 hours.
  - Maintain order in the classroom—remember that you are in charge.
  - Encourage students to follow along in the Student Manual.

- ◆ Avoid these teaching “don’ts.”
  - Don’t simply read the material. Instead, speak to the students, paraphrasing in your own words.
  - Don’t allow one or two students to dominate the class discussion. Try to get all to participate.
  - Don’t allow yourself to get off schedule. Otherwise, you will not be able to cover all of the material.
  - Avoid telling “war stories.” Instead, use concise descriptions of personal experience only to make important points.
  - Don’t use profanity or tell off-color jokes. You will lose respect as an instructor.
  - Avoid annoying or distracting mannerisms, such as jingling coins in your pocket or twirling a pointer.
  - Avoid using demonstrations by the instructor. Do this only when it is impossible or impractical for the students themselves to do the demonstrating.

## **Preparing the Classroom**

- ◆ Arrive at least a half hour prior to the start of the course.
- ◆ Confirm that the classroom is furnished with the following:
  - Appropriate lighting
  - Climate control (heat or air conditioner)
  - Ample space, free of barriers and obstructions
  - Adequate seating for all students
  - Clean, working restrooms
  - Clean drinking water
  - Telephone, in case of an emergency
  - First-aid kit (optional)
- ◆ Develop an emergency evacuation plan for each facility you use.
- ◆ Set up the following:
  - TV and video player
  - Flip chart with markers
  - Overhead slide projector
  - Table with relevant demonstration items or equipment
- ◆ Distribute manuals, certificate applications, and other materials.

## **Beginning the Class**

- ◆ Introduce yourself and your team of instructors.
- ◆ Welcome everyone.
- ◆ Thank the host club, organization, agency, or facility.
- ◆ Offer help for those with special needs.
- ◆ Review the schedule, including breaks, and the location of the restroom facilities.
- ◆ Explain that there is no smoking during the class and how smokers may be accommodated during breaks.
- ◆ Check for proper paperwork (if necessary).
- ◆ Describe any exams or other paperwork that are to be completed at the end of the course.
- ◆ If the class is small enough, ask the students to introduce themselves and tell briefly what they hope to learn from the class.
- ◆ Mention some of the props around the room that you will be referring to during the class.
- ◆ Introduce the next speaker and lesson topic.

# The Boating Safety Course Class Plan

This recommended eight-hour Class Plan assumes you are teaching the course in one full day, starting class between 8 a.m. and 9 a.m. with an hour lunch break midday. If instead you are teaching this in two sessions, follow the plan on this page for the first session and the plan on the next page for the second session. This plan also assumes you are using the Boat Ed classroom video.

Start Time	Duration	Key Topics	Aids/Suggested Activities
0:00	15 min	<b>Kick Off</b> <ul style="list-style-type: none"> <li>◆ Class logistics</li> <li>◆ Course introduction</li> </ul>	
0:15	25 min	<b>Lesson One: Know Your Boat</b> <ul style="list-style-type: none"> <li>◆ Vessel parts—terms and definitions</li> <li>◆ Hull types and shapes</li> <li>◆ Vessel classifications (including PWC as an inboard vessel)</li> <li>◆ Types of engines and drives (outboards, inboards, stern drives, jet drives)</li> <li>◆ PWCs</li> <li>◆ Sailboats</li> </ul>	<ul style="list-style-type: none"> <li>• classroom video—4 minutes</li> <li>• display the drawings of boat and PWC, and ask students to name the parts</li> </ul>
0:40	35 min	<b>Lesson Two: Before You Get Underway</b> <ul style="list-style-type: none"> <li>◆ Vessel's capacity—load and horsepower</li> <li>◆ Float plans</li> <li>◆ Fueling a vessel/PWC and fuel selector switch</li> <li>◆ Trailering</li> <li>◆ Vessel and engine maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• classroom video—6 minutes</li> <li>• calculate a vessel's capacity</li> <li>• distribute a float plan for the students to use on future outings</li> </ul>
1:15	15 min	<b>BREAK</b>	
1:30	1 hr 40 min	<b>Lesson Three: Operating Your Boat ... Safely</b> <ul style="list-style-type: none"> <li>◆ Casting off and docking</li> <li>◆ Navigation rules when encountering other vessels</li> <li>◆ Types of navigation lights</li> <li>◆ Encountering other vessels at night</li> <li>◆ Sound signals</li> <li>◆ U.S. Aids to Navigation System</li> <li>◆ Anchoring</li> <li>◆ Dams, locks, and bridges</li> <li>◆ Changing water levels</li> <li>◆ Compasses and charts</li> <li>◆ PWC operation, courtesy, environmental considerations and reboarding</li> <li>◆ Ignition safety switches</li> <li>◆ Avoiding propeller strike injuries</li> </ul>	<ul style="list-style-type: none"> <li>• classroom video—24 minutes</li> <li>• display the drawings of casting off and docking to illustrate the procedure</li> <li>• draw a vessel encountering another vessel, and ask students what each operator should do</li> <li>• show a lighting example, and ask students what it means and what to do</li> <li>• signal with a sound-producing device, and ask students what it means</li> <li>• show a lateral marker, and ask students how to navigate</li> <li>• show the decal on a PWC as if the PWC were overturned</li> </ul>
3:10	1 hr	<b>BREAK FOR LUNCH</b>	

Start Time	Duration	Key Topics	Aids/Suggested Activities
4:10	1 hr 20 min	<b>Lesson Four: Legal Requirements of Boating</b> <ul style="list-style-type: none"> <li>◆ Vessel numbering and documentation (registration, HIN)</li> <li>◆ Age requirements for vessel and PWC operation</li> <li>◆ Dangerous and unlawful operation</li> <li>◆ Alcohol and drug laws</li> <li>◆ Obstructing navigation and homeland security</li> <li>◆ Personal flotation devices</li> <li>◆ Fire extinguishers</li> <li>◆ Backfire flame arrestors, ventilation systems, and mufflers</li> <li>◆ Required navigation lights</li> <li>◆ Visual distress signals and sound-producing devices</li> <li>◆ Other equipment and regulations—diver-down flags, etc.</li> <li>◆ PWC laws</li> <li>◆ Laws related to towing person(s) on skis or other devices</li> <li>◆ Waste, oil, and trash disposal</li> <li>◆ Reporting accidents</li> <li>◆ Enforcement of laws</li> </ul>	<ul style="list-style-type: none"> <li>• classroom video—13 minutes</li> <li>• show a certificate of number (registration card)</li> <li>• mention an age, and ask the students what type of vessel the person could operate and if safety education is required</li> <li>• show different types of PFDs</li> <li>• on a fire extinguisher, show its type and size, “Marine Type USCG Approved,” and charge level</li> <li>• show a chart with combinations of VDSs, and ask the students if they satisfy requirements for day, night, or both</li> <li>• show a skier-down flag</li> <li>• pass out a boating accident report form to each student</li> </ul>
5:30	15 min	<b>BREAK</b>	
5:45	35 min	<b>Lesson Five: Boating Emergencies ... What To Do</b> <ul style="list-style-type: none"> <li>◆ Risk management—risks from boating stressors, dehydration, alcohol, and failure to wear PFDs</li> <li>◆ Boating accidents—capsizing, swamping, falling overboard, collisions, fires, and running aground</li> <li>◆ Personal injuries—cold water immersion and hypothermia, carbon monoxide poisoning, and other injuries</li> <li>◆ Weather emergencies and summoning help</li> </ul>	<ul style="list-style-type: none"> <li>• classroom video—9 minutes</li> <li>• have a student put on a PFD and check for proper fit</li> <li>• show a PFD that’s not in good condition, and discuss what’s wrong</li> <li>• show how to use a fire extinguisher (P.A.S.S.)</li> </ul>
6:20	25 min	<b>Lesson Six: Enjoying Water Sports With Your Boat</b> <ul style="list-style-type: none"> <li>◆ Responsibilities of operator—to passengers, to others allowed to operate your vessel, and to the environment</li> <li>◆ Paddlesports—canoes, kayaks, and rafts</li> <li>◆ Water-skiing</li> <li>◆ Scuba diving and snorkeling</li> <li>◆ Windsurfing and sailing</li> <li>◆ Fishing and hunting</li> </ul>	<ul style="list-style-type: none"> <li>• classroom video—5 minutes</li> <li>• pass out a pre-departure checklist that students can use later</li> <li>• write each area of responsibility on a flip chart/transparency as it’s discussed</li> <li>• write down each type of water sport as it is discussed</li> <li>• provide local contact information for instruction in paddling, sailing, etc.</li> </ul>
6:45	15 min	<b>BREAK</b>	
7:00	1 hr	<b>Wrap Up</b> <ul style="list-style-type: none"> <li>◆ Certification exam</li> <li>◆ Instructor/class evaluation</li> <li>◆ Review of exam questions and correct answers with class</li> </ul>	
8:00		<b>Conclude Class</b>	

**Objectives**  
*The student should...*

- ◆ Be able to identify the different types of hulls and their performance characteristics.
- ◆ Be able to identify the basic parts of a vessel, a PWC, and a sailboat.
- ◆ Be able to identify the different types of engines and drives commonly found in recreational vessels and their uses.



## The Many Parts of a Boat

Every boat operator should know these terms:

- |                            |                         |             |           |
|----------------------------|-------------------------|-------------|-----------|
| ◆ red and green sidelights | ◆ propeller             | ◆ freeboard | ◆ cleat   |
| ◆ bow                      | ◆ hull                  | ◆ port      | ◆ gunwale |
| ◆ draft                    | ◆ all-round white light | ◆ keel      | ◆ beam    |
| ◆ starboard                | ◆ stern                 | ◆ transom   |           |



## Types of Boat Hulls

- ◆ There are two basic types of boat hulls: displacement and planing.
- ◆ **Displacement Hull:** Designed to cut through water by pushing the water aside, they move with little propulsion.
  - Lowering a boat into water displaces some of that water. The weight of the displaced water equals the weight of the boat and is known as the boat's displacement.
  - Boats with displacement hulls move more slowly.
  - A round-bottomed hull is a displacement hull. Most large cruisers and sailboats have displacement hulls, allowing them to travel more smoothly through water.
- ◆ **Planing Hull:** Operate like displacement hull boats at slow speeds, but skim the water's surface at higher speeds.
  - Flat-bottomed and vee-bottomed hulls are planing hulls.
  - Most small power-driven vessels, including PWCs and some small sailboats, have planing hulls.



## Length of a Vessel

- ◆ A vessel's length overall (LOA) dictates the equipment required to comply with federal and state laws. LOA is measured from the tip of the bow in a straight line to the stern of the vessel. This excludes any attachments.
- ◆ Some states have laws that refer to vessel lengths as "classes."
  - Less than 16 feet (Class A)
  - 16 feet to less than 26 feet (Class 1)
  - 26 feet to less than 40 feet (Class 2)
  - 40 feet to less than 65 feet (Class 3)



## Types of Engines and Drives

- ◆ **Outboards:**
  - Portable, self-contained engine, gear case, and propeller attached to the boat's transom.
  - Can be four-stroke, but many are two-stroke engines that burn oil with the fuel. Newer technology two-stroke are direct injection and burn over 75% cleaner than conventional engines.
  - Are steered by controlling a tiller or steering wheel.
- ◆ **Inboards:**
  - Four-stroke automotive engine adapted for marine use. Mounted inside the hull's midsection or in front of the transom.
  - Operate by turning a drive shaft attached to a propeller.
  - Two-stroke engine if on a PWC. Newer technology engines are direct injection and burn cleaner.
  - Steering is controlled by a rudder behind the propeller.

- ◆ Stern Drives:
  - Also known as inboard/outboards (I/O) because they combine features found on both. They are four-stroke automotive engines adapted for marine use and mounted inside the boat.
  - Attached through the transom to a drive unit. The engine turns a drive shaft attached to a propeller.
  - Steering is controlled by the outdrive that swivels like an outboard.
- ◆ Jet Drives
  - Propel a vessel by forcing a jet of water out the back of the vessel. Directing the jet of water steers the vessel.
  - PWCs are the most common type of vessels using a jet drive.
  - May also power larger vessels.
  - Commonly used in vessels designed for shallow water conditions.



## Personal Watercraft



- ◆ PWCs are small vessels that use an inboard jet drive and are designed to be operated by a person sitting, standing, or kneeling on the vessel rather than inside the vessel. PWCs are designated by the U.S. Coast Guard as an inboard vessel less than 16 feet long.
- ◆ PWCs are subject to the same laws and requirements of any other vessel as well as the laws specific to PWCs.
- ◆ Following are the parts that every PWC operator should know:
  - steering control
  - steering nozzle
  - port
  - impeller
  - jet pump intake grate
  - drive shaft
  - starboard
  - draft
  - safety lanyard
  - bow
  - stern



## Sailboats

Sailboats range in size and complexity, but generally consist of four components:

- ◆ The hull carries the passengers and supports the rigging.
- ◆ The rigging includes the lines, sails, boom, and masts.
- ◆ The keel or centerboard is attached to the bottom of the hull.
- ◆ The rudder is used to steer the sailboat and is controlled by a tiller or steering wheel.

## Review Questions

1. Which side of the vessel is the port side?  
*Answer:* left
2. Which part of the vessel is the stern?  
*Answer:* rear
3. What are the two basic types of vessel hulls?  
*Answer:* displacement and planing
4. What are three basic hull shapes?  
*Answer:* round bottom, flat bottom, and vee bottom
5. What are the four length classes of vessels?  
*Answer:* less than 16 feet, 16 to less than 26 feet, 26 to less than 40 feet, and 40 to less than 65 feet
6. What are the four types of engines?  
*Answer:* outboard, inboard, stern drive, and jet drive
7. What do stern drive and inboard engines have in common?  
*Answer:* They are both automotive engines adapted for marine use.
8. How does the U.S. Coast Guard classify a PWC?  
*Answer:* as an inboard vessel
9. Are personal watercraft subject to the laws and requirements of other vessels?  
*Answer:* Yes
10. What do you call a device that is used to pump and force water under pressure through a steering nozzle at the rear of the vessel?  
*Answer:* impeller

## Summary

- ◆ Most powerboats and PWCs have planing hulls; most sailboats and cruisers have displacement hulls.
- ◆ A vessel's length dictates the equipment it must have to comply with federal and state law.
- ◆ There are four types of engines and drives—outboards, inboards, stern drives, and jet drives.
- ◆ PWCs are classified by the U.S. Coast Guard as inboard vessels and are subject to all laws governing vessels.

**Objectives**  
*The student should...*

- ◆ Be able to locate and describe the information on a vessel's capacity plate.
- ◆ Know how to file a proper float plan.
- ◆ Be able to fuel a vessel safely.
- ◆ Be able to launch a vessel from a trailer and retrieve it from the water safely and courteously.
- ◆ Know the basics of vessel and engine maintenance.



### Your Boat's Capacity



- ◆ Never take a boat on the water with too many people or too much gear on board.
- ◆ A capacity plate near the operator's position or on the transom of the boat indicates the maximum weight capacity (including weight of passengers, gear, and motors) or the maximum number of people that the vessel can carry safely.
- ◆ Single-hull boats less than 20 feet in length—except PWCs and sailboats—must have a capacity plate. Never exceed the recommended capacity found in the owner's manual and on the warning decal.
- ◆ Vessels with no capacity plate can use this rule of thumb: Number of people is equal to the vessel length (ft.) times the vessel width (ft.) divided by 15.
- ◆ On outboard boats, the capacity plate also shows the maximum horsepower, not to be exceeded.



### File a "Float Plan"



- ◆ For shorter daytime outings, at a minimum you should:
  - Contact a responsible person and tell him or her where you are boating, when you are returning, and the telephone number of the authorities to call if you are overdue.
  - Contact this person again when you return or if you decide to extend your trip.
- ◆ For extended outings, leave a written float plan with a local marina, friend, or family member which:
  - Describes the vessel—its registration number, length, make, horsepower, and type of engine.
  - Includes description and license plate of tow vehicle and trailer.
  - Gives the number of passengers, their names and addresses, and a contact in case of emergency.
  - Lists where you are going, the route, and your planned departure and expected return times.
  - Gives number of the authorities to call if you are overdue.



### Fuel Your Vessel ... Safely!

- ◆ Never fuel at night unless it is an emergency. If you must refuel after dark, use only electric lights.
- ◆ To protect the water environment, try to refuel away from the water or on a commercial fueling ramp.
- ◆ Fuel usage tips:
  - Operate at two-thirds throttle to conserve fuel.
  - Allow one-third tank of fuel for getting out, one-third for returning, and one-third for emergency.
- ◆ Procedures for fueling safely and responsibly
  - Before beginning to fuel:
    - Tie the boat securely to the fuel dock.
    - Have all passengers disembark to the dock.
    - Do not allow anyone at the fuel dock to smoke or strike a match.
    - Check that fuel lines, connections, and fuel vents are in good condition.
    - Turn off anything that might cause a spark—engines, fans, or electrical equipment.
    - Shut off all fuel valves, and extinguish all open flames.
    - Close all windows, ports, doors, and other openings.
    - Remove portable fuel tanks from the boat and fill them on the dock.
    - Make sure that your fire extinguisher is within reach.

- While filling the fuel tank:
  - Keep the nozzle of the fuel-pump hose in solid contact with the tank opening to prevent producing a static spark.
  - Fill the tank slowly to avoid spilling fuel into the boat's bilge or into the water. Use an oil-absorbent pad to catch drips or spills.
  - Never fill a tank to the brim—leave room for fuel to expand.
- After fueling:
  - Put the fill cap on tightly to prevent vapors from escaping.
  - Wipe up any spilled fuel, and properly dispose used paper towels or rags on shore.
  - Open all windows, ports, doors, and other openings. If your boat is equipped with a power ventilation system, turn it on for at least four minutes before starting your engine to eliminate fuel vapors in bilge.
  - Before starting engine, sniff bilge and engine compartment for fuel vapors.
  - Start the engine and then reload your passengers.
- ◆ Fueling Issues for a PWC
  - Check the entire fuel system for leaks, and inspect fuel system connections frequently.
  - Avoid spills when fueling in or near the water.
  - Do not tip a PWC to fill it all the way up.
  - After fueling and before starting the engine, sniff the engine compartment for any evidence of gas fumes.



### **Fuel Selector Switch on a PWC**

- ◆ The “Off” position should be used when the PWC's engine is turned off.
- ◆ The “On” position should be used while you are underway.
- ◆ The “Reserve” position should be used if you run out of fuel while underway.



### **Trailer Your Vessel**

- ◆ Choose the Right Trailer and Vehicle To Tow Your Vessel
  - The trailer and towing vehicle should be designed to fit your vessel.
    - Use the size of your vessel to determine the dimensions of the trailer needed.
    - If the combined weight of your vessel and its engine is more than 90% of the manufacturer's load capacity, buy the next larger trailer.
    - Check the owner's manual of your towing vehicle to ensure that it's rated to tow the combined weight of your vessel, engine, and trailer.
  - The towing hitch must be appropriate for the loaded trailer.
    - The coupler on a trailer connects to a ball hitch on the towing vehicle. A frame-mounted hitch on the towing vehicle is better than a bumper-mounted hitch.
    - Make sure the size stamped on the ball hitch on the towing vehicle is the same size that is stamped on the trailer's coupler.
    - “Tongue weight” is the amount of the loaded trailer's weight that presses down on the towing hitch. The tongue weight should be about 10% of the combined weight of the vessel and trailer (“gross trailer weight” or GTW).
  - Two strong safety chains should be crisscrossed to support the trailer's coupler. The chains should be strong enough to hold the combined weight of the vessel, engine, and trailer.
- ◆ Before Leaving Home
  - Secure the vessel on the trailer and the gear within the vessel.
    - Arrange the gear so that its weight is balanced, and secure the gear firmly.
    - Secure the vessel to the trailer with several tie-down straps and/or safety lines to prevent the vessel from shifting. Never trust the bow winch alone to hold your vessel onto the trailer.
    - Put the engine or drive unit in the raised position and secure it.
    - Attach the safety chains between the trailer and the towing vehicle, crisscrossing them under the trailer tongue.
  - Inspect and maintain trailering equipment.
    - Check the pressure of all tires on the towing vehicle and the trailer. Make sure you have a spare tire in good condition for both.
    - Tighten the lug nuts/bolts on the towing vehicle and trailer, and grease wheel bearings.
    - Make sure all lights and brakes work properly on the towing vehicle and trailer.
    - Examine tie-down straps, lines, winch, safety chains, and hitch for signs of wear.

- ◆ On the Road With a Trailer
  - Drive cautiously.
    - Drive at moderate speeds and avoid sudden maneuvers.
    - On long trips, pull over periodically to check the towing vehicle, trailer, tires, trailer coupling, and gear in the vessel.
  - Allow for the added length and weight of the trailer.
    - Make wider turns at corners and curves.
    - Allow extra time and distance for stopping and for passing other vehicles.
- ◆ Launching Your Vessel from a Trailer
  - Prepare to launch well away from the boat ramp.
    - Transfer all equipment and supplies to the vessel.
    - Disconnect trailer lights from the towing vehicle.
    - Remove all tie-down straps, except the winch line, before backing down the ramp.
    - Make sure the vessel's drain plug is in place.
    - Tie a rope to the vessel's bow to use to control the vessel if necessary during launching.
  - Back the trailered vessel into the water so that the lower unit of the engine can be lowered and submerged while the vessel is still on the trailer.
    - Always set the parking brake on the towing vehicle.
    - Lower the engine or outdrive, and start the engine.
    - Once the engine warms up, back the trailer further into the water until the vessel floats. Undo the winch line, put the vessel's engine in reverse, and back slowly off the trailer.
- ◆ Retrieving Your Vessel
  - Back the trailer into the water so that approximately two-thirds of the rollers or bunks are submerged. Set the parking brake of the towing vehicle, and put it in park or first gear.
    - Move the vessel onto the trailer far enough to attach the winch line to the bow eye of the vessel. Finish pulling the vessel onto the trailer by cranking the winch. Do not load a vessel using engine power.
    - Shut off the engine, and raise the engine or outdrive.
    - Pull the vessel out of the water.
  - Prepare for the drive home well away from the boat ramp.
    - Remove and dispose of all weeds from the vessel and trailer, remove the drain plug to release bilge water, and drain any live wells.
    - Secure the vessel on the trailer and the gear within the vessel, following the instructions under "Before Leaving Home."
- ◆ Courtesy on the Boat Ramp
  - Prepare the vessel for launching well away from the ramp.
  - Use at least two experienced people to launch and retrieve the vessel.
  - Never block the ramp with an unattended vessel or vehicle.
  - When retrieving, do not pull your vessel into a launch lane until the towing vehicle is at the ramp.



## Vessel Maintenance

- ◆ Examine the interior and exterior of the hull when it is out of the water.
  - Sand oxidized areas (appear as white powder spots) with fine sandpaper.
  - Use environmentally safe, non-phosphate detergents to remove oil and algae from fiberglass hulls. Patch holes with a fiberglass compound.
  - Check through-hull fittings to make sure they are not cracked or leaking.
  - Remove puddles from the interior.
- ◆ Store vessels in a dry area out of the sun. If stored for a long time, place the trailer on blocks. Use a ventilated cover. Hang canoes upside down.
- ◆ Clean lines and ropes. Keep them out of the sun when not in use. Replace weakened or fraying lines.
- ◆ Clean sails with a soft brush. Examine for small tears or open seams; repair by taping or sewing.
- ◆ Refer to owner's manual for a maintenance schedule.



## Engine Maintenance

- ◆ Keep the engine clean and tuned properly.
- ◆ Check the oil and fluid levels before every outing. Change the oil according to the owner's manual.
- ◆ Make sure battery connections are tight, clean, and free of corrosion. If the battery is weak when you start the engine, recharge it.
- ◆ Inspect the engine for anything that shows signs of wear or requires tightening.
- ◆ Never use automotive electrical parts. Use marine parts only.

## Review Questions

1. What information is displayed on the capacity plate of an outboard powerboat?  
**Answer:** capacity in pounds or number of people, and recommended maximum horsepower
2. Name three things that should be included on your float plan before you embark on an extended outing.  
**Answer:** may include:
  - vessel description: number, length, make, etc.
  - passengers: number, names, and addresses
  - trip plan: destination, route, expected departure and return times
3. What three things should you do while filling the fuel tank of your vessel?  
**Answer:** keep the nozzle in contact with the tank opening, fill tank slowly and avoid spilling fuel, and never fill a tank to the brim
4. What rule of thumb is used to prevent running out of fuel?  
**Answer:** one-third out, one-third in, and one-third in reserve
5. When should you get the next larger trailer to tow your vessel?  
**Answer:** if the combined weight of the vessel and its engine is more than 90% of the recommended load capacity of the trailer
6. What is tongue weight?  
**Answer:** the amount of the loaded trailer's weight that presses down on the towing hitch
7. How should two strong safety chains be secured to support the trailer's coupler in case it comes disconnected from the towing vehicle?  
**Answer:** crisscrossed
8. Where should you prepare your vessel before launching it from the trailer?  
**Answer:** well away from the boat ramp
9. Name three engine maintenance tips.  
**Answer:** may include:
  - keep well tuned
  - check oil levels
  - change oil
  - check batteries
  - grease and lubricate
  - check for anything loose

## Summary

- ◆ Don't exceed the maximum carrying capacity or horsepower stated on your boat's capacity plate.
- ◆ Turn on your boat's power ventilation system for at least four minutes after fueling and before starting the engine. Use the "sniff test" after fueling a PWC before starting the engine.
- ◆ Before trailering a vessel, make sure the coupler is attached securely and crisscross the safety chains.
- ◆ When launching a vessel from a trailer, make sure the drain plug is in. After backing down the ramp, start the engine while the vessel is still on the trailer.
- ◆ Be considerate of other boaters when launching your vessel from the trailer and retrieving it from the water.

**Objectives**  
*The student should...*

- ◆ Be able to cast off and dock a vessel under different wind and current conditions.
- ◆ Know the three basic rules of navigation.
- ◆ Know what to do when encountering another vessel.
- ◆ Know the types of nighttime navigation lights and how to interpret them.
- ◆ Be able to use and interpret sound signals.
- ◆ Know what to do when encountering the buoys and markers of the U.S. Aids to Navigation System.
- ◆ Be able to anchor a vessel correctly.
- ◆ Understand the dangers inherent in boating near dams, locks, and bridges and the effects of tides and currents on a vessel.
- ◆ Be able to operate a PWC safely and courteously.
- ◆ Be strongly aware that power is required for steering control of a PWC.
- ◆ Understand how ignition safety switches work.
- ◆ Know how to avoid propeller strike injuries.


**Casting Off**

- ◆ Before casting off:
  - Keep the boat tied to the dock while the engine warms up.
  - Make sure everyone on board is seated and wearing a life jacket.
  - Check that the engine is running properly and the departure area is clear of traffic. Then begin to cast off.
- ◆ If there is no wind or current:
  - Cast off the bow and stern lines.
  - Shift to forward gear and slowly move forward, gradually turning your boat away from the dock.
- ◆ If the wind or current direction is toward the dock:
  - Cast off the stern line. Move and secure the bow line to a mid-boat position on the dock.
  - Put the boat into forward gear briefly and turn the steering wheel hard toward the dock. Increase the speed slowly until the stern is clear of the dock.
  - Cast off the bow line, and back away.
- ◆ If the wind or current direction is away from the dock:
  - Cast off all lines.
  - Use an oar or boat hook to keep the boat clear of the dock. Let the wind or current carry the boat away from the dock.
  - Shift to forward gear and slowly leave the area.


**Docking**

- ◆ Before docking:
  - Bring the vessel to a stop by using reverse gear.
  - Approach into the wind if possible and move slowly.
  - Never try to stop with your arms or legs.
- ◆ If there is no wind or current:
  - Approach the dock slowly at a narrow angle (about 20 degrees).
  - When close enough, have a passenger step on shore and secure the bow line.
  - Swing the stern in with a line or boat hook, and secure it.
- ◆ If the wind or current direction is toward the dock:
  - Approach slowly, parallel to the dock.
  - Let the wind or current push your boat to the dock.
  - Secure the bow and stern lines.
- ◆ If the wind or current direction is away from the dock:
  - Approach the dock slowly at a sharp angle (about 40 degrees).
  - Use reverse to stop. Secure the bow line.
  - Put boat in forward gear briefly, and slowly turn steering wheel hard away from dock. Secure the stern line.



## Navigation Rules ... Traffic Laws of the Waterways

- ◆ Three basic rules of navigation:
  - Practice good seamanship. Every operator should take action in ample time to avoid a collision.
  - Keep a sharp lookout at all times for other vessels, navigational hazards, and others in the water.
  - Maintain a safe speed that ensures you will have ample time to avoid a collision.
- ◆ There are two terms to help explain what to do when encountering other vessels.
  - The give-way vessel is the vessel that is required to take early and substantial action to keep well away from other vessels by stopping, slowing down, or changing course.
  - The stand-on vessel is the vessel that must maintain its course and speed unless it becomes apparent that the give-way vessel is not taking appropriate action.
- ◆ When a power-driven vessel encounters a power-driven vessel
  - Head-on
  - Paths That cross
  - Overtaking
- ◆ When a sailing vessel encounters another sailing vessel
  - Wind on same side
  - Wind on different sides
- ◆ When a power-driven vessel encounters a sailing vessel
  - Head on
  - Paths That cross
  - Overtaking
- ◆ There are exceptions to rules above. For example, if you encounter a vessel which has less maneuverability than your vessel, the other vessel will usually be the stand-on vessel.



## Navigation Lights

- ◆ Navigation lights must be displayed from sunset to sunrise and during periods of restricted visibility.
- ◆ Types of navigation lights:
  - Sidelights: Red and green lights visible from the side or head-on. The red light indicates a vessel's port (left) side; the green indicates a vessel's starboard (right) side.
  - Sternlight: A white light seen from behind the vessel.
  - Masthead Light: A white light, which shines forward, located on the mast of a sailboat and required on all power-driven vessels. Must be displayed by all vessels when under engine power. The absence of this light indicates a sailboat under sail.
  - All-Round White Light: A white light seen from any direction; may be used to combine masthead and sternlight on vessels less than 39.4 ft. in length. Serves as anchor light when sidelights are extinguished.



## Night Navigation

- ◆ Lights of other vessels help you determine whether they are operating under power or sail, and their direction of travel. Apply the same navigation rules used in the daytime. However, never assume lights of other vessels are working properly.
- ◆ When you see a red, a green, and a white light, you are approaching another power-driven vessel head-on; both vessels must give way.
- ◆ When you see only a white light, you are overtaking another vessel or it is anchored. It is the stand-on vessel.
- ◆ When you see a green and a white light, you are the stand-on vessel. However, you should remain alert.
- ◆ When you see a red and a white light, you must give way to the other vessel.
- ◆ When you see only a green light or only a red light, you may be approaching a sailing vessel and you must give way.
- ◆ When you see a red light and a green light, you are approaching a sailing vessel head-on and you must give way.
- ◆ Commercial vessels that are towing or pushing a barge display one or more yellow lights instead of a stern light. There may be a long, unlit space between the bow and the stern.



## Sound Signals

- ◆ Sound signals are composed of short (about one second) and prolonged (4-6 seconds) blasts.
- ◆ As a vessel operator, you use sound signals to communicate a change in direction, to let other boaters know where you are in periods of restricted visibility, and to alert other boaters to danger.



## U.S. Aids to Navigation System (ATON)

- ◆ The U.S. Aids to Navigation System (ATON) uses nuns, cans, and daymarks as “traffic signals” of the waterways.
  - Nuns and Cans: Either red cone-shaped (nuns) or green cylindrical-shaped (cans) buoys.
  - Lighted Buoys: Marked with the ATON colors and numbers and a matching colored light.
  - Daymarks: Red triangles or green squares attached permanently to structures; can be lighted.
- ◆ Colors and numbers of lateral markers mean the same thing regardless of the kind of buoy or marker on which they appear:
  - Red colors, red lights, and even numbers mark the right edge of the channel as a vessel operator enters from the open sea or heads upstream. Remember: “Red. Right. Returning.”
  - Green colors, green lights, and odd numbers mark the left edge of the channel as a vessel operator enters from the open sea or heads upstream.
  - Red and green colors or lights indicate the preferred (primary) channel. If green is on top, the preferred channel is to the right; red on top means the preferred channel is to the left.
  - If it applies to your state, cover the ICW System or the Western Rivers Systems.
- ◆ Variations on the U.S. Aids to Navigation System: Discuss these markers if they apply in your state.
- ◆ Non-lateral markers are found on lakes and rivers and use orange markings and black lettering.
  - Squares indicate directions; distances; places to find food, supplies, and repairs; etc.
  - Diamonds warn of dangers such as rocks, dams, shoals, construction, or stumps.
  - Circles indicate a controlled area such as no wake, speed limit, etc.
  - Crossed diamonds indicate areas off-limits to all vessels such as swimming areas, dams, and spillways.
- ◆ Other non-lateral markers include:
  - Safe Water Marker (red and white vertical stripes) indicates mid-channels and may be passed on either side.
  - Inland Waters Obstruction Marker (black and white vertical stripes) indicates you should not pass between the marker and the shore.
  - Mooring Buoy (white with blue horizontal stripe) identifies a buoy to which you may tie up.



## Anchoring

- ◆ Choose an anchor that fits your boat and the boating conditions.
  - The plow-style anchor and the fluke-style (Danforth-size) anchor have the best holding power.
  - Mushroom anchors should not be used for vessels larger than a small canoe, rowboat, small sailboat, or inflatable boat.
- ◆ Prepare your anchor before setting out.
  - Attach 7-8 feet of galvanized chain to the anchor.
  - Length of anchor line should be 7-10 times the water depth.
  - Store the anchor and its lines where they can be accessed easily in an emergency.
- ◆ Follow these steps to anchor your boat.
  - Select an area with plenty of room, well-protected, adequate water depth, and a sandy or muddy bottom.
  - Head slowly into the wind or current until you are upwind or upcurrent of where you want to be.
  - Lower the anchor over the bow to the bottom. Never anchor from the stern as this can cause the boat to swamp.
  - Slowly back away downwind or downcurrent. Let out 7-10 times as much line as the depth of the water. Tie off the line, and pull on the anchor to secure it.
  - Take visual sightings to help you know where your boat is positioned.
  - Periodically check connecting knots on your anchor line.
- ◆ Follow these steps to retrieve the anchor.
  - Move the boat over the anchor while pulling in the line. Pulling the anchor straight up should break it free.
  - If the anchor is stuck, turn your boat in a large circle, while keeping the anchor line pulled tight.
  - When the anchor breaks loose, stop and retrieve it. Never drag the anchor behind the boat.



## Dams, Locks, and Bridges

- ◆ Dams pose dangers.
  - Avoid low-head dams, which can create dangerous currents that can trap vessels.
  - Large-structure dams have powerhouses and spillways; areas below and above these dams are dangerous to boaters and swimmers, and are usually off-limits.
- ◆ Dams on rivers create different water levels. Locks safely transport vessels from one water level to another.
- ◆ Watch for bridges that provide only low clearance. Reduce speed and proceed with caution near any bridge.



## Changing Water Levels and Tides on Coastal Waters

- ◆ Water levels can change rapidly due to tides, flooding rivers, or water released through dams.
- ◆ Changing water levels can cause vessels to run aground and also can affect docking to a fixed pier.
- ◆ Tides can cause water levels to fluctuate by several feet and also can generate strong currents.



## Compasses and Charts

- ◆ A compass shows magnetic north and is useful if land is out of sight, visibility is reduced, or the boat operator is disoriented.
- ◆ Nautical charts contain information such as water depths and the locations of channels, sand bars, rocks, and vegetation.



## Operating a Personal Watercraft



- ◆ PWCs must follow the same rules and requirements of any other vessel.
- ◆ Steering and stopping a PWC
  - PWCs are propelled by water being forced out through a steering nozzle at the back of the unit.
  - Remember that you always must have power in order to maintain steering control.
  - Always allow plenty of room for stopping.
- ◆ PWC operators need to take special care to show courtesy to other vessels.
  - Do not jump the wake of a passing vessel or ride too close to another vessel. These are common complaints others have against PWC operators.
  - Do not try to spray others with the wake of your PWC.
  - Avoid excessive noise, especially near residential and camping areas. Vary your operating area, and avoid congregating with other PWC operators near shore. Do not modify the exhaust system, and avoid maneuvers that lift the engine exhaust out of the water.
  - Share the waterways responsibly with other boaters, fishermen, swimmers, surfers, or skiers.
- ◆ Environmental considerations for PWCs
  - Operate only in water that is at least 30 inches deep.
  - Avoid creating a wake when operating near the shore or in narrow streams or rivers.
  - Do not dock or beach your PWC in reeds and grasses.
  - Take care not to spill oil or gasoline when fueling in or near the water.
  - Never chase, disturb, or harass wildlife with your PWC.
- ◆ Other considerations
  - PWC regulations vary from state to state. Know the regulations before operating.
  - You and anyone on board must wear a PFD.
  - Keep hands, feet, loose clothing, and hair away from the pump intake area.
  - Stay away from the steering nozzle unless the PWC is shut off.
  - Frequently inspect your PWC's electrical systems and perform the "sniff test" after fueling.
  - Do not exceed the load capacity of your PWC.
- ◆ Reboarding a capsized PWC
  - Most manufacturers have placed a decal at the rear or bottom of the craft that indicates the direction to roll a PWC upright.
  - Practice reboarding with someone else around to see if it is something you could handle alone.



## Ignition Safety (Engine Shut-Off) Switches



- ◆ An ignition safety switch has a lanyard which attaches the operator to the switch. The safety switch shuts off the engine if the operator falls off the PWC or out of the boat.
- ◆ Check your state law to see if you are required to attach the safety lanyard on a PWC with an ignition safety switch.
- ◆ There are two options available on PWCs.
  - Some PWCs run at idle speed and slowly circle the operator if he or she falls off.
  - Most PWCs have a shut-off switch that shuts down the engine if the operator falls off.
- ◆ Wearing a safety lanyard also prevents self-inflicted propeller strikes.



## Avoiding Propeller Strike Injuries

- ◆ Most propeller strike accidents can be prevented if operators follow basic safe boating practices.
  - Make sure the engine is off while passengers board or disembark.
  - Never start a boat with the engine in gear.
  - Never ride on a seat back, gunwale, transom, or bow.
  - Make sure all passengers are seated properly before getting underway.
  - Maintain a proper lookout.
    - Slow down near congested areas and anchorages.
    - Learn to recognize warning buoys.
    - Keep the boat away from marked swimming and diving areas.
- ◆ Devices that reduce propeller strikes fall into four categories: guards, propulsion, interlocks, and sensors.

## Review Questions

1. If the wind direction is toward the dock, what should you cast off first when leaving the dock?  
**Answer:** the stern line
2. In encountering situations, what do you call the vessel that is required to take early and substantial action to avoid a collision by stopping, slowing down, or changing course?  
**Answer:** the give-way vessel
3. What must the stand-on vessel do?  
**Answer:** maintain its course and speed unless it becomes apparent the give-way vessel is not taking appropriate action
4. What should you do if you are driving a powerboat or PWC and meet another powerboat or PWC head-on?  
**Answer:** keep to the right
5. If you are overtaking another vessel, are you the stand-on vessel?  
**Answer:** No
6. If you see a red and a white light ahead when boating at night, should you maintain your course and speed?  
**Answer:** No
7. If you see only a green light while boating at night, what type of vessel are you approaching and what must you do?  
**Answer:** a sailing vessel and you must give way
8. What are the “traffic signals” that guide boaters safely along their course?  
**Answer:** buoys and markers
9. What phrase reminds vessels of the correct course in the lateral system of U.S. Aids to Navigation?  
**Answer:** “Red Right Returning”
10. What does a solid green buoy with an odd number indicate?  
**Answer:** the edge of the channel on a boater’s left side when entering from the open sea or heading upstream
11. What does a white buoy with an orange open diamond indicate?  
**Answer:** danger
12. What does a white buoy with an orange crossed diamond indicate?  
**Answer:** areas that are off-limit to vessels
13. How long should an anchor line be?  
**Answer:** at least 7-10 times the water depth
14. Where on the vessel should you never anchor from to avoid making the vessel unstable?  
**Answer:** the stern
15. To maintain steering control of a PWC, what must you never do?  
**Answer:** allow the engine to return to idle or shut off
16. What are the two most common complaints boaters have against PWC operators?  
**Answer:** wake jumping and riding too close
17. What can PWC operators do as a courtesy to those on shore?  
**Answer:** vary their operating area, avoid congregating, and avoid making excessive noise
18. What safety device shuts off the engine if the operator is thrown from the proper operating position?  
**Answer:** emergency ignition safety switch
19. How can an operator avoid propeller strike accidents when passengers are boarding or disembarking a boat?  
**Answer:** make sure the engine is shut off

## Summary

- ◆ When docking a vessel, if possible approach the dock into the wind or current, whichever is stronger.
- ◆ Even though there are navigation rules for encountering another vessel, it is still the responsibility of both vessel operators to take action to avoid collision.
- ◆ Always give way if you see a red and a white light or a single red, green, or white light while boating at night.
- ◆ The “Red Right Returning” rule applies to buoys, lights, and daymarks.
- ◆ Regulatory markers indicate “Controlled,” “Exclusion,” or “Danger” areas and give information.
- ◆ Anchor from the bow, and make sure the length of the anchor line is 7-10 times the depth of the water.
- ◆ Avoid low-head dams—they can trap your vessel against the face of the dam.
- ◆ On PWC, if you turn off the engine or allow it to return to idle, you will lose all steering control.
- ◆ Jumping the wake of other vessels and riding too close are the two most frequent complaints against PWC operators.
- ◆ Always attach the lanyard of the ignition safety switch to your wrist or PFD.

**Objectives**  
*The student should...*

- ◆ Know which vessels need to be registered and how to do so.
- ◆ Be able to place certificate numbers and validation decals on a vessel correctly.
- ◆ Know where to find the HIN.
- ◆ Know the age and education restrictions on vessel or PWC operation.
- ◆ List the reckless behaviors that should be avoided when operating a vessel.
- ◆ Explain the dangers of consuming alcohol or drugs while boating and the penalties for doing so.
- ◆ Identify the classifications and uses of personal flotation devices, and state the legal requirements.
- ◆ Know the legal requirements for fire extinguishers, backfire flame arrestors, ventilation systems, and mufflers.
- ◆ Know the legal requirements for navigation lights, visual distress signals, and sound-producing devices.
- ◆ Know requirements for other equipment such as diver-down flags or state-required equipment.
- ◆ Understand the legal requirements specific to PWCs.
- ◆ Know the legal requirements for towing a person with a vessel.
- ◆ Understand how to dispose waste, oil, and trash properly and use MSDs properly.
- ◆ Know when and how to report a boating accident.



### Your Vessel's Certificate of Number and Decal(s)

Most vessels must have a certificate of number (registration) and decal to operate legally on public waters. Review how this topic applies to your state as covered in the Student Manual:



- ◆ Which vessels must be registered
- ◆ How to obtain a certificate and decal(s)
- ◆ Responsibility of vessel operator to carry certificate on board and make it available for inspection
- ◆ How to display the number and decal(s) correctly on the vessel, including size, color, and placement



### Other Facts About Titling and Registering Your Vessel

Review how this topic applies to your state as covered in the Student Manual:

- ◆ Whether or not a title is required for outboard motors
- ◆ How long a certificate and decal are valid
- ◆ What to do if a vessel is abandoned or destroyed
- ◆ What to do if a certificate is lost or destroyed
- ◆ How to apply for a certificate and decal(s) for a homemade vessel
- ◆ How to apply for a U.S. Coast Guard "Certificate of Documentation" for larger recreational vessels



### Hull Identification Number

- ◆ All vessels manufactured for sale after 1972 must have a manufacturer's serial number or HIN.
- ◆ HINs are typically engraved in the fiberglass or on a small metal plate attached to the transom.
- ◆ Record your HIN, and store it away from the vessel.



### Who May Operate a Vessel

Review how this topic applies to your state as covered in the Student Manual.

What are the age limits and boater education requirements for operation?



### Unlawful and Dangerous Operation of a Vessel



Negligent and reckless operation of a vessel is prohibited by law. Review the definition of and examples of reckless operations as covered in the Student Manual, such as:

- ◆ Operating a vessel in restricted areas
- ◆ Operating a vessel in a swimming area
- ◆ Operating a vessel under the influence of alcohol or other drugs
- ◆ Failing to regulate speed
- ◆ Water-skiing in a hazardous manner
- ◆ Allowing passengers to ride on the bow, gunwale, transom, seat backs, seat on raised decks, or any other place where they can fall overboard
- ◆ Any other operational practices which are illegal in your state



## Alcohol and Drugs

Review how this topic applies to your state as covered in the Student Manual:

- ◆ The blood alcohol concentration that is considered intoxication by your state
- ◆ The penalties for operating a vessel under the influence



## Obstructing Navigation

- ◆ Do not operate or anchor in a river or channel in a way that will interfere with other vessels.
- ◆ Do not moor or attach a vessel to a buoy, beacon, light, or any other navigational aid.
- ◆ Do not move, displace, tamper with, damage, or destroy any navigational aid.
- ◆ Do not obstruct a pier, wharf, boat ramp, or access to any facility.



## Homeland Security Restrictions

Recreational boaters have a role in keeping our waterways safe and secure.

- ◆ Do not approach within 100 yards and slow to minimum speed within 500 yards of any U.S. Naval vessel.
- ◆ Observe and avoid all security zones.
- ◆ Observe and avoid all other restricted areas near dams, power plants, and so on.
- ◆ Do not stop or anchor beneath bridges or in channel.
- ◆ Report suspicious activities to local authorities or U.S. Coast Guard.



## Personal Flotation Devices (PFDs)

All vessels must be equipped with the proper number and type of U.S. Coast Guard–approved PFDs:

- Type I: Offshore life jacket
- Type II: Near-shore vest
- Type III: Flotation aid
- Type IV: Throwable device, not wearable
- Type V: Special-use device

- ◆ All vessels must have one Type I, II, or III (or, in some states, also a Type V) PFD for each person on board.
- ◆ Each PFD must be in good condition, the proper size for the wearer, and readily accessible.
- ◆ Review how this topic applies to your state as covered in the Student Manual:
  - Which vessels are required to have a Type IV on board
  - What the legal requirements are for children
  - What the requirements are for a PWC
  - What the requirements are for a water-skier



## Fire Extinguishers

Most vessels are required to have a Type B fire extinguisher(s) on board, in serviceable condition, and readily accessible. Check extinguishers regularly to see that they are charged.

- ◆ Extinguishers are classified by their size and the type of fires they will extinguish. Approved types are identified by the label “Marine Type USCG Approved.”
- ◆ Fire extinguisher requirements vary by the length of a vessel.



## Backfire Flame Arrestors

- ◆ All powerboats, except outboards, must have a backfire flame arrestor on each carburetor.
- ◆ Backfire flame arrestors must be in serviceable condition and U.S. Coast Guard–approved.



## Proper Ventilation

All gasoline-powered vessels, constructed in a way that would entrap fumes, must have at least two ventilation ducts fitted with cowls to remove the fumes.

- ◆ If your vessel is equipped with a power ventilation system or blower, turn it on for at least four minutes before starting your engine, especially after fueling. If your vessel is not equipped with a power ventilation system (such as PWCs), open the engine compartment and sniff for gasoline fumes before starting the engine.



## Mufflers

Review how this topic applies to your state as covered in the Student Manual:

- ◆ The noise level restrictions
- ◆ Any prohibitions regarding cutouts, exhaust stacks, or muffler modifications



## Navigation Lights

- ◆ Vessels must be equipped with proper navigation lights in these conditions:
  - When away from the dock between sunset and sunrise
  - During periods of restricted visibility such as fog or heavy rain
- ◆ Required navigation lights include:
  - A green light on the starboard (right) side, visible from at least one mile away.
  - A red light on the port (left) side, visible from at least one mile away.
  - An all-round white light, lantern, or flashlight visible in all directions or both a masthead light and a sternlight. This light must be used when anchored or moored away from the dock at night.
- ◆ Review the light requirements in your state, as covered in the Student Manual, for classes and sizes of:
  - Power-driven vessels while underway between sunset and sunrise
  - Unpowered vessels while underway between sunset and sunrise



## Visual Distress Signals (VDSs)

- ◆ Pyrotechnic VDSs emit either smoke or flames and are classified as day and/or night signals:
  - Orange Smoke VDS—day signal
  - Red Meteor VDS—day or night signal
  - Red Flare VDS—day or night signal
- ◆ Non-pyrotechnic VDSs are non-combustible and are classified as day or night signals:
  - Electric light—night signal
  - Orange flag—day signal
  - Arm signal—used if no other distress signal is on board
- ◆ Vessels on federally controlled waters must be equipped with USCG–approved day and night VDSs.
  - All vessels are required to carry night signals when operating between sunset and sunrise.
  - Recreational vessels 16 feet or longer and non-motorized, open sailboats 26 feet or longer also must carry day signals.
  - If pyrotechnic VDSs are used, a minimum of 3 must be carried on board. They also must be dated and not expired.
  - Do not display VDSs while on the water unless you need assistance to prevent danger to persons on board.



## Sound-Producing Devices

- ◆ Vessels on federally controlled waters must carry the following:
  - A whistle, horn, or some other means of making a sound signal audible for at least one-half mile, if the vessel is less than 65.6 feet (20 meters). This includes PWCs.
  - A whistle or horn, and a bell audible for at least one mile, if the vessel is at least 65.6 feet (20 meters) long.
- ◆ Review how this topic applies to your state as covered in the Student Manual.



## Other Equipment and Local Regulations

Review how this topic applies to your state as covered in the Student Manual:

- ◆ Diver-down flag
- ◆ Skier-down flag
- ◆ Marine events
- ◆ Other state-specific required equipment or local regulations



## Requirements Specific to Personal Watercraft

- ◆ A Type I, II, or III (or, in some states, also a Type V) PFD must be worn by the operator and passengers.
- ◆ If equipped with a lanyard-type ignition safety switch, it must be used.
- ◆ Review how this topic applies to your state as covered in the Student Manual:
  - Hours when a PWC may be operated legally
  - Distance that a PWC must stay from another vessel, person, stationary platform, or shoreline
  - Jumping the wake of another vessel
  - Operating a PWC at idle speed
  - Chasing wildlife with a PWC



## Towing a Person With a Vessel Legally

Review how this topic applies to your state as covered in the Student Manual:

- ◆ What hours skiers may be towed legally
- ◆ Flag requirements, if any, for a vessel towing persons
- ◆ Distance a vessel towing a person must be from docks, piers, or other public use areas
- ◆ PFD requirements for the persons being towed
- ◆ Observer or rearview mirror requirements for vessels towing person(s)



## Waste, Oil, and Trash Disposal in State and Federal Waters

- ◆ It is illegal to discharge waste, oil, or trash into federally controlled or state waters.
  - Sewage carries disease and pollutants that are harmful to people, aquatic plants, and animals.
  - Trash thrown into the water can injure swimmers and wildlife and can plug engine cooling water intakes.
  - Pollution is unsightly.
- ◆ Requirements for the discharge of sewage and waste
  - Recreational vessels with installed toilet facilities must have an operable marine sanitation device (MSD) on board.
  - Three types of MSDs:
    - Types I and II treat waste with special chemicals to kill bacteria. Marine toilets equipped with “Y” valves must be secured so that the valve cannot be opened.
    - Type III provide no treatment and are either holding tanks or portable toilets.
  - Vessels 65 feet and shorter may use a Type I, II, or III MSD. Longer vessels must have a Type II or III MSD.
  - Installed devices must be U.S. Coast Guard-certified.
- ◆ Requirements for the discharge of trash
  - It is illegal to dump refuse, garbage, or plastics into federally controlled or state waters.
  - Trash must be stored in a container on board and placed in a proper receptacle after returning to shore.
  - If on federally controlled waters, your vessel is 26 feet or longer, you must display a 4 x 9-inch garbage disposal placard. It must notify passengers and crew about discharge restrictions.
- ◆ Requirements for the discharge of oil and other hazardous substances
  - All vessels with propulsion machinery must be able to retain oil mixtures on board.
  - It is illegal to discharge oil or hazardous substances into federally controlled or state waters.
  - It is illegal to dump oil into the bilge of the vessel without means for proper disposal.
  - You must dispose of oil waste at an approved reception facility.
  - Immediately notify the U.S. Coast Guard and state authorities if your vessel discharges oil or hazardous substances.
  - If your vessel is 26 feet or longer, you must display a 5 x 8-inch placard near the bilge pump control station stating the Federal Water Pollution Control Act’s law.
- ◆ Requirements for a waste management plan
  - Ocean-going vessels 40 ft. or longer with cooking and sleeping facilities must have a Waste Management Plan, and the captain is responsible for implementation.
  - Plan should be posted and include directives about proper disposal of sewage, garbage, etc.
- ◆ Review any permits, documentation, or restrictions that may apply in your state as covered in the Student Manual.



## Boating Accidents and Casualties ... What the Law Requires You To Do

Review how this topic applies to your state as covered in the Student Manual:

- ◆ The legal requirement to stop and render aid
- ◆ Under what circumstances must an accident be reported
- ◆ To whom must the accident be reported, what information must be provided, and within what timeframe



## Enforcement

Review how this topic applies to your state as covered in the Student Manual:

- ◆ Persons who have the authority to enforce boating laws and regulations
- ◆ Actions required by an operator who is signaled to stop

## Review Questions

1. What number is assigned and imprinted by the vessel manufacturer and is unique to each vessel?  
**Answer:** Hull Identification Number
2. Because it is considered reckless operation, where should you not allow passengers to ride while underway?  
**Answer:** on the bow or gunwale
3. What activity is illegal if your blood alcohol concentration (BAC) is above the legal limit?  
**Answer:** operating a vessel
4. What are three requirements for a PFD to be legal?  
**Answer:** U.S. Coast Guard–approved, in good condition, and readily accessible
5. Name the five types of PFDs.  
**Answer:** offshore life jacket, near-shore vest, flotation aid, throwable device, and special-use device
6. In addition to a Type I, II, or III PFD, what type of PFD do most states require to be on board a vessel 16 feet in length or longer?  
**Answer:** Type IV throwable device
7. What must all PWC operators, regardless of age, wear whenever they are underway?  
**Answer:** U.S. Coast Guard–approved personal flotation device (PFD)
8. Where should a fire extinguisher be placed on a vessel?  
**Answer:** in an area that is accessible and not near the engine
9. How long should you wait after turning on your vessel's blower (if so equipped) and before starting your engine?  
**Answer:** at least four minutes
10. What navigation lights are required for an 18-foot powerboat?  
**Answer:** red light on the port (left) side, green light on the starboard (right) side, and a white light
11. What must a 16-foot canoe away from dock after dark have on hand?  
**Answer:** at least a flashlight or lantern
12. What are two visual distress signals (VDSs) that can be used at night?  
**Answer:** may include:
  - red flares
  - red meteors
  - electric light
13. What does a divers flag look like?  
**Answer:** red flag with a white diagonal stripe
14. If an observer is on board when pulling a skier behind a vessel, how many people should that vessel be rated to carry?  
**Answer:** three
15. May a water-skier(s) be towed at night with proper lighting?  
**Answer:** No
16. What is it illegal to discharge into federally controlled or state waters?  
**Answer:** waste, oil, or trash
17. When are you required to report a boating accident?  
**Answer:** if the accident results in death, serious injury, or significant property damage

## Summary

- ◆ Always have your certificate of number (registration) on board.
- ◆ Reckless operating practices, such as excessive speed, are not only dangerous but are also illegal.
- ◆ Operating a vessel while intoxicated is illegal and dangerous.
- ◆ All PFDs must be U.S. Coast Guard–approved, in good condition, the proper size for the intended wearer, and readily accessible.
- ◆ All vessels must have at least one Type I, II, or III (or, in some states, also a Type V) PFD for each person on board.
- ◆ Most vessels are required to have a Type B fire extinguisher(s) on board.
- ◆ Vessels operated between sunset and sunrise must have and use the specified navigation lights.
- ◆ Vessels also are required to have a sound-producing device.
- ◆ Each person riding on a PWC must wear a PFD.
- ◆ It is illegal to operate a PWC or tow a skier after dark.
- ◆ It is illegal to discharge waste, oil, or trash into federally controlled or state waters.
- ◆ You are required to report serious boating accidents.

**Objectives**  
*The student should...*

- ◆ Understand how to practice risk management while boating.
- ◆ Understand the effects of boating stressors.
- ◆ Understand how dehydration occurs and how to prevent and recognize it.
- ◆ Understand the increased effects of alcohol on the body when on the water.
- ◆ Be able to properly size a PFD for a wearer and check a PFD's condition.
- ◆ Be able to take the proper safety actions if a vessel capsizes, is swamped, or runs aground.
- ◆ Know how to avoid collisions.
- ◆ Be able to respond properly to a fire emergency.
- ◆ Be able to recognize the symptoms of hypothermia and know how to avoid hypothermia if trapped in cold water.
- ◆ Understand the danger and stages of cold water immersion, and know the keys to surviving.
- ◆ Know how to prevent carbon monoxide poisoning and be able to recognize the symptoms.
- ◆ Be able to obtain weather forecasts and recognize weather warnings, and know what to do if caught in foul weather.
- ◆ Know how to summon help quickly if a serious boating emergency occurs.


**Risk Management**

- ◆ Nearly all boating accidents are preventable.
- ◆ Boating fatalities are most often characterized by:
  - PFDs on board but not in use
  - Good weather conditions
  - Small, open vessels with low sides involved
  - Age of the operator between 26 and 50 years, usually male
- ◆ Risk management is the process of:
  - Recognizing and acting upon accident warning signs.
  - Minimizing the effects of accidents if they do happen.
- ◆ Boating stressors increase the risk of a boating accident. Sun's glare and heat, vessel's motion, and engine's noise and vibration make you tire more rapidly when on the water.
- ◆ Dehydration increases the risk of a boating accident.
  - Boating causes you to generate more body heat, and thus increases sweating. Increased sweating causes dehydration if body fluids are not replaced. Dehydration increases fatigue and makes you more likely to be involved in a boating accident.
  - To minimize the risk of dehydration while boating in warm weather, drink some water every 15-20 minutes.
  - Watch for signs of dehydration (thirst, dry mouth, sleepiness, irritability, weakness, dizziness, headache). If symptoms are observed, drink plenty of water, get out of the sun, and rest.
- ◆ Minimize risk of boating accidents by avoiding alcohol.
  - The effect of alcohol is increased by the natural stressors placed on the body while boating. One drink on the water can have the same effect as three drinks on land.
  - Alcohol depresses the central nervous system, affects judgment, and slows physical reaction time.
  - Alcohol makes it difficult to pay attention and perform multiple tasks.
  - Alcohol can reduce a person's ability to distinguish colors, especially red and green.
  - Always designate a non-drinking vessel operator and observer if your group is going to consume alcohol.
- ◆ Minimize risk of drownings by wearing PFDs.
  - Almost all drowning victims aren't wearing a PFD or are wearing an inadequate one. It is critical that boaters have a readily accessible U.S. Coast Guard-approved PFD for each person on board, and have everyone wear them.
  - PFDs should be the proper size based on the person's weight and chest size. Perform a "snug fit test"—especially for children—by lifting the wearer up by the shoulders of the PFD.
  - PFDs should be in good condition. Regularly test a PFD's buoyancy in shallow water or in a swimming pool; inspect for weakened material, or insecure straps or zippers; replace spent cartridges of inflatable PFDs.



## Boating Accidents

- ◆ A vessel capsizes when it turns on its side or completely over. Swamping occurs when a boat stays upright and fills with water.
  - To help prevent and prepare for capsizing, swamping, or someone falling overboard, make sure that you and your passengers wear life jackets. Also:
    - Attach the ignition safety switch lanyard to your wrist, clothes, or life jacket.
    - Don't allow anyone to sit on the gunwale, bow, seat backs, motor cover, or any other area not designed for seating; don't let anyone sit on pedestal seats when going faster than idle speed.
    - Don't overload your boat; balance the load of all passengers and gear.
    - Keep your center of gravity low by not allowing people to stand up or move around while underway.
    - In a small boat, don't allow anyone to lean a shoulder beyond the gunwale.
    - Slow your boat appropriately when turning.
    - Don't risk boating in rough water conditions or in bad weather.
    - When anchoring, secure the anchor line to the bow, never to the stern.
  - If you should capsize or swamp your boat, or if you have fallen overboard and can't get back in, stay with the boat if possible.
    - If you aren't wearing a life jacket, find one and put it on; if you can't put it on, hold onto it.
    - Take a head count.
    - Use reach, throw, row, or go rescue technique if necessary.
    - If your boat remains afloat, try to reboard or climb onto it to get as much of your body out of the cold water as possible.
  - If your boat sinks or floats away:
    - Don't panic.
    - If you are wearing a life jacket, make sure it's securely fastened, remain calm, and wait for help.
    - If you aren't wearing a life jacket, look for a life jacket or other floating item in the water to help you stay afloat.
    - If you have nothing to support you, you may have to tread water or simply float; in cold water, float rather than tread to reduce hypothermia.
  - If someone on your vessel falls overboard, immediately:
    - Reduce speed.
    - Throw the victim a PFD.
    - Turn the boat around and carefully pull alongside the victim.
    - Stop the engine.
    - Pull the victim on board over the stern, keeping the weight in the boat balanced.
- ◆ Collisions occur when your vessel collides with another vessel or with a fixed or floating object.
  - Collisions can cause very serious damage, injury, or death.
  - To prevent collisions:
    - Follow the rules of navigation, and pay attention to navigation aids.
    - Keep a sharp lookout, and maintain a safe speed.
    - Look in all directions before making a turn.
    - Use caution when traveling into the sun's glare.
    - Never operate when fatigued, stressed, or consuming alcohol.
    - Be aware that floating debris is more common after heavy rainfall.
- ◆ Fire emergencies have caused many vessels to burn to the water line needlessly.
  - To prevent fires:
    - Don't mix the three ingredients required for a fire to erupt (fuel, oxygen, and heat).
    - Be sure ventilation systems have been installed and are used properly.
    - Maintain the fuel system, and keep the bilges clean.
    - Follow safe fueling procedures.
  - If fire erupts on your vessel, follow these steps.
    - If underway, stop the vessel and have everyone put on a PFD.
    - Keep the fire downwind.
    - Immediately shut off the fuel supply.
    - Aim the extinguisher at the base of the flames, and sweep back and forth.
    - Never use water on a gasoline, oil, grease, or electrical fire.
    - Summon help with your VHF marine radio.

- ◆ Running aground while traveling at high speed can damage the boat and injure those on board.
  - Avoid running aground by knowing your boating environment.
    - Become familiar with the locations of shallow water and submerged objects before you go out.
    - Learn to read a chart to determine your position and the water depth.
  - If you run aground:
    - Make sure no one is injured.
    - If the impact did not cause a leak, follow these steps to try to get loose.
      - ◇ Stop the engine and lift the outdrive.
      - ◇ Shift the weight in the vessel to the area farthest away from the point of impact.
      - ◇ Try to shove off from the rock, bottom, or reef with a paddle or boathook.
      - ◇ Make sure your boat is not taking on water.
  - If you can't get loose, use visual distress signals or your VHF marine radio to summon help.



## Personal Injuries

- ◆ Cold water immersion and hypothermia can be deadly. Initial reaction to cold water immersion can occur in water as warm as 77°F.
  - There are four stages of cold water immersion.
    - Initial “cold shock” (first 3-5 minutes) can cause immediate, involuntary gasping; hyperventilation; panic; and vertigo—all resulting in water inhalation and drowning.
    - Short-term “swim failure” (3-30 minutes) can cause loss of strength.
    - Long-term immersion hypothermia (after 30 minutes) occurs when the body loses heat faster than it produces it, cooling the organs in the core of the body.
    - Post-immersion collapse (during or after rescue) is the collapse of arterial blood pressure leading to cardiac arrest.
  - Symptoms of hypothermia, in order of severity, are:
    - Shivering, slurred speech, and blurred vision
    - Bluish lips and fingernails
    - Loss of feeling in extremities
    - Cold, bluish skin
    - Confusion
    - Dizziness
    - Rigidity in extremities
    - Unconsciousness
    - Coma
    - Death
  - Surviving cold water immersion depends on having sufficient flotation to keep your head above water, controlling your breathing, having timely rescue, and retaining body heat.
  - Prepare for boating in cold water conditions by wearing a PFD and layered clothing and also equipping your boat with a means for re-entry.
  - If you do fall into or must enter cold water:
    - Don't panic. Get control of your breathing.
    - Perform the most important functions first before you lose dexterity.
    - Wear a PFD, and don't take your clothes off unless absolutely necessary.
    - Try to reboard your boat even if it is swamped or capsized.
    - Protect against rapid heat loss by staying as motionless as possible; staying with the boat; adopting a position to reduce heat loss (if alone, use the HELP—Heat Escape Lessening Posture); and swimming, if you must, on your back.
    - Be prepared to signal rescuers.
  - When treating victims of cold water immersion:
    - Remove the victim from the water gently and in a horizontal position.
    - Prevent further heat loss.
    - Treat to your level of training.
    - Seek medical help immediately.
- ◆ Carbon monoxide is an invisible, odorless, tasteless gas which is very toxic even in small quantities.
  - Early symptoms of CO poisoning include irritated eyes, headache, nausea, weakness, and dizziness. Move persons with these symptoms to fresh air immediately, and seek medical attention.

- To prevent CO poisoning:
  - Keep fresh air flowing throughout the boat.
  - Keep everyone away from engine and generator exhaust outlets.
  - Never sit on the back deck, “teak surf,” or hang on the swim platform while the engines are running.
  - Never enter areas under swim platforms where exhaust outlets are located.
  - Ventilate immediately if exhaust fumes are detected.
  - Install and maintain CO detectors inside your boat.
- Before each outing, make sure you know where the exhaust outlets are located on the boat. Explain to passengers the symptoms of CO poisoning and where CO may accumulate. Confirm that water flows from the exhaust outlet when the engines and generator are started. Listen for any change in exhaust sound, and test the operation of each CO detector.
- At least monthly, make sure all exhaust clamps are in place and secure. Look for leaks from exhaust system components. Inspect rubber exhaust hoses for burns, cracks, or deterioration.
- At least annually, have a qualified marine technician check the engine and exhaust system.
- ◆ Some proper responses to other serious injuries
  - Shock: The seriously injured should be treated for shock by keeping the victim warm, still, and in a lying-down position until medical attention arrives.
  - Bleeding: Bleeding usually can be controlled by applying direct pressure to the wound.
  - Burns: Immediately place minor burns in cold water, and apply a dry bandage after the pain subsides. Seek medical help for more severe burns.
  - Broken Bones: Seek medical assistance immediately for broken and dislocated bones.
  - Head, Neck, or Spinal Injury: Never move a victim more than is absolutely necessary. The water can provide excellent support until medical help arrives.



## Weather Emergencies

- ◆ It is the boat operator’s responsibility to take appropriate action based on the weather.
- ◆ To avoid severe weather:
  - Tune a portable radio to a local station that gives weather updates.
  - Be alert to the weather you can see and hear, and check a barometer.
  - Watch for wind shifts, and watch for lightning and rough water.
  - Watch the weather to the west, the direction from which most bad weather arrives.
  - Watch for fog that creates problems in inlets and bays.
  - Head toward the nearest safe shore if a thunderstorm is approaching.
- ◆ If caught in severe weather:
  - Prepare the boat to handle severe weather.
    - Slow down, but keep enough power to maintain headway and steering.
    - Close all hatches, windows, and doors.
    - Stow any unnecessary gear.
    - Turn on your boat’s navigation lights.
    - Keep bilges free of water.
    - If there is lightning, disconnect all electrical equipment.
  - Prepare your passengers for severe weather.
    - Have everyone put on a PFD, and make sure it is secured properly.
    - Have your passengers sit on the floor close to the centerline.
  - Decide whether to go to shore or ride out the storm.
    - If possible, head for the nearest shore that is safe to approach; if already caught in a storm, it may be best to ride it out in open water.
    - Head the bow into the waves at a 45-degree angle (PWCs should head directly into the waves).
    - Keep a sharp lookout for other vessels, debris, shoals, or stumps.
    - If the engine stops, drop a “sea anchor” on a line off the bow; if the sea anchor is not sufficient, anchor using your conventional anchor.



## Summoning Help

The ability to summon help quickly can make the difference between life and death. To summon help, you should carry on board and know how to contact help using:

- ◆ Visual distress signals
- ◆ VHF marine radio
- ◆ Mobile phone and a list of appropriate phone numbers
- ◆ Emergency Position Indicating Radio Beacon (EPIRB)

## Review Questions

1. What is true about PFDs in a typical boating fatality?  
**Answer:** PFDs are on board but not in use.
2. Name three boating stressors that make you tire more rapidly when on the water.  
**Answer:**
  - glare and heat of the sun
  - motion of the vessel
  - noise and vibration of the engine
3. How often should you drink water while boating to prevent becoming dehydrated?  
**Answer:** every 15-20 minutes
4. How much of the amount of alcohol that makes a person legally intoxicated on land is enough to make someone equally intoxicated when on the water?  
**Answer:** one-third
5. What is a major contributor to boating accidents and fatalities?  
**Answer:** alcohol
6. What is an easy way to remember priorities for rescuing someone who has fallen into the water?  
**Answer:** Reach, Throw, Row, and Go
7. If you capsize, should you immediately swim to shore to ensure your safety?  
**Answer:** no, stay with the boat
8. What are four things you should do if a fire erupts on board a vessel?  
**Answer:**
  - Stop the vessel, and put on a PFD.
  - Keep fire downwind.
  - Shut off fuel supply.
  - Aim extinguisher at base of flames
9. What is the condition that occurs when the body loses heat faster than it can produce it?  
**Answer:** hypothermia
10. What is the primary danger that occurs immediately upon being immersed in cold water?  
**Answer:** involuntary gasping, resulting in inhalation and drowning
11. If you are trapped in cold water, what do the letters “HELP” stand for?  
**Answer:** Heat Escape Lessening Posture
12. Name four symptoms of carbon monoxide poisoning.  
**Answer:** May include:
  - irritated eyes
  - headache, nausea
  - weakness
  - dizziness
13. If you are wounded, how can you usually control the bleeding?  
**Answer:** by applying direct pressure to the wound

## Summary

- ◆ Nearly all accidents are preventable if you learn to recognize the warning signs, stay sober, and wear PFDs.
- ◆ One-third of the amount of alcohol that it takes to make a person legally intoxicated on land can make a boater equally intoxicated.
- ◆ Remember the “Reach, Throw, Row, Go” rule when assisting someone in the water from on shore.
- ◆ If your boat capsizes, stay with the boat.
- ◆ Cold water immersion can kill, and it is critical that you know how to prevent it by reducing the likelihood of capsizing as well as how to respond if the vessel does capsize.
- ◆ Carbon monoxide is an odorless, tasteless gas that can make you sick in seconds, and it is important to know how to recognize signs of carbon monoxide poisoning as well as how to prevent it by keeping fresh air on the boat.
- ◆ Be alert to changing weather conditions, and head for shore if a thunderstorm is approaching.

**Objectives**  
*The student should...*

- ◆ Understand a vessel operator's responsibility to his or her passengers.
- ◆ Understand a vessel owner's responsibility when allowing others to use his or her vessel.
- ◆ Understand boaters' responsibility to the environment.
- ◆ Be able to properly tow a skier and recognize skier hand signals.
- ◆ Understand the shared responsibilities of all those enjoying the waters—boaters, paddlers, water-skiers, divers, windsurfers, anglers, and hunters.


**Responsibilities of a Vessel Operator**


- ◆ Operators have responsibilities to their passengers.
  - Make sure your passengers understand basic safety practices and laws.
  - Use a pre-departure checklist to ensure you've taken necessary safety precautions.
  - Have a pre-departure safety discussion with your passengers to go over: the location of safety equipment; need for wearing a PFD; laws about reckless operation, required equipment, and waste disposal; safety procedures in case of a fire or someone falling overboard; how to summon help; and how to anchor the vessel and handle lines (ropes).
  - Conduct emergency drills with your passengers to cover what to do in case of an emergency.
- ◆ Operators have responsibilities to others they allow to operate their vessel.
  - Make sure that they meet the minimum age and boater education requirements for operation in your state and that they know basic boating safety and navigation rules.
  - Demonstrate how to use the lanyard with the ignition safety switch, and require them to use it.
  - Emphasize the need for obeying speed restrictions and keeping a proper lookout.
  - If you allow others to drive your PWC, make sure they meet the age and education requirements for PWCs. Tell them that they have the same responsibilities as any other vessel operator. Let beginners take their first ride in an uncrowded area. Remind them to stay a safe distance from other vessels and that power is required for steering control. Tell the operator to make sure the area is clear before making a turn.
- ◆ Boaters have a responsibility to the environment.
  - Keep waters clean and disease-free by disposing of waste properly.
  - Practice the three "R's"—Reduce, Reuse, and Recycle.
  - Protect the shoreline and aquatic vegetation from damage caused by your wake, prop, or pump intake.
  - Don't allow toxic substances (e.g., cleaners, paint, antifreeze, fuel) to contact the water.
- ◆ Operators have responsibilities to the others with whom they are sharing the public waterways. Responsibilities also include controlling the noise of your vessel.


**Paddlesports—Canoes, Kayaks, and Rafts**

- ◆ Paddlers should:
  - Know how to swim in a river current, and wear a PFD at all times.
  - Never paddle alone; two canoes with two canoeists each are recommended.
  - Not overload the craft; tie down gear, and distribute weight evenly.
  - Maintain a low center of gravity and three points of contact.
  - Stay alert at all times, and be aware of the surroundings.
  - Have someone help them practice reboarding the craft.
  - Dress properly for the weather and type of boating.
  - Check the craft for leaks.
  - Map a general route and timetable before embarking.
  - Know the weather conditions before heading out.
- ◆ A paddle trip downriver can include river hazards.
  - Low-head dams are difficult to see and can trap paddlers; carry the craft around them.
  - When approaching rapids, go well upstream and check them out before proceeding.
  - Stay away from strainers (river obstructions that include overhanging branches, logjams, and flooded islands).

- ◆ If capsized, paddlers should:
  - Float on the upstream side of the craft.
  - Not attempt to stand or walk in swift-moving water.
  - Float on their back with feet and arms extended and feet pointed downstream.
  - If the water is cold, take all necessary precautions to avoid hypothermia.



## Water-Skiing

- ◆ Before towing a skier, an operator should:
  - Have a second person on board to act as an observer.
  - Review hand signals with the skier for proper communication.
  - Make sure the skier is wearing a U.S. Coast Guard–approved PFD.
  - Be familiar with the skiing area and any water hazards.
  - Make sure the tow lines are of the same length if towing multiple skiers.
  - Never tow a skier at night. It is both hazardous and illegal.
- ◆ While towing a skier, the operator should:
  - After making sure that no one in the water is near the propeller, start the engine.
  - Start slowly until the ski rope is tight, and then apply enough power to raise the skier out of the water.
  - Keep the skier at a safe distance from the shoreline, docks, hazards, and people in the water.
  - Avoid congested areas, and keep a sharp lookout for other vessels and obstructions. Let the observer watch the skier.
  - Always respond to the skier’s signals.
  - Always keep fallen skiers in view and on the operator’s side of the boat. If required in your state, display a red or orange flag to alert other boaters that a skier is down.
  - Always shut off the engine before allowing the skier to board the vessel.
- ◆ When in the water, the skier should:
  - Wear a PFD.
  - Use hand signals.
  - Never ski under the influence of alcohol or other drugs.
  - Never spray swimmers, vessels, or other skiers; and never wrap the tow rope around his or her body.
  - Always hold a ski up out of the water after falling so as to remain in view of vessel operators.
  - Never approach the back of the vessel unless the engine has been turned off.



## Scuba Diving and Snorkeling

- ◆ Vessel operators should:
  - Be able to recognize and stay the legal distance away from a diver-down flag, a red flag with a white diagonal stripe.
  - Keep a lookout for bubbles breaking the surface of the water, which may indicate divers below.
- ◆ Divers should:
  - Display appropriate diver-down flags.
  - Select a stable boat suited for diving, and anchor the vessel securely.
  - Avoid overloading the vessel with people, equipment, or supplies.
  - Never dive or snorkel alone.



## Windsurfing

- ◆ Windsurfers should dress appropriately—wear a PFD, even if not required; and consider wearing a wetsuit.
- ◆ Tell someone where you are going, when you expect to return, and whom to call if you are overdue.
- ◆ Do not become overly fatigued. If feeling weak, windsurfers can furl the sail, place it on the board, lie on the board, and stroke to shore.
- ◆ Windsurfers should be on the lookout for vessels, avoiding them and their wakes.
- ◆ Don’t stray too far from shore.



## Sailing

- ◆ Sailboats are usually the stand-on vessel.
- ◆ Take precautions to avoid sailing risks. In small sailboats, be prepared for capsizing. Sailors should wear a PFD. Be aware of the danger of hypothermia.
- ◆ Take a certified sailing course before setting out on your own.

- ◆ For safe sailing, sailboat operators should:
  - Stay off the water during storms or periods of high winds.
  - Carry a flashlight. Sailboats with an auxiliary engine must have the red, green, and white navigation lights.
  - Remember that the mast can conduct lightning. Be aware of masthead clearance when passing under power lines and bridges.



## Fishing

- ◆ Anglers should:
  - Know and follow all safe boating laws and requirements, and wear a PFD.
  - Pay attention to the capacity plate and not overload the vessel.
  - Recycle or toss used fishing line into receptacles on shore and not into waters or onto shorelines.
  - Take care of their fishing boat like their other fishing equipment.
- ◆ Vessel operators who are boating in the vicinity of fishing boats should:
  - Slow down when approaching fishing boats or give them a wide berth.
  - Never run over anglers' lines or disturb fishing boats by making a large wake.



## Hunting

- ◆ Those using a vessel to hunt should take extra precautions to avoid capsizing or swamping. Be aware that small, flat-bottomed vessels are prone to capsizing or swamping. Keep weight low, and distribute gear evenly in the vessel. Do not exceed the vessel's capacity. Take only well-trained dogs on board. Take precautions to avoid hypothermia if you do capsize.
- ◆ Wear a PFD at all times while on the water. When hunting on cold water, dress in several layers under your PFD.
- ◆ Always check the weather, and stay close to the shore.
- ◆ Never fire shots or release any arrows until the vessel is stopped, the motor is off, and the vessel is secured.
- ◆ Follow all safe boating rules, and be aware of laws regarding transport of firearms in a vessel.
- ◆ Ensure that firearms are unloaded, have the safety on, and are secured in a gun case when they are being transported.

## Review Questions

- As the operator of a vessel, what are you responsible for ensuring that your passengers understand?  
*Answer:* basic safety practices and laws
- Before allowing anyone to operate your PWC, what should you remind them about power?  
*Answer:* required for steering control
- What are the three "Rs" that you should practice to protect the environment?  
*Answer:* Reduce, Reuse, and Recycle
- If you capsize in a canoe, kayak, or raft, on which side of the craft should you stay?  
*Answer:* upstream
- What are three river hazards that paddlers should avoid?  
*Answer:* low-head dams, rapids, and strainers
- Where should you keep a fallen skier while you are picking them up?  
*Answer:* in view and on the operator's side of the boat
- Demonstrate the following water-skiing hand signals:
  - Skier down
  - Speed OK
  - Slow down
  - Back to dock*Answer:* (show drawings)
- In addition to a displayed diver-down flag, what indicates that a diver may be below the water's surface?  
*Answer:* bubbles
- When passing under power lines and bridges, what should sailboat operators be aware of?  
*Answer:* masthead clearance
- What should hunters in vessels always wear?  
*Answer:* life jackets (PFDs)

## Summary

- ◆ As an operator of a vessel, you have responsibilities to your passengers, to anyone else you allow to operate your vessel, and to the environment.
- ◆ As the owner of a PWC, you could be liable for damage caused by others operating it.
- ◆ Wear a PFD when involved in any sport or activity on or near the water.
- ◆ Always shut off the engine before dropping off or picking up a skier.
- ◆ If you fall in the water while on a river in a canoe, raft, etc., float on your back with your feet pointed downstream.

## Attention All Boater Education Instructors...

The *Boat America* training video is available to help you make the most of your classroom teaching. This fast-paced, up-to-date, 63-minute video combines live action and animation to reinforce visually all of the important boating safety topics.

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- Parts of a boat
- Fueling a vessel
- Required safety equipment
- Types of PFDs
- Navigation rules
- Navigation lights
- Nighttime navigation
- Marker buoys
- Trailing and launching
- Use of ignition safety switch
- Anchoring
- Negligent and reckless boating
- Boating while intoxicated
- Casting off and docking procedures
- Filing float plans
- Safety inspections
- Waste and trash disposal
- Vessel registration
- Requirements to operate a vessel
- Boating accidents
- Risk management
- Personal injuries
- Weather emergencies
- Operator responsibilities
- Water sports

### PWC-Specific

- PWCs classified as vessels
- Parts of a PWC
- How a PWC operates
- Power required for steering control
- Use of ignition safety switch
- PWC required equipment
- Fuel selector switch
- Safe fueling of a PWC
- Specific legal requirements for PWCs
- Courteous operation and noise reduction
- Hours of PWC operation
- Wake jumping
- Water-skiing with a PWC
- Environmental concerns

### Water-Skiing and Other Towing Devices

- Using a proper PFD
- Safe skiing areas
- Safe techniques for towing person on skis or other devices
- Use of mirror or observer
- Skiing hand signals