

United States Coast Guard Auxiliary

DEPARTMENT OF EDUCATION

BOATING

SKILLS & SEAMANSHIP



INSTRUCTOR GUIDE

BSS-3 Twelfth Edition

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PREFACE

BOATING SKILLS AND SEAMANSHIP is an intermediate boating course designed to be appropriate to both new boaters seeking basic boating skills and those who want to advance their basic skills to a higher level. The Core Course, described below, is approved by the National Association of State Boating Law Administrators (NASBLA) and, as such, will serve as an approved course in all states when state regulations are added to the course. It is up to local instructors to add such material. In addition, some states require state specific questions to be added to the final exam.

COURSE ORGANIZATION

BS&S consists of the Core Course and five Optional Lessons.

The Core Course lessons are:

Lesson 1	Which Boat is for You
Lesson 2	Equipment for Your Boat
Lesson 3	Trailer your Boat
Lesson 4	Handling Your Boat
Lesson 5	Your “Highway” Signs
Lesson 6	The Rules You Must Follow
Lesson 7*	Inland Boating
Lesson 8	The Rest of our Story

*Special note: The Inland Boating lesson is optional and included to assist inland boaters. Instructors may exclude this lesson if it is not appropriate for their boating area. This lesson does not include information necessary for NASBLA approval. Thus, if Lesson 7 is not taught, the graduates of the Core Course may still receive a NASBLA-approved certificate.

The Optional Lessons are:

Lesson 9	Introduction to Navigation
Lesson 10	Powering Your Boat
Lesson 11	Lines and Knots for Your Boat
Lesson 12	Weather and Boating
Lesson 13	Your Boat’s Radio

Each of these Optional Lessons may be added, individually or collectively, to the Core Course or taught as single (or multiple) lesson courses.

Information and review questions, previously in the Student Study Guide, are now incorporated into each lesson. There is a supplemental publication (ordered separately), *Student Review Questions*, which contains the review questions for ALL lessons. This is for use by students who are sharing one textbook and wish to do the quizzes themselves.

NASBLA APPROVAL

For this approval, in addition to completing the coursework for the Core Course and passing an examination, students must be taught state regulations. The method and materials necessary to ensure the students have a thorough understanding of state regulations are left to the discretion of the instructor. In addition, the student should be provided with two pamphlets: *FEDERAL REQUIREMENTS AND SAFETY TIPS FOR RECREATIONAL BOATS* and *ONLY YOU CAN TAKE THE SEARCH OUT OF SEARCH AND RESCUE* (published by the National Boating Federation and available in April 2002). Instructors may order both of these (no cost) pamphlets through ANSC.

COURSE FORMAT

The BS&S textbook, and supplementary material, is loose-leaf and three-hole punched. It is ordered as a complete thirteen-lesson set. The Core Course may be separated from the Optional Lessons. Each Flotilla can reassemble the set with the desired lesson combinations.

Students may bring their own three-ring binder, or the Flotilla may provide one and include the cost in the course fee.

This format enables the instructor to accomplish several things.

1. If it is desired to teach only the Core Course, it is not necessary to include the Optional Lessons in the material provided the student. The Flotilla may retain the unused lessons and use them in another course. An example would be to conduct a short navigation course that would include Lesson 9 from BS&S plus the *Navigating with GPS* textbook.
2. Flotillas may mix and match the Optional Lessons to suit their local student needs.
3. If Flotillas elect to furnish binders for their students, it is recommended that the binder provided have a see-through plastic sleeve on the front cover. BS&S course supplies include an insertable cover page, which may be personalized for each Flotilla - with names, phone numbers, and e-mail addresses. This cover is also available on the Auxiliary's web site (Education Department pages), where the local information may be typed on the form prior to printing.
4. A three-hole binder makes it easier to keep the book open to the current page and to work with in the classroom. It also facilitates textbook updates.
5. Local information may be three-hole punched and added to the textbook.
6. Flotillas may want to provide large binders to hold several Auxiliary courses. In the future, most PE courses will be three-hole punched.
7. The final exam is also loose-leaf and three-hole punched, and each lesson's exam is on a separate page. This enables the instructor to provide the student with only the questions pertaining to the actual lessons taught. Unused questions may then be used when an Optional Lesson is taught.

TEACHING TIMES

Core Course - Minimum teaching time for the Core Course (8 Lessons) is 12 hours. The time devoted to each Lesson is at the discretion of the individual Flotilla.

Optional Lesson - When an Optional Lesson is taught, whether stand-alone, added to the Core Course, or added to another Auxiliary course (such as GPS, ABC, or BSC), the total teaching time is extended by two (2) hours per Optional Lesson added. For example, if one Optional Lesson, say “Introduction to Navigation”, were added to *Navigating with GPS* (a two-hour course), the total minimum teaching time for the “package” would be four (4) hours: 2 hours (GPS) + 2 hours (Optional Lesson). How those four hours are allocated is at the discretion of the Flotilla.

TEACHING AIDS

A Power Point presentation is available for all lessons in BS&S and is on a CD. This presentation aids the instructor in helping the student visualize course content. The presentation closely follows the text-book and provides instructors with an excellent “track” to guide them through each lesson.

Flotillas that do not own an LCD projector, or have not been able to borrow or rent one, may use the Power Point presentation to create overheads.

There are several videotape programs available to enhance classroom presentations. Information on how to obtain these tapes, as well as other teaching aids, may be found in the Public Education Instructor Aids Library catalog found at the Education Department’s web site.

In addition, instructors are encouraged to provide examples of items pictured and discussed in the course. Examples of such items would be compasses, PFDs, binoculars, and flame suppressors.

LESSON 1

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The importance of boating safety,*
2. *The course and the U.S. Coast Guard Auxiliary,*
3. *Parts of a boat in proper language,*
4. *Types of hulls and means of propulsion for boats,*
5. *The variety of boats available in order to match a boat purchase with your needs,*
6. *How to get information on possible defects in a vessel,*
7. *Some considerations in a contract to purchase a boat,*
8. *The importance of boat insurance,*
9. *The responsibilities of a boat's operator.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Boater's language	(a) Its utility (b) Its origin
(3) Types of boats	(a) There are many different kinds of boats (b) Advantages and disadvantages of more common types of boats
(4) Types of propulsion	(a) V-drives (b) Jet drives (c) Tunnel drives
(5) Hull designs	(a) Displacement hulls (b) Planing hulls (c) Semi-displacement hulls (d) Catamaran hulls
(6) Uses of boats	(a) Utility boats 1. Prams and dinghies 2. Inflatables 3. Skiffs 4. Utility outboards (b) Runabouts 1. Bowriders 2. Cathedral hull

- (c) Cuddy cabins
 - (d) Cruisers
 - (e) Pontoon boats
 - (f) Houseboats
 - (g) Canoes
 - (h) Kayaks
 - (i) Personal watercraft
- (7) Materials for constructing boats
- (a) Steel
 - (b) Aluminum
 - (c) Wood
 - (d) Fiberglass
 - 1. Hand-layup process
 - 2. Chopped-strand process
 - 3. Matched-die process
 - 4. Sandwich construction
 - 5. General considerations
 - 6. Fiberglass disadvantages
- (8) Intended use
- (9) The Coast Guard Customer Infoline
- (10) Marine surveyors
- (11) Buying a boat
- (12) Responsibilities of a boat's operator

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. **j** Stanchion
2. **i** Starboard
3. **a** Aft
4. **g** Head
5. **b** Transom
6. **e** Planing hull
7. **h** Outboard
8. **d** Tender
9. **c** Bowrider
10. **f** PWC

The Responses:

- a. Toward the back of a boat
- b. The stern cross section of a square-stern boat
- c. A runabout with seats in the front
- d. It transports people and gear
- e. It rises up on top of the water when it has enough speed
- f. A personal watercraft
- g. A marine toilet
- h. Its engine is mounted on the transom
- i. The right side of a boat, looking forward
- j. It holds up a rail

Multiple-Choice Items:

- 1-1. The shortest distance from the waterline to the top of a vessel's sides or transom is its:
 - a. **freeboard**,
 - b. gunwale,
 - c. dead rise,
 - d. draft.
- 1-2. Select your boat to suit your:
 - a. local waters,
 - b. pocketbook,
 - c. **needs**,
 - d. desires.
- 1-3. A vessel is anything used on the water for:
 - a. skiing,
 - b. **transportation**,
 - c. fishing,
 - d. cruising.
- 1-4. The part of a stern drive engine that is outside the vessel is called the:
 - a. outboard,
 - b. propeller,
 - c. upper unit,
 - d. **outdrive**.

- 1-5. If a boat weighs more than the water it displaces, it:
- sinks,***
 - floats,
 - is sluggish,
 - handles easily.
- 1-6. Skiffs, jon boats, houseboats, and pontoon boats should be used only:
- in sheltered waters,***
 - for pleasure,
 - in fresh water,
 - for fishing.
- 1-7. A vessel with a galley, head, plumbing, berths, and other essentials for living aboard is called a:
- bowrider,
 - cruiser,***
 - tender,
 - runabout.
- 1-8. The means of propulsion often used in rocky, shallow water where propellers are easily damaged is:
- inboards,
 - outboards,
 - I/Os,
 - jet drives.***
- 1-9. You can get information about product recalls and possible safety defects in vessels by calling:
- the Coast Guard Customer Infoline,***
 - the nearest marine dealer,
 - the Marine Patrol,
 - the Coast Guard Auxiliary.
- 1-10. If you are buying a used boat, have it examined for possible defects by:
- the Coast Guard,
 - a reliable dealer,
 - a friend,
 - a marine surveyor.***
- 1-11. The forward part of a vessel is called the:
- bow,***
 - transom,
 - hull,
 - stern.
- 1-12. A displacement hulled vessel:
- rides on top of the water when it is in motion,
 - is usually flat on its bottom,
 - is characteristically very fast,
 - pushes its way through the water when it is in motion.***

- 1-13. From the Norse, we got the term “steering board” which eventually became:
- a. ***starboard***,
 - b. port,
 - c. larboard,
 - d. forward.
- 1-14. The keel and the planks of a boat together make the:
- a. stringers,
 - b. ***hull***,
 - c. bilges,
 - d. deck.
- 1-15. Which of the following is a vessel:
- a. a raft,
 - b. an inflatable,
 - c. a PWC,
 - d. ***all of the above***.
- 1-16. Which of the following often has a semi-displacement hull:
- a. ***trawler***,
 - b. runabout,
 - c. cuddy cabin cruiser,
 - d. pontoon boat.
- 1-17. A planing hulled vessel:
- a. is usually round on its bottom,
 - b. is characteristically slow,
 - c. ***rides on top of the water at cruising speeds***,
 - d. pushes its way through the water when underway.
- 1-18. The flat, vertical surface on the aft portion of boats is called the:
- a. steering board,
 - b. loading board,
 - c. ***transom***,
 - d. cross member.
- 1-19. The top speed of a displacement hulled vessel depends primarily on its:
- a. draft,
 - b. ***length***,
 - c. weight,
 - d. freeboard.
- 1-20. In the water, and especially when it is rough, the easiest type of engine to work on is:
- a. ***stern drive***,
 - b. an outboard,
 - c. a magnetic drive,
 - d. a pulse drive.

LESSON 2

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The safety equipment your boat must have,*
2. *The safety equipment to have on board,*
3. *Available safety equipment that is not required by law,*
4. *Legal responsibilities of boat operation,*
5. *The Coast Guard's zero tolerance policy,*
6. *The dangers of substance abuse aboard boats,*
7. *The Coast Guard Auxiliary's vessel examination program.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and Lesson Objectives	
(2) What a boat needs	<ul style="list-style-type: none">(a) Documenting of Vessels(b) Registration of boats(c) Numbering of vessels(d) Sales and transfers(e) Hull identification number(f) Measuring the length of boats(g) Capacity plate(h) Compliance plate
(3) Fire prevention and detection	<ul style="list-style-type: none">(a) Your boat's ventilation system<ul style="list-style-type: none">1. General precautions(b) Ventilation systems<ul style="list-style-type: none">1. Natural ventilation system requirements2. Power ventilation system requirements3. Boats requiring ventilation systems<ul style="list-style-type: none">a. Natural ventilation system requiredb. Warning label(c) Backfire flame arresters

- (4) A boat's equipment
 - (a) Fire extinguishers
 - 1. Types of fires
 - 2. Sizes of extinguishers
 - 3. Contents of extinguishers
 - 4. Halon
 - 5. Obsolete extinguishers
 - 6. Fire extinguisher approval
 - 7. Care and treatment
 - 8. Using a fire extinguisher
 - 9. Legal requirements for extinguishers
 - (b) Warning systems
 - (c) Personal flotation devices
 - 1. Types of PFDs
 - a. Type I PFDs
 - b. Type II PFDs
 - c. Type III PFDs
 - d. Type IV PFDs
 - e. Type V PFDs
 - 2. Legal requirements
 - 3. General considerations
 - 4. Care of life jackets
 - (d) Sound producing devices
 - (e) Visual distress signals
 - 1. Types of visual display devices
 - a. Daytime non-pyrotechnic signals
 - b. Daytime pyrotechnic devices
 - c. Nighttime non-pyrotechnic signals
 - d. Nighttime pyrotechnic devices
 - e. Disposal of VDs
 - (f) Marine sanitation devices
 - (g) Emergency Position Indicating Radio Beacons
 - (h) Equipment not required but recommended
 - 1. Second means of propulsion
 - 2. Dewatering devices

- 3. First aid kit
 - 4. Anchors
 - 5. VHF-FM radio
 - 6. Tools and spare parts
- (5) Legal considerations
- (a) Operator responsibility
 - (b) Law enforcement
 - (c) Discharge of oil
 - (d) Plastics and garbage
 - (e) Speed regulations
 - (f) State and local regulations
- (6) Substance abuse
- (7) Boating accident reports
- (8) Vessel Safety Check

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

- 1. h courtesy marine examination
- 2. f not inherently buoyant
- 3. c dishwater
- 4. j marine sanitation device
- 5. a throwable PFD
- 6. b VDS
- 7. d HIN
- 8. e near-shore buoyant vest
- 9. i off-shore life jacket
- 10. g documentation

The Responses:

- a. Type IV life jacket
- b. Flares, for example
- c. Water from washing dishes
- d. It's on the transom
- e. Type II life jacket
- f. An inflatable life jacket
- g. National registration
- h. Free; made by the Coast Guard Auxiliary
- i. Type I life jacket
- j. Required on installed toilets that do not have holding tanks

Multiple-Choice Study Questions:

- 2-1. A boat's length is measured in a straight line from its bow to its stern and includes:
- a. bowsprits,
 - b. boomkins,
 - c. pulpits,
 - d. *none of the above.*

- 2-2. You must register your powerboat in:
- the state where you keep it,
 - the state of principal use,***
 - either the state where you keep it or the state of principal use,
 - registration is not required.
- 2-3. The registration number of a boat:
- may be transferred to a new replacement boat,
 - may not be transferred to a new boat owner,
 - will stay with the boat unless the principal state of use is changed,***
 - may be changed if the number on the boat is damaged.
- 2-4. In addition to carrying the proper number of Type I, II, or III life jackets, one Type IV (throwable) device is required for:
- all recreational boats less than 16 feet long,
 - all recreational boats 16 feet or more in length,***
 - all boats,
 - all recreational motorboats.
- 2-5. The letters and numbers you use to put your registration number on your vessel must:
- be at least three inches high,
 - contrast in color with the hull,
 - be plain block letters,
 - all of the above.***
- 2-6. Many boats display a capacity plate where it is clearly visible to the operator. It specifies the recommended:
- maximum speed,
 - maximum fuel capacity,
 - maximum weight-carrying capacity, among other things,***
 - minimum engine oil capacity.
- 2-7. As their active extinguishing agent, marine-type fire extinguishers usually use:
- water,
 - dry chemical,***
 - carbon tetrachloride,
 - soda acid.
- 2-8. Most power boats in use on federal waters must be:
- seaworthy,
 - properly equipped with an anchor,
 - registered or documented,***
 - operated by licensed skippers.
- 2-9. A class B fire involves:
- paper and wood,
 - gasoline, oil, or grease***
 - any combustible,
 - electrical.

- 2-10. One serious disadvantage of aerial flares is that they:
- are so bright they can blind the operator,
 - can be seen from long distances,
 - have an expiration date,
 - burn for only a short time.***
- 2-11. In order to meet Federal Boating Law requirements, life jackets must be approved by the:
- American Red Cross,
 - Underwriter's Laboratories,
 - U.S. Coast Guard,***
 - Marine Underwriters.
- 2-12. At least one approved life jacket must be aboard each vessel for each:
- person on board,***
 - available seat,
 - paying customer,
 - occupied bunk or berth.
- 2-13. Even if your flares are within their dates of expiration, they may not function if they have been:
- wet,***
 - stored in an air-tight container,
 - previously used,
 - kept aboard the boat in case of emergency.
- 2-14. Which of the following equipment is not required by law but is recommended by the U. S. Coast Guard Auxiliary:
- life jackets,
 - backfire flame arrester,
 - sound producing device,
 - anchor.***
- 2-15. Exhaust and air supply ducts must be above:
- the gunwales,
 - the bilge,
 - the usual level of water in the bilge,***
 - the engine.
- 2-16. Halon extinguishers:
- require an indicator in the engine compartment,
 - are no longer manufactured,***
 - are environmentally friendly,
 - has a disagreeable odor.
- 2-17. How many minutes should you operate your ventilation blower before starting your engine:
- two,
 - four,***
 - six,
 - seven.

- 2-18. The most usual means of preventing fires and explosions from backfires is a Coast Guard approved:
- fire extinguisher,
 - life jacket,
 - gasoline vapor detector,
 - backfire flame arrester.**
- 2-19. Never test your extinguisher by:
- filling it,
 - weighing it,
 - firing it,**
 - shaking it.
- 2-20. Which type life jacket affords the greatest protection for its wearer:
- Type I,**
 - Type II,
 - Type III,
 - Type IV.
- 2-21. Inboard motorboats less than 26 feet long must have at least:
- one, semi-portable Class B extinguisher,
 - at least one approved, hand-portable type B-I extinguisher,**
 - at least one soda-acid extinguisher,
 - at least two approved, hand-portable type B-I extinguisher.
- 2-22. Type III life jackets are designed for:
- calm, inland water,**
 - off-shore use,
 - near-shore use,
 - vessels carrying paid passengers.
- 2-23. Although not legally required, the Coast Guard Auxiliary recommends that you have the following equipment aboard in addition to other equipment:
- second means of propulsion,
 - first aid kit,
 - anchor,
 - all of the above.**
- 2-24. If you are involved in a boating accident on federal waters, the law requires you to:
- notify local authorities under all circumstances,
 - file a written report within 12 hours,
 - render assistance,**
 - give first aid.
- 2-25. It is illegal to dump which of the following anywhere in the oceans or in the navigable waters of the United States:
- food,
 - dunnage,
 - garbage,
 - plastic.**

LESSON 3

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The essential safety factors in boat trailering,*
2. *The important factors in selecting a trailer,*
3. *Available safety equipment,*
4. *The safety limits of your trailer,*
5. *The fundamentals of trailer and trailer tire care,*
6. *Some of the legal requirements in trailering,*
7. *Some important facts about trailer maintenance,*
8. *How to ready a boat and trailer for travelling,*
9. *Safety considerations at the launching site,*
10. *Considerations for storing a boat and trailer,*
11. *Preventing theft,*
12. *The importance of filing and canceling a float plan.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Legal considerations	<ol style="list-style-type: none">(a) Width(b) Brakes(c) Lights(d) Licenses(e) Mirrors(f) Safety chains(g) Other legal requirements
(3) Practical considerations	<ol style="list-style-type: none">(a) Hull shape(b) Selecting a trailer<ol style="list-style-type: none">1. Trailer size2. Types of trailers<ol style="list-style-type: none">a. Skid trailersb. Float-on Trailersc. Roller supporting trailers

- (c) Care of a trailer
 - 1. Wheel bearings
 - 2. Trailer lights
 - 3. Trailer tires
 - a. Tire pressure and tire life
 - b. Changing a tire
 - (d) Other practical considerations
 - 1. Fire extinguishers
 - 2. Winches
 - 3. Tie-downs
 - 4. Rust and breakdown
- (4) The towing vehicle
- (a) Towing package
 - 1. Cooling
 - 2. Transmission
 - 3. Brakes
 - 4. Suspension system
 - 5. Other equipment
 - (b) Trailer hitches
 - 1. Bumper hitch
 - 2. Weight-carrying hitch
 - 3. Weight-distributing hitch
 - (c) Trailer ball and coupler,
 - 1. Balls not interchangeable
- (5) Balancing the load
- (6) Handling a trailer
- (7) Pre-departure checks
- (8) Preparing to launch
- (9) Launching
- (10) Retrieving
- (11) Storing a boat and a trailer
- (12) Theft prevention
- (a) Before trailering a boat
 - (b) At the launch site
 - (c) At home

(13) Zebra mussels

(14) Float plan

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. **f** surge brakes
2. **e** bearing buddy
3. **c** seize
4. **b** lifting rings
5. **j** bumper hitch
6. **a** tie-downs
7. **d** fishtails
8. **g** impeller
9. **i** float plan
10. **h** flasher

The Responses:

- a. Secure your boat to its trailer
- b. On a boat's transom
- c. Bearings immersed in salt water
- d. Less than 5% of weight on tongue
- e. Wheel bearing protector
- f. Automatically applied when towing vehicle stops
- g. Circulates water
- h. Controls turn signals
- i. Completed prior to cruising
- j. Usually illegal

Multiple-Choice Study Questions. .

- 3-1. The widest boat you can trailer on most state roads is:
 - a. six feet,
 - b. seven feet,
 - c. ***eight feet,***
 - d. nine feet.
- 3-2. The safety chains of your trailer, under the hitch, should always be:
 - a. ***crossed,***
 - b. of open link construction,
 - c. attached to the towing vehicle's bumper,
 - d. short.
- 3-3. A bumper hitch is:
 - a. recommended,
 - b. legal in all states,
 - c. the best available,
 - d. ***illegal in many states.***
- 3-4. The ball of a trailer hitch and the coupler on the trailer must
 - a. be free of grease,
 - b. ***be matched for size,***
 - c. be insulated from each other,
 - d. be made of the same material.

- 3-5. You should have brakes on your trailer if it is designed for a gross weight of:
- 1,500 or more pounds,**
 - 2,000 or more pounds,
 - 2,500 or more pounds,
 - 3,000 or more pounds.
- 3-6. Many states require that boat trailers have:
- safety chains,
 - licenses,
 - lights and turn signals,
 - all of the above.**
- 3-7. Trailer light failure can be reduced by:
- using watertight lights,
 - mounting lights on a high bracket or board,
 - unplugging trailer electrical system before launching or recovering boat,
 - all of the above.**
- 3-8. Which brakes work from a trailer's momentum:
- compressed air,
 - surge,**
 - electric,
 - none of the above.
- 3-9. When trailering, always take along:
- an inflated spare tire,
 - a jack,
 - spare bearings,
 - all of the above.**
- 3-10. How much of the load should be on the hitch to avoid fishtailing?
- 2% to 4%,
 - 5% to 7%,**
 - 8% to 10%,
 - 12% to 14%.
- 3-11. Small trailer tires:
- cost more,
 - turn faster and need more air pressure,**
 - are made with solid cores,
 - turn slower and need less air pressure.
- 3-12. Winch lines for retrieving boats are made of:
- steel,
 - polypropylene,
 - webbing,
 - all of the above.**

- 3-13. Dry rot forms most often in:
- salt water,
 - fresh water,**
 - brackish water,
 - potable water.
- 3-14. It is easier to back a trailer if you place your hand on the bottom of the steering wheel and then move your hand:
- in the direction you want the trailer to go,**
 - in the opposite direction from where you want the trailer to go,
 - clockwise so the trailer will go to the right,
 - counterclockwise so the trailer will go to the left.
- 3-15. You can increase the life of your trailer's lights if you:
- mount them on a removable board,
 - keep them out of the water,
 - disconnect them before immersing them in water,
 - all of the above.**
- 3-16. Before you step the mast of a sailboat:
- launch the boat,
 - check to see what is overhead,**
 - take it to the launching ramp,
 - moor it securely.
- 3-17. Before leaving the dock:
- check to see that you have enough bait,
 - file a float plan,**
 - be sure you have enough ice,
 - make certain you have the water skis.
- 3-18. If you have too much weight on the hitch, it will cause:
- the front end of your automobile to lift up,
 - you to lose some steering control,
 - the automobile's rear end to squat,
 - all of the above.**
- 3-19. An advantage of tilt trailers is:
- they are cheaper,
 - they can carry a heavier load,
 - you can usually keep the trailer's wheels out of the water,**
 - it's easier to balance the load on them.
- 3-20. When you buy a boat:
- buy an inexpensive one,
 - keep launching problems in mind,**
 - remember how much trouble it is to maintain it,
 - buy a trailer.

- 3-21. A flat bottom boat fits best on:
- a. a roller type trailer,
 - b. a tilt trailer,
 - c. ***a skid-type trailer,***
 - d. a float-on trailer.
- 3-22. While launching a boat:
- a. have someone stay in it to guide you,
 - b. put the transmission in “park” to ensure that your car does not roll down the ramp,
 - c. ***if at all possible, stay in your car with your foot on the brake,***
 - d. set the hand brake to ensure that your car does not roll down the ramp,
- 3-23. Zebra mussels have been found in:
- a. the Great Lakes,
 - b. the Mississippi River,
 - c. the Hudson River,
 - d. ***all of the above.***
- 3-24. When you start your outboard motor, check to see that water is coming out of its:
- a. tattletale,
 - b. ***telltale,***
 - c. vent pipe,
 - d. propeller shaft.

LESSON 4

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The principles of handling a boat,*
2. *Safety precautions for handling a boat,*
3. *One-third “rule” for fuel, and why it is important to follow,*
4. *Precautions for fueling your boat,*
5. *What to do to be safe if you find gasoline in your bilge,*
6. *The fundamentals of propeller selection and operation,*
7. *How your boat steers and turns,*
8. *The fundamentals of trim adjustment for outboards and stern drives,*
9. *How to load your boat safely,*
10. *Safe conduct in a small boat such as sitting, standing, and moving about,*
11. *How to retrieve an overboard person,*
12. *The importance of pre-trip routine checks,*
13. *How to depart from and return to a pier or mooring,*
14. *Your responsibility for damage you may cause others,*
15. *Characteristics and limitations of anchors,*
16. *How to anchor safely,*
17. *Safety practices for towing a skier,*
18. *How to handle your boat in adverse weather and seas.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

- | <u>Topics</u> | <u>Subtopics</u> |
|--|---|
| (1) Introduction and lesson objectives | |
| (2) The importance of keeping a full fuel tank | |
| (3) Fueling a boat | (a) Know what you are doing!
(b) Other precautions
(c) Keep fumes out
(d) Built-in tanks
(e) Fuel tank vents
(f) Portable tanks
(g) Gasoline in a bilge |

- (4) A boat's propeller
 - (a) Propeller characteristics
 - 1. Diameter
 - 2. Pitch
 - 3. Size
 - (b) Propeller safeguards
 - (c) Cavitation
 - (d) Selecting a propeller

- (5) A comparison of cars and boats
 - (a) Steering
 - (b) Stopping
 - (c) Inboard engines

- (6) Twin screws
 - (a) Turning with twin screws
 - (b) Twin vs. single engines
 - (c) Motor reliability
 - (d) Auxiliary motors

- (7) Installation and tilt adjustment
 - (a) Installing a small outboard
 - (b) The tilt adjustment

- (8) Jet drives

- (9) Loading a boat

- (10) Getting started
 - (a) Before starting an engine
 - 1. Brief the guests
 - 2. Get a weather check
 - 3. Emergency needs
 - 4. Life jackets
 - 5. Check throttle and steering
 - 6. Other equipment
 - 7. Check the gas and oil
 - (b) Starting an engine
 - (c) Getting underway

- (11) Leaving a pier
 - (a) No wind/current
 - (b) Wind and current
 - (c) Wind/current off the pier
 - (d) Wind/current on the pier
 - (e) Wind/current on the bow
 - (f) Wind/current on the stern
 - (g) Turning in a narrow channel
 - (h) Watch your wake

- (12) “Man” overboard
 - (a) Sound the alarm
 - (b) Returning to the victim
 - (c) Retrieving the victim

- (13) Docking
 - (a) Docking with no wind or current
 - (b) Wind blowing off the pier
 - (c) Wind blowing onto the pier

- (14) Mooring to a permanent anchor

- (15) Anchoring
 - (a) Equipment
 - (b) Anchor rode
 - (c) Types of anchors
 - 1. Danforth
 - 2. Yachtsman’s anchor
 - 3. Mushroom anchor
 - 4. Grapnel
 - 5. Northhill anchor
 - 6. CRQ plow
 - (d) A boat’s anchors
 - (e) Anchor line scope
 - (f) Steps in anchoring
 - (g) Weighing anchor

- (16) Towing a skier
 - (a) The ski towline
 - (b) Signaling
 - (c) Other considerations

- (17) Heavy weather
 - (a) Running into a sea
 - (b) Running before a sea
 - (c) Impaired visibility

- (18) Narrow inlets

- (19) Small boat safety
 - (a) Get advice

- (20) Environmental concerns

REVIEW QUESTIONS AND ANSWERS

Important Boating Terms:

This lesson's review questions and their correct answers are provided below.

The items:

1. g propeller size
2. e ground tackle
3. a propeller pitch
4. d headway
5. b bollard
6. i cavitation
7. c bitt
8. j shackle
9. h yaw
10. f pitchpole

The Responses:

- a. The distance a propeller would move forward in one complete turn were there no slippage
- b. Post or piling
- c. Device to which an anchor line is secured
- d. Forward motion through water
- e. Anchoring equipment
- f. Turn end over end
- g. Diameter and pitch
- h. Swing from side to side about a vertical axis
- i. Rapid boiling of water
- j. Device for attaching a rode to an anchor

Multiple-Choice Study Questions.

- 4-1. Your fuel filler pipe should be:
 - a. brass,
 - b. made of plastic,
 - c. **grounded,**
 - d. airtight.
- 4-2. The propellers of small outboard motors are protected from damage by:
 - a. their warranties,
 - b. **shear pins,**
 - c. shrouds,
 - d. slip hubs.
- 4-3. Boats pivot about a point that is about:
 - a. 1/4 of the distance from stem to stern,
 - b. **1/3 of the distance from stem to stern,**
 - c. 1/2 of the distance from stem to stern,
 - d. 2/3 of the distance from stem to stern.
- 4-4. While fueling a boat with a built-in tank:
 - a. **close all cabin doors, hatches, and ports before you begin,**
 - b. shut off the fuel tank air vent,
 - c. run the blower,
 - d. open all compartments.

- 4-5. Outboard and stern drive boats steer by:
- thrust,***
 - rudders,
 - wheels,
 - tillers.
- 4-6. Most power boats turn their sterns into the wind if they are not operating their engines because:
- they have shallow drafts,
 - their bows are heavier than their sterns,
 - they have deep drafts,
 - their bows are usually higher than their sterns.***
- 4-7. When you refuel a portable tank:
- do it quickly and don't hold up other people at the fueling dock,
 - use the best grade of gasoline available,
 - close off all compartments,
 - do it with the tank on the fueling dock.***
- 4.8 When loading your boat consider:
- sea state and weather,
 - the activity you expect to engage in,
 - weight of equipment, fuel, food, and other gear,
 - all of the above.***
- 4-9. The best way to go through shallow water with a stern drive or outboard is to:
- raise your motor or lower unit slightly and proceed at idle speed,***
 - lower your motor or lower unit,
 - raise your motor or lower unit and increase your speed,
 - lower your motor or lower unit and go through at idle speed.
- 4-10. If you tuck your outboard or outdrive in too much, your boat may:
- cavitate,
 - be stern heavy,
 - bounce,
 - plow.***
- 4-11. Most boat propellers:
- are left-handed,
 - are right-handed,***
 - turn counterclockwise,
 - are counterbalanced.
- 4-12. When the pressure on the fat side of a propeller's blades is reduced, the water boils and may damage your propeller. This is called:
- transmission,
 - plowing,
 - cavitation,***
 - surging.

- 4-13. An outboard or a stern drive tilts up or down to adjust its:
- steering ability,
 - direction of thrust,***
 - tendency to steer to port or to starboard,
 - turning ability.
- 4-14. When leaving a pier in a boat with an outboard or stern drive engine and with a strong wind blowing onto the pier:
- it is usually easier to back out than to go forward,***
 - turn your helm as far away from the pier as possible and go forward,
 - run a bow line from your boat to a bollard and back to your boat then go forward with your propeller to port,
 - run a stern line from your boat to a bollard and back to your boat and then back out.
- 4-15. If you are turning in a narrow channel and have a strong wind on your stern:
- hug the right side of the channel, turn your helm all the way to starboard, and go forward,
 - hug the right side of the channel, turn your helm all the way to port, and back around,***
 - hug the left side of the channel and go forward,
 - hug the left side of the channel, turn your helm all the way to port, and back around.
- 4-16. For normal scope, the length of the anchor rode should be:
- two times the depth of the water,
 - three times the depth of the water,
 - five times the depth of the water,
 - seven times the depth of the water.***
- 4-17. To minimize the violent pitching motion when running into a heavy sea, point your bow:
- directly into the waves,
 - about 20° to either side of the direction from which the waves are coming,
 - about 45° to either side of the direction from which the waves are coming,***
 - directly away from the direction of the waves.
- 4-18. Generally, the best way to avoid a broach is to:
- ride the crest of a wave,
 - stop the engines and drift,
 - keep yawing under control at all times,***
 - ride in the troughs with the waves on your beam.
- 4-19. When anchoring your boat, you should:
- carefully lower the anchor over the bow,***
 - toss the anchor over the side as far forward as possible,
 - drop the anchor while your boat is moving slowly forward,
 - weigh the anchor.
- 4-20. The size of a propeller is:
- the diameter of the circle it makes when it turns,
 - the theoretical distance it moves forward in one turn,
 - its pitch and diameter,***
 - none of the above.

- 4-21. To improve the efficiency and speed of your outboard or stern drive in smooth water:
- use a high grade lubricating oil,
 - use the highest grade of gasoline available,
 - lower your outboard or outdrive,
 - raise your outboard or outdrive slightly.***
- 4-22. Deep draft boats are affected most by:
- the wind,
 - the size of their engines,
 - current,***
 - the size of their superstructures.
- 4-23. Danforth anchors work best in:
- shale,
 - grass,
 - rocks,
 - sand or mud.***

LESSON 5

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *Aids to Navigation (ATON),*
2. *The characteristics of various systems,*
3. *Cautions in the use of ATONs,*
4. *The meaning of chart symbols,*
5. *The availability of electronic Aids to Navigation,*
6. *Reference materials which tell changes in Aids to Navigation.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Protection of ATONs	
(3) Buoyage Systems	(a) U.S. Aids to Navigation System (b) Intracoastal Waterway (c) Western Rivers (d) Uniform State Waterway Marking System
(4) Waterway marks	(a) Buoys 1. Floating structures 2. Spherical buoys 3. Nun and can buoys 4. Spar buoys 5. Be cautious around buoys (b) Daybeacons 1. Triangular daymarks 2. Square Daymarks 3. Diamond shaped daymarks (c) Light structures (d) Marks that give information (e) Markers for special purposes

- (5) How waterways are marked
 - (a) Markers on navigable waters
 - 1. Red, right, returning
 - 2. Lateral marks on navigable waters
 - 3. Numbers on lateral markers
 - 4. Safe water ATONs
 - 5. Preferred channel markers
 - 6. Ranges
 - 7. Directional lights
 - 8. Daymarks without lateral significance
 - (b) Intracoastal Waterway markers
 - 1. Yellow triangles, squares, and bands
 - 2. Dual purpose markers
- (6) Light characteristics
 - (a) Light patterns
 - (b) Occulting lights
 - (c) Safe water ATON lights
 - (d) Preferred channel lights
 - (e) Articulated lights
- (7) Chart Symbols
 - (a) Fixed structure lights
 - (b) Symbols for buoys
 - (c) Symbols for daymarks and minor lights
- (8) Light structures
 - (a) Lighthouses
 - 1. Lighthouse sectors
 - (b) Classes of light structures
 - (c) Light structures sound signals
- (9) Light on bridges
- (10) Electronic aids to navigation
 - (a) Loran-C
 - (b) Satellite navigation
 - (c) The Global Positioning Satellite system
- (11) Navigation publications

REVIEW QUESTIONS AND ANSWERS

This lesson’s review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. i daymark
2. e lateral marks
3. b red markers and buoys
4. a safe water marks
5. c occulting light
6. d fixed light
7. f green markers and buoys
8. j nun
9. g can
10. h flashing light

The Responses:

- a. Mark midchannel
- b. Even numbers
- c. Blinks off
- d. On from sunset to sunrise
- e. Mark sides of navigable channels
- f. Odd numbers
- g. Cylindrical buoy
- h. Flashes on
- i. Has a geometrical shape
- j. Red buoy, conical top

Multiple-Choice Study Questions.

- 5-1. To be useful to a boater, landmarks must be visible and:
 - a. ***appear on a chart of the area,***
 - b. be well-known,
 - c. blend with the background,
 - d. historical in nature.
- 5-2. You are “returning from sea” when you are going:
 - a. counterclockwise around the United States,
 - b. ***clockwise around the United States,***
 - c. downstream on a river,
 - d. going east in Lake Erie.
- 5-3. Spherical buoys mark fairways and the middles of navigable channels and are:
 - a. green above red,
 - b. all black,
 - c. red above green,
 - d. ***red and white striped.***
- 5-4. The buoys used to mark the right side of a channel proceeding from seaward:
 - a. have white lights,
 - b. have green lights,
 - c. ***have even numbers,***
 - d. are can shaped.

- 5-5. Lighted safe water buoys have:
- white lights,**
 - red lights,
 - green lights,
 - yellow lights.
- 5-6. Going from Manasquan Inlet in New Jersey on the ICW, down the east coast, up the west coast of Florida, and west across the Gulf of Mexico is considered:
- returning from sea,**
 - going to sea,
 - cruising,
 - going counterclockwise.
- 5-7. A preferred channel marker has:
- green and red lights,
 - green and red horizontal bands,**
 - white lights,
 - vertical red and white stripes.
- 5-8. In the U.S. ATON system, a can is:
- white,
 - red,
 - black,
 - green.**
- 5-9. A nun buoy has:
- a flat top,
 - a conical shaped top,**
 - no letter or number,
 - an odd number.
- 5-10. The buoyage system in use on the navigable waters of the United States is:
- U.S. ATON System,**
 - lateral system,
 - Cardinal System,
 - IALA-A.
- 5-11. The following special markings are used in the ICW system:
- yellow triangles,
 - yellow squares,
 - yellow bands,
 - all of the above.**
- 5-12. Daymarks on the sides of channels usually have:
- letters,
 - combinations of letters and numbers,
 - numbers,**
 - neither letters nor numbers

- 5-13. Markers within channels have:
- letters*,
 - combinations of letters and numbers,
 - numbers,
 - neither letters nor numbers.
- 5-14. On a chart you can tell if an ATON is a buoy from its:
- gothic type,
 - italic (slanting) type*,
 - bold faced type,
 - large print.
- 5-15. You can find a brief description of each lighthouse in the:
- Local Notice to Mariners,
 - Chart #1,
 - Light List*,
 - Notice to Mariners.
- 5-16. A fixed light is one that:
- is on from dusk to dawn*,
 - has been repaired,
 - shines brightly,
 - on from sunrise to sunset.
- 5-17. The centerline of the navigable channel under a fixed bridge is marked by:
- amber lights,
 - red lights,
 - green lights*,
 - red and green lights.
- 5-18. Red daymarks have:
- three sides and odd numbers,
 - four sides and even numbers,
 - diamond shapes,
 - three sides and even numbers*.
- 5-19. On a chart, a magenta disk means:
- a buoy,
 - a lighted aid to navigation*,
 - a triangular daymark,
 - a square daymark.
- 5-20. A special purpose mark, such as a yellow buoy, is used to designate:
- an anchorage*,
 - a dredge pipeline,
 - a triangular daymark,
 - a square daymark.

- 5-21. Red and white striped buoys are:
- a. diagonally stripped,
 - b. horizontally stripped,
 - c. *vertically stripped*,
 - d. none of the above.
- 5-22. The newest navigation system is:
- a. Loran,
 - b. Telestar,
 - c. Omega,
 - d. *GPS*.

LESSON 6

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The importance of the navigation rules,*
2. *The rules and where they apply,*
3. *How the rules apply to boaters in different circumstances,*
4. *The differences between the inland and international rules,*
5. *The General Responsibility rule,*
6. *How liability for an accident is assessed,*
7. *Your responsibility for helping other people,*
8. *Safe conduct for your vessel,*
9. *Proper sound signals for different situations,*
10. *The proper light configuration for your vessel,*
11. *The rules of operation and sounds to be made in restricted visibility,*
12. *What lights and shapes tell you,*
13. *Legal distress signals.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Two Sets of Rules	(a) The International Rules (b) The Inland Rules (c) Local waters (d) Demarcation lines
(3) To whom do the rules apply?	
(4) What is a vessel?	(a) Vessel underway (b) Fishing vessel (c) Vessel restricted in ability to maneuver (d) Vessel not under command (e) Vessel constrained by draft
(5) The General Responsibility Rule	(a) The “rule” of good seamanship (b) The general prudential “rule” (c) Assessing legal liability

- (6) General considerations
 - (a) Vessel size and the rules
 - (b) Maintain a lookout
 - (c) Safe speed
 - (d) Do you have radar?

- (7) Conduct in narrow channels
- (8) Traffic Separation Schemes
- (9) Vessel Traffic Services
- (10) Stand-on or give-way?
 - (a) The danger zone
 - (b) Who is stand-on?
 - (c) In the daytime
 - (d) Courtesy and common sense

- (11) Rules for special vessels,
 - (a) Overtaking and overtaken vessels
 - (b) Rules for sailing vessels

- (12) Risk of collision
 - (a) Head-on situations
 - (b) Head-on sound signals
 - 1. International meeting signals
 - 2. Whistle signals
 - 3. Inland meeting signals
 - 4. Cross signals
 - (c) Crossing situations
 - 1. Crossing in international waters
 - 2. Crossing in inland waters
 - (d) Overtaking situations
 - 1. Overtaking in inland waters
 - 2. Overtaking in international waters
 - 3. Overtaking in narrow channels

- (13) Bend signals

- (14) Restricted visibility
 - (a) Sound signals underway, restricted visibility
 - (b) Sound signals not underway, restricted visibility

(15) Vessel lights and shapes

- (a) Range of visibility
- (b) What lights tell you
- (c) “Shapes” on vessels
- (d) Lights and shapes on sailing vessels underway
- (e) Lights for power-driven vessels underway
- (f) Special lights and shapes
 - 1. Fishing vessels
 - 2. Vessel constrained by draft
 - 3. Towing vessels
 - 4. Other special vessels
- (g) Vessels at anchor
- (h) Diving operations

(16) Distress signals

(17) Courtesy and safety

(18) Drawbridge

- (a) Limitations on drawbridge openings
- (b) Drawbridge signals
 - 1. Sound Signals
 - 2. Visual signals
 - 3. Radiotelephone

(19) Penalties

REVIEW QUESTIONS AND ANSWERS

This lesson’s review questions and their correct answers are provided below.

Important Boating Terms:

The items:

- 1. g head-on situation
- 2. c failure to maintain a lookout
- 3. f overtaking
- 4. e making way
- 5. a stern light
- 6. h stand-on vessel
- 7. j danger zone
- 8. i sailing vessel underway at night
- 9. b sailing vessel operating propelling machinery
- 10. d crossing situation

The Responses:

- a. Has an arc of visibility of 135°
- b. Black conical shape, apex down
- c. Principal cause of collisions
- d. At night you see a red or a green light
- e. Being propelled
- f. You see another vessel’s sternlight
- g. At night you see both sidelights
- h. Maintains course and speed
- i. Sidelights and sternlight but no white masthead light
- j. Dead ahead to 22.5° abaft the starboard beam

Multiple-Choice Study Questions.

- 6-1. If your vessel is 12 meters or more in length, you must have on board:
- an anchor,
 - a second means of propulsion,
 - a copy of the Navigation Rules,***
 - first aid kit.
- 6-2. The primary purpose of the Navigation Rules is:
- to establish racing rules,
 - to reduce the number of personal injury suits,
 - to prevent collisions between vessels,***
 - to tell you how your boat should be equipped.
- 6-3. The Navigation Rules apply to all vessels on the:
- high seas,
 - inland waters of the U.S.,
 - Great Lakes,
 - all of the above.***
- 6-4. When underway, every vessel must proceed at a safe speed and maintain a:
- proper lookout,***
 - constant engine watch,
 - straight course,
 - all of the above.
- 6-5. When you act to avoid a collision, make your changes in course and speed:
- at right angles to the course you are steering,
 - to port,
 - to starboard,
 - large enough that they are readily seen.***
- 6-6. The single white light on a vessel means you are seeing:
- its stern light,
 - a power driven vessel less than 12 meters long,
 - a vessel under oars,
 - any of the above.***
- 6-7. Which vessel is stand-on to all others:
- a crossing vessel,
 - an overtaken vessel,***
 - an overtaking vessel,
 - none of the above.
- 6-8. Lines that mark the boundaries between waters governed by the International Rules and those governed by the Inland Rules are:
- lines of position,
 - demarcation lines,***
 - pick-up lines,
 - shore lines.

- 6-9. In an overtaking situation under Inland Rules, you would never expect the other vessel to sound:
- one short blast,
 - two short blasts,
 - five short blasts,
 - one prolonged blast.**
- 6-10. Under International Rules in a head-on situation, one short blast on the whistle means:
- I intend to alter my course to port,
 - I am altering my course to starboard,**
 - I intend to alter my course to starboard,
 - I am altering my course to port.
- 6-11. The sidelight on the starboard side of a vessel is:
- red,
 - yellow,
 - green,**
 - white.
- 6-12. The color of a sternlight is always:
- red,
 - yellow,
 - green,
 - white.**
- 6-13. The navigation rules apply:
- to all vessels,**
 - only to commercial vessels,
 - only when a vessel is underway,
 - to all vessels except recreational boats.
- 6-14. Five or more short blasts of the horn is a signal for:
- operating astern propulsion,
 - anchoring,
 - danger,**
 - a drawbridge.
- 6-15. The appropriate signal for you to give in a head-on, crossing, or overtaking situation when you pass another boat on your port side is almost always:
- one short blast,**
 - two short blasts,
 - one prolonged blast,
 - two prolonged blasts.
- 6-16. If you are at anchor in restricted visibility and in open water, ring your bell rapid for about 5 seconds at intervals of no more than:
- one minute,**
 - two minutes,
 - three minutes,
 - whenever you think of it.

- 6-17. The basic configuration of lights for power vessels less than 20 meters is:
- sidelights and a stern light,
 - masthead light and stern light,
 - sidelights, stern light, and masthead light,***
 - a combination lantern at the masthead.
- 6-18. In the Navigation Rules, the term “right of way” applies only to a vessel that is:
- being overtaken on coastal waters,
 - overtaking another on international waters,
 - crossing ahead of your vessel from right to left on the Gulf of Mexico,
 - downbound in a narrow channel or fairway with a following current.***
- 6-19. If you are overtaking another vessel, you remain an overtaking vessel until:
- you are abreast of the other vessel,
 - it is obvious one of you must change course,
 - you are past and clear of the other vessel,***
 - until the other vessel signals you are clear.
- 6-20. If you see both sidelights of another vessel, assume that you are in:
- a crossing situation,
 - a head-on or meeting situation,***
 - an overtaking situation,
 - none of the above.
- 6-21. Inland meeting sound signals announce:
- action you are taking,
 - action you have taken,
 - action you intend to take,***
 - to the other vessel that you are near.
- 6-22. In an inland meeting situation, you give a whistle signal. The other vessel can:
- respond with a cross signal,
 - ignore your signal,
 - ring its bell,
 - respond with the same signal or with the doubt signal.***
- 6-23. In a crossing situation, the give-way vessel:
- alters course to pass in front of the other vessel,
 - increases speed,
 - sounds the danger signal,
 - turns to starboard and passes astern of the stand-on vessel.***
- 6-24. The whistle signal for a drawbridge opening is:
- one prolonged blast, followed by one short blast,***
 - four short blasts,
 - one short blast, followed by one prolonged blast,
 - three short blasts.

LESSON 7

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The nature of inland waters,*
2. *The navigation rules that pertain to inland waters,*
3. *ATONs used on inland waters*
4. *The nature and meaning of crossing and passing daymarks,*
5. *Some of the hazards of inland waters including commercial traffic, locks, river currents, dikes, etc.,*
6. *How to navigate the inland waters,*
7. *The dangers posed by dredges and how to avoid them,*
8. *The hazards of lowhead and high dams,*
9. *Safe boating near dams,*
10. *Correct procedures near and in locks,*
11. *How to read and understand river charts.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Types of inland waters	(a) Rivers (b) Lakes (c) Canals
(3) Inland Navigation	1. Watch your speed (a) Inland navigation rules (b) Inland ATONs <ol style="list-style-type: none"> 1. Western Rivers ATONs <ol style="list-style-type: none"> a. River bank names b. Passing daymarks c. Crossing daymarks d. Using crossing daymarks e. River buoys f. Mile markers g. Piloting tools 2. Uniform State Waterway Marking System <ol style="list-style-type: none"> a. Regulatory markers b. USWMS ATONs

- (4) Inland seamanship
 - (a) Changing water depths
 - (b) Lake hazards
 - 1. Underwater hazards
 - 2. Other lake hazards
 - (c) Services and facilities

- (5) River currents
 - (a) River channels
 - (b) Behavior of currents
 - (c) River bends
 - (d) Entering a current
 - (e) River debris

- (6) Maintaining inland waterways
 - (a) Levees
 - (b) Other devices
 - 1. Directing the river's flow
 - 2. Other underwater structures
 - (c) Dredging
 - 1. Lights on dredge pipelines
 - 2. Dredge lights and shapes

- (7) Dams
 - (a) Lowhead dams
 - 1. Passing over lowhead dams
 - 2. Lowhead dam dangers
 - (b) High dams
 - 1. Restricted areas
 - 2. Dam gates
 - (c) Fishing below dams

- (8) Locks
 - (a) Lock operation
 - (b) The lockmaster
 - (c) Priorities for use
 - (d) Coexisting with commercial traffic
 - (e) Hazardous cargo
 - (f) Communicating with the lockmaster
 - (g) Traffic signals
 - (h) Locking through
 - 1. Conduct in the lock
 - 2. Tying up in the lock
 - (i) Rafting up
 - (j) Leaving the lock

- (9) River charts
- (a) Characteristics of river charts
 - (b) A chart of a section of the Missouri River
 - (c) Daybeacons
 - (d) Navigation lights
- (10) Commercial traffic
- (a) Ocean-going and river tows
 - (b) You and a river tow
 - 1. Watch out for the tow
 - 2. The tow's blind spot
 - (c) Communicating with commercial traffic
- (11) Before you go

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. e navigable waterways
2. a left bank
3. f Western Rivers
4. i buoys
5. g revetment
6. d wing dams
7. j red, swallow-tailed flag
8. c sailing line
9. b passing daymark
10. h crossing daymark

The Responses:

- a. Left descending bank
- b. Triangle or square
- c. Marks channel
- d. Direct the current into the channel
- e. Includes navigable rivers, the Great Lakes, and the ICW
- f. The Mississippi and its tributaries
- g. Facing of stone, concrete, etc.
- h. Diamond
- i. Not usually shown on river charts
- j. Hazardous cargo

Multiple-Choice Study Questions:

- 7-1. Navigable waterways include:
 - a. local lakes,
 - b. *the navigable rivers, Great Lakes, and ICW,*
 - c. all canals and rivers,
 - d. all inland waterways.
- 7-2. Which navigation rules are in force on navigable waterways?
 - a. U.S. ATON System,
 - b. Colregs,
 - c. USWMS,
 - d. *inland rules.*

- 7-3. What is the color of the ATONs on the right descending bank of a river?
- red,
 - green,**
 - yellow
 - white.
- 7-4. River buoys are:
- easily located,
 - lighted,
 - black,
 - usually not shown on river charts.**
- 7-5. The flow of a river's current is often directed by:
- revetments,
 - dams,
 - locks,
 - wing dams.**
- 7-6. At night you know which side of a dredge the pipeline is on by:
- two red lights,**
 - two green lights,
 - a white and a green light,
 - a white and a red light.
- 7-7. Hazardous cargo has a rigid replica of the code pennant bravo. This pennant is:
- red and swallow-tail,**
 - red and white swallow-tail,
 - blue,
 - white with a red stripe.
- 7-8. River charts have:
- many details of landmarks,
 - charted water depths,
 - locations of buoys,
 - locations of ATONs.**
- 7-9. Lakes include bodies of water that are:
- natural,
 - impounded,
 - made by damming rivers,
 - all of the above.**
- 7-10. Which set of ATONs is used on the Western Rivers?
- U.S. ATON System,**
 - USWMS,
 - ICW,
 - none of the above.

- 7-11. Crossing daymarks are:
- a. ***diamond shape,***
 - b. square,
 - c. triangular,
 - d. rectangular.
- 7-12. What buoys are not used in the USWMS?
- a. ***green,***
 - b. red,
 - c. black,
 - d. orange.
- 7-13. Maintenance of the federal, navigable, inland waterways is the responsibility of:
- a. ***the U.S. Corps of Engineers,***
 - b. the U.S. Coast Guard,
 - c. state authorities,
 - d. local authorities.
- 7-14. Dredge pipelines are marked by what color lights at night?
- a. blue,
 - b. green,
 - c. ***yellow,***
 - d. white.
- 7-15. In locking through, which vessels have the highest priority?
- a. commercial,
 - b. ***government,***
 - c. recreational,
 - d. yachts.
- 7-16. Most river charts are made by:
- a. the U.S. Coast Guard,
 - b. ***the U.S. Corps of Engineers,***
 - c. National Oceanic and Atmospheric Administration,
 - d. National Ocean Service.
- 7-17. When communicating with commercial river traffic:
- a. call on channel 16,
 - b. change to a working channel when you have contact,
 - c. be sure you know which vessel you are talking to,
 - d. ***all of the above.***
- 7-18. Your speed should be reduced in canals because:
- a. they are small and dangerous,
 - b. you need to watch out for other vessels,
 - c. ***your wake will erode the banks,***
 - d. you will miss the scenery.

- 7-19. As you travel upstream, which bank is on your port side?
- right,***
 - left,
 - first national,
 - left descending bank.
- 7-20. Crossing daymarks mean:
- cross over at the next ATON,
 - the river channel continues along the same bank,
 - nothing to you since your vessel is very small,
 - the river channel is on the side with the daymark.***
- 7-21. Danger areas in the Western Rivers and U. S. Aids to Navigation systems are marked with:
- open diamonds,***
 - diamonds with cross marks,
 - circles,
 - rectangles.
- 7-22. On the inside of a river bend,
- the current scours the channel,
 - currents are in one direction at the surface and in the opposite direction below the surface,
 - the current moves faster,
 - silting and shoaling may occur.***
- 7-23. Wing dams and dikes:
- appear as solid or dotted lines on charts,***
 - are not usually shown on charts,
 - cause silting,
 - provide excellent anchorages.
- 7-24. What structures have been described as “efficient, self-operating drowning machines?”
- wing dams,
 - high rise dams,
 - dikes,
 - lowhead dams.***
- 7-25. Call the lockmaster on your VHF-FM radio using:
- channel 13,
 - channel 6,
 - channel 22,
 - channel 16.***
- 7-26. River charts seldom show:
- the characteristics of navigation lights,***
 - locations of passing daymarks,
 - locations of crossing daymarks,
 - locations of navigation lights.

LESSON 8

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The causes of small boat accidents and how to prevent them,*
2. *The principles of safe boating practices in terms of PWC operation,*
3. *The dangers of immersion in cold water, the causes and symptoms of hypothermia, how to prevent, and some precautions in dealing with hypothermic people,*
4. *Some of the problems experienced by sailboats and especially those caused by motorboats, how to avoid adding to them, how to be of help to a sailboat in trouble, and how to aid a person overboard,*
5. *The dangers and symptoms of carbon monoxide poisoning, its causes aboard ship, and its prevention,*
6. *Sources of good weather information,*
7. *Changes in surroundings that indicate storms approaching.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Small boat safety	(a) Boating fatalities (b) Causes of boating fatalities (c) Small boat stability (d) Maintain three point contact (e) Stay with the boat
(3) Personal Watercraft	(a) Operator responsibility (b) Be respectful of others (c) Steering a PWC (d) Some safety problems (e) Learning to operate a PWC
(4) Hypothermia	(a) Stages in hypothermia (b) Prevention of hypothermia <ol style="list-style-type: none"> 1. Conserve your heat 2. Clothing makes a difference 3. Increase your energy reserve (c) Activity and hypothermia <ol style="list-style-type: none"> 1. Floating and heat loss 2. Swimming and heat loss

- (d) Get out of the water
 - (e) The HELP position
 - (f) Helping hypothermic people
 - (g) How you can help
- (5) Motorboats and sailboats
- (a) Sailboater skills
 1. Square-rigged vessels
 2. Tacking
 3. Mooring and anchoring
 4. When there is little wind
 5. Wind and wake
 6. Blocking the wind
 7. Obscured vision
 - (b) Special navigation rules for sailboats
 1. Priority of sailboats
 2. Sailing races
- (6) Carbon monoxide poisoning
- (a) Symptoms of carbon monoxide poisoning
 - (b) Carbon monoxide and ventilation
 - (c) Preventing carbon monoxide poisoning
- (7) Weather

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. e carbon monoxide
2. a PWC
3. d hypothermia
4. h sailboard
5. c floating boats
6. i riding aboard a PWC
7. j center of gravity
8. f a first sign of hypothermia
9. b sailing into the wind
10. g center of buoyancy

The Responses:

- a. Power driven vessel
- b. Tacking
- c. Displace an amount of water equal to their own weight
- d. Reduction of a body's core temperature below where normal biological functions can occur
- e. Formed by incomplete combustion of fuel
- f. Gooseflesh
- g. Center of the mass of water a boat displaces
- h. Used for windsurfing
- i. Each person must have a life jacket
- j. Center of a mass

Multiple-Choice Study Questions:

- 8-1. People in small boats often drown because:
 - a. they end up in the water unexpectedly,
 - b. they may be disoriented from a sudden plunge into the water,
 - c. they were not wearing their life jackets,
 - d. ***all of the above.***
- 8-2. If a person in a small boat reaches out over the side of the boat:
 - a. the center of buoyancy may move outside the boat,
 - b. ***the center of gravity may move outside the boat,***
 - c. things in the boat may fall out,
 - d. water may stall the engine.
- 8-3. P W C operators and riders should wear:
 - a. life jackets,
 - b. goggles or wraparound eye shields,
 - c. wet suits in cold weather,
 - d. ***all of the above.***
- 8-4. Which of the following fabrics will protect you most from hypothermia when they are wet:
 - a. synthetic fibers such as nylon,
 - b. cotton,
 - c. ***wool,***
 - d. rayon.

- 8-5. The best thing you can do for a hypothermic person is:
- get immediate medical help,***
 - treat the person yourself,
 - give a small drink of whiskey,
 - help the person get up and move around to warm up.
- 8-6. Motorboats are often disruptive of sailboats when:
- the sailboats are mooring,
 - there is little wind,
 - they block the wind,
 - all of the above.***
- 8-7. Which of the following is correct?
- About one-half of all boating fatalities occur in lakes, ponds, and reservoirs and not on navigable waterways,
 - Over one-half of boating fatalities occur on weekend afternoons,
 - About one-half of all boating fatalities occur in calm weather and in full daylight,
 - all of the above.***
- 8-8. Standing in a boat raises its:
- center of gravity,***
 - center of buoyancy,
 - blind spot,
 - freeboard.
- 8-9. PWCs are:
- subject to all the laws governing motorboats,***
 - exempt from most of the legal requirements,
 - dangerous and should be outlawed,
 - not classed as boats.
- 8-10. Which of the following is true:
- hypothermia occurs more rapidly if you are wet than if you are dry,
 - hypothermia occurs more rapidly in women than in men,
 - hypothermia can occur in a strong wind even if you are dry,
 - all of the above.***
- 8-11. The best thing you can do to ward off hypothermia if you find yourself in cold water is:
- start swimming to shore,
 - keep moving,
 - assume the HELP position,***
 - eat a good meal before you go.
- 8-12. The closest a boat can sail toward the wind is about:
- 30°,
 - 45°,***
 - 60°,
 - 90°.

- 8-13. The best thing you can do to keep from being gassed by carbon monoxide is:
- a. burn clean fuel in your engine,
 - b. when you see it or smell it, don't breathe it,
 - c. ***install a carbon monoxide detector,***
 - d. keep away from engines which are running.
- 8-14. What percentage of people who drowned in boating accidents were able to swim?
- a. 60,
 - b. 70,
 - c. 80,
 - d. ***90.***
- 8-15. Small motorboats (less than 20 feet long) have:
- a. oar locks,
 - b. ***capacity plates,***
 - c. loading instructions,
 - d. all of the above.
- 8-16. If your boat capsizes:
- a. have someone swim to shore for help,
 - b. have someone stay with the boat,
 - c. have everyone stay in the water and hold on to the boat,
 - d. ***climb up on the boat and out of the water, if possible.***
- 8-17. Which of the following is correct:
- a. the skipper is responsible for anything that happens to or on a PWC,
 - b. The skipper is responsible for any damage caused by a PWC,
 - c. The skipper is responsible for seeing that a PWC is operated legally,
 - d. ***all of the above.***
- 8-18. In hypothermia:
- a. ***your body loses heat more rapidly than it can be replenished,***
 - b. you freeze to death,
 - c. your body quits burning food to provide energy,
 - d. all of the above.
- 8-19. Under which of the following conditions will you lose heat most rapidly in cold water:
- a. ***swimming,***
 - b. treading water,
 - c. wearing a life jacket,
 - d. using the HELP position.
- 8-20. Sailboats can sail toward the wind by:
- a. ***tacking,***
 - b. running before the wind,
 - c. jibing,
 - d. maneuvering.

- 8-21. Carbon monoxide is:
- a. colorless,
 - b. odorless,
 - c. poisonous,
 - d. *all of the above.*

LESSON 9

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *How to select a chart,*
2. *Where to get information about the currency of charts,*
3. *Where to get information to keep charts current,*
4. *How charts are constructed,*
5. *How to read charts,*
6. *How to use charts in navigating,*
7. *How to use navigation tools,*
8. *The importance and use of Tide Tables,*
9. *How to select, adjust, and mount a compass,*
10. *The sources of compass error and how to correct for them,*
11. *How to determine position on a chart,*
12. *How to measure distance on a chart,*
13. *How to plot a course and measure its direction,*
14. *How to determine and chart a position by compass bearings,*
15. *How to compute speed, time, or distance when two of the three are known, and*
16. *How to make a DR (dead reckoning) plot.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Piloting tools	(a) Binocular (b) Electronic tools
(3) Maps and charts	(a) Nautical charts (b) Availability of charts (c) Dates of charts
(4) Chart features	(a) Projections <ol style="list-style-type: none"> 1. Mercator projections 2. Polyconic projections (b) Chart scales <ol style="list-style-type: none"> 1. Harbor and coastal charts (c) Which chart is for you?

- (5) A chart's general information block
 - (a) Horizontal datum
 - (b) Vertical datum
 - 1. Tidal water
 - 2. Tide tables
 - 3. Western rivers

- (6) Other charted information
 - (a) Water depth
 - (b) Notes
 - (c) Shore details
 - (d) Aids to navigation

- (7) The magnetic compass
 - (a) Features of a good compass
 - (b) Installing a compass
 - (c) Adjusting a compass

- (8) Position on the earth's surface
 - (a) Great circles
 - (b) Parallels of latitude
 - (c) Longitude lines
 - (d) Location on the earth's surface

- (9) Locating a point on a chart
- (10) Distance on the earth's surface
- (11) Measuring distance
 - (a) Use the chart's scale
 - (b) Use the latitude scale
 - (c) Use a piece of paper

- (12) Course plotting
 - (a) Direction
 - (b) Measuring direction
 - 1. Using a course plotter
 - 2. Using parallel rulers

- (13) Sources of compass error
 - (a) Variation
 - (b) Deviation

- (14) Correcting a compass reading
 - (a) A helpful memory aid
 - (b) Some examples

- (15) Positioning
 - (a) Line of position
 - (b) A range LOP
 - (c) Establishing a fix
 - 1. Ranges and fixes
 - 2. Bearings and fixes

- 3. Charting a position
 - a. Drawing LOPs
 - b. Check your work
- (d) Common conventions
 - (a) Measuring speed
 - (b) The speed table
 - (c) Computing time, speed, or distance
 - 1. Computing distance
 - 2. Computing speed or time
 - (d) Some examples
 - (e) An alternate method
- (16) Speed-Time-Distance
 - (a) Drawing a DR plot
 - (b) A sample course
 - 1. Labeling a DR plot
 - 2. Making the computations
 - 3. Compute each half hour
- (17) Dead reckoning
 - (a) Loran
 - (b) GPS
 - (c) WAAS
 - (d) Electronic charting
- (18) Electronic navigation
 - (a) Loran
 - (b) GPS
 - (c) WAAS
 - (d) Electronic charting
- (19) Practice the art
- (20) A further invitation

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. **f** datum
2. **d** longitude line
3. **a** one minute
4. **j** Mercator Projection
5. **g** latitude line
6. **b** variation
7. **i** knot
8. **c** correct a compass reading
9. **h** direction a compass points
10. **e** nautical mile

The Responses:

- a. One nautical mile
- b. Compass error caused by earth's magnetic field
- c. Make adjustments for effects of variation and deviation
- d. Meridian
- e. 1.15 statutory miles
- f. Benchmark
- g. Parallel
- h. Magnetic north
- i. One nautical mile per hour
- j. Used in most nautical charts

Multiple-Choice Study Questions:

- 9-1. The best binocular for use on a recreational vessel is:
- a. 50x7,
 - b. 15 x 35,
 - c. **7x50,**
 - d. 7x35.
- 9-2. For overall planning on a cruise, navigators should select a chart with:
- a. **a small scale which shows a large area,**
 - b. a large amount of land mass shown,
 - c. a large scale,
 - d. a Mercator projection.
- 9-3. One minute of latitude equals:
- a. one statute mile,
 - b. **one nautical mile,**
 - c. sixty nautical miles,
 - d. sixty statute miles.
- 9-4. Charts are being revised to use only the following datum for soundings:
- a. mean low water,
 - b. low water,
 - c. lower low water,
 - d. **mean lower low water.**
- 9-5. Which of the following measures distances north or south of the equator:
- a. a great circle,
 - b. **latitude,**
 - c. longitude,
 - d. the prime meridian.
- 9-6. Which scale of a chart should never be used for measuring distances:
- a. **longitude scale,**
 - b. latitude scale,
 - c. the chart's distance scale,
 - d. none of the above.
- 9-7. The direction of a course is the angle it makes with a:
- a. line of position,
 - b. the equator,
 - c. line of latitude,
 - d. **meridian.**
- 9-8. You can find the amount of variation in your boating area by:
- a. finding the difference between the direction a magnetic compass points and the direction it should point,
 - b. **looking at a compass rose on the chart of the area,**
 - c. looking in the chart catalog,
 - d. looking at Chart #1.

- 9-9. If you measure the direction of a course line on a chart, you have a:
- magnetic direction,
 - compass direction,
 - true direction,**
 - line of position.
- 9-10. Variation is the difference between:
- your course heading and your intended heading,
 - magnetic north and the direction your compass needle points,
 - true north and magnetic north,**
 - a vessel's heading and its course direction.
- 9-11. Deviation is a compass error caused by:
- the earth's magnetic field at your position,
 - a cheap compass,
 - proximity to the north geographic pole,
 - magnetic influences aboard your vessel.**
- 9-12. The technical term for the bench mark from which a marine chart's vertical and horizontal measurements are made is:
- latitude,
 - longitude,
 - fathom,
 - datum.**
- 9-13. Direction can be determined on a Mercator chart by using the:
- direction scale,
 - variation,
 - compass rose,**
 - title block.
- 9-14. A speed table is used to:
- determine speed from a tachometer reading,**
 - measure distances,
 - calibrate your speedometer,
 - tell you what the maximum legal speeds are.
- 9-15. The vertical datum of a chart:
- helps you know how far apart two points are,
 - is the North American Datum, 1983,
 - helps you know where you are,
 - helps you know how much clearance there is under a bridge.**
- 9-16. To correct a compass reading:
- add easterly variations,**
 - add magnetic deviations,
 - add westerly variations,
 - add westerly deviations.

- 9-17. Mercator projections are made by projecting the earth's surface onto a:
- cone,
 - cylinder,**
 - chart,
 - map.
- 9-18. On a chart, shallow water is:
- white,
 - light green,
 - light blue,**
 - light yellow.
- 9-19. If you travel at a speed of 12 knots for 10 minutes, you will have gone how far:
- 2.0 miles,
 - 2.0 nautical miles,**
 - 3.0 miles,
 - 3.0 nautical miles.
- 9-20. In an area with a variation of 12°E your heading is 130° by your compass. The deviation for this heading is 3°W. What is your true heading:
- 121°,
 - 145°,
 - 115°,
 - 139°.**
- 9-21. A position determined by the intersection of two LOPs is:
- an estimated position,
 - a range line of position,
 - a fix,**
 - an advanced line of position.
- 9-22. A fix is labeled with:
- a dot and a circle,**
 - an "X",
 - a square,
 - a half circle.
- 9-23. How long will it take you to go 3 miles at a speed of 20 knots:
- 60 minutes,
 - 6.67 minutes,
 - 9 minutes,**
 - 12 minutes.
- 9-24. How fast do you have to go to cover 6 nautical miles in 20 minutes:
- 6.67 knots,
 - 18 knots,**
 - 3 knots,
 - 6 knots.

LESSON 10

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The characteristics of marine engines and how engines are classified,*
2. *The differences between two- and four-stroke engines,*
3. *The fundamentals of marine engine operation and how to care for a boat's engine,*
4. *The dangers of interchanging marine and automobile parts,*
5. *What to consider in selecting gasoline for your marine engine,*
6. *The effects of alcohol on an engine's fuel system,*
7. *The importance of the battery and how to maintain it properly,*
8. *110-volt electrical dangers,*
9. *How to prevent galvanic action,*
10. *Steps in winterizing your boat,*
11. *The importance of a springtime check list,*
12. *Elements of basic troubleshooting for causes of engine failure.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Types of marine engines	(a) Installation classes (b) Operating cycles <ol style="list-style-type: none"> 1. Differences in two-and four-stroke engines (c) Classification by type of fuel <ol style="list-style-type: none"> 1. Risks from fuel
(3) Marine engines	(a) Inboard engines, <ol style="list-style-type: none"> 1. Direct drive vs. V-drive 2. Tunnel drives (b) Stern drive engines (c) Outboard motors (d) Stern drives or outboards? (e) Engine sizes (f) A special warning
(4) Selecting a propeller	

- (5) Induction systems
 - (a) Carburetors
 - (b) Fuel injection

- (6) Ignition systems
 - (a) Diesel fuel ignition
 - (b) Gasoline engine ignition
 - 1. Magneto ignition
 - 2. Alternator-battery ignition
 - 3. Electronic ignition

- (7) Flame arresters

- (8) Cooling systems
 - (a) Air-cooled engines
 - (b) Water-cooled engines
 - 1. Open cooling systems
 - 2. Dual cooling systems
 - (c) Cooling system precautions

- (9) Gasoline considerations
 - (a) Leaded gasoline
 - 1. Octane ratings
 - 2. Premium gasoline
 - (b) Reformulated gasoline
 - 1. Alcohol and outboards
 - 2. Alcohol and fuel systems
 - a. Fuel lines
 - (c) Fuel tanks

- (10) Batteries
 - (a) Battery switches
 - (b) Check the battery
 - (c) Checking the battery's charge
 - (d) Battery failure
 - (e) Corroded terminals
 - (f) Secure the battery
 - (g) Use of dual batteries
 - (h) Short circuits
 - (i) Charging batteries
 - (j) 120-volt electrical dangers
 - (k) Direct current problems
 - (l) Preventing electrical problems

(11) Maintenance

- (a) Routine maintenance
 - 1. Lubrication
 - a. Crankcase oil
 - b. Pumping the crankcase
 - c. Wash it out
 - d. Check the oil level
 - 2. Lower unit care
 - a. Grease the fittings
 - b. Check hydraulic fluid
 - 3. Checks while lubricating
 - a. Check the bilge pumps
 - b. Check for oil leaks
 - c. Check the stuffing box
 - d. Check the drive belts
 - 4. Ignition system maintenance
 - 5. Fuel system maintenance
 - a. Water separation filter
 - 6. Cooling system
 - 7. Galvanic action
 - a. Sacrificial zincs
 - 8. Propeller maintenance

(12) Winterizing a boat

- (a) Oil and fuel systems
- (b) Fuel tank
- (c) Gasoline engine
- (d) Cooling systems
- (e) Care of lower units
- (f) Ignition system
- (g) Freshwater system
- (h) Heads

(13) Spring fitting-out

- (a) Out of the water
 - 1. Batteries
 - 2. Items to check
- (b) In the water

(14) Troubleshooting

- (a) Engine will not turn over
 - 1. Check the clutch and throttle control
 - 2. Check the battery
 - 3. Check for loose connections
- (b) Engine will not start
- (c) Engine runs rough
- (d) Engine idles but does not develop full power

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

- 1. g crankcase
- 2. b fuel injection
- 3. h Diesel fuel
- 4. i induction system
- 5. a magneto
- 6. e gasohol
- 7. f removing battery
- 8. j zinc
- 9. c prevent gum formation
- 10. d impeller

The Responses:

- a. Built into flywheels
- b. Is replacing carburetors
- c. Stabilize your gasoline
- d. Most common water pump on marine engines
- e. May destroy some fuel tanks
- f. Loosen positive terminal first
- g. It contains the lubricating oil
- h. Gels at low temperatures
- i. Brings fuel to the engine
- j. Sacrificial metal

Multiple-Choice Study Questions.

- 10-1. Diesel engines ignite their fuel:
 - a. by a spark,
 - b. by an ignition system,
 - c. the same way as in a gasoline engine,
 - d. **by heat of compression.**
- 10-2. Diesel fuel has a safety advantage over gasoline because it is:
 - a. **less likely to explode,**
 - b. more efficient,
 - c. cheaper to use,
 - d. less odorous.

- 10-3. One advantage of a stern drive engine over an outboard motor is that it:
- weighs less, horsepower for horsepower,
 - costs less,
 - uses fuel more efficiently,***
 - is easier to replace.
- 10-4. Marine engines can be classified by:
- how they are installed,
 - number of operating cycles,
 - type of fuel they use,
 - all of the above.***
- 10-5. The easiest way to approach the problem of corrosion on battery terminals is to:
- tighten the terminals,
 - spray them with a water and baking soda mixture,
 - turn the switch off when the battery is not in use,
 - coat them with grease.***
- 10-6. Inboards, stern drives, and outboards get their names from:
- how they are installed,***
 - the fuel they use,
 - the type of ignition they have,
 - none of the above.
- 10-7. Which of the following is a cooling system in current use:
- air,
 - open,
 - dual,
 - all of the above.***
- 10-8. If you have two batteries, you should have:
- no battery failure problems,
 - a battery isolation switch,***
 - a hygrometer,
 - a voltage regulator.
- 10-9. If your engine has points and if you change them, always change your:
- distributor,
 - carburetor,
 - condenser,***
 - oil.
- 10-10. An explosion through the air intake of a carburetor is
- power stroke,
 - backfire,***
 - misfire,
 - disaster.

- 10-11. To protect your battery from accidental short circuits, the terminals should be:
- disconnected whenever the battery is not in use,
 - smearred with marine grease,
 - protected by a cover,***
 - allowed to build up a deposit of salts.
- 10-12. One feature that you will find on a four-cycle engine that you never find on a two-cycle outboard motor is a:
- crankcase with oil,***
 - condenser,
 - points,
 - carburetor.
- 10-13. Modern outboard motors require:
- leaded gasoline,
 - a lead substitute in the gasoline,
 - less lead than a stern drive engine,
 - no lead in the gasoline.***
- 10-14. Proper lubrication in a two-stroke gasoline outboard engine is provided by:
- oil mixed in the gasoline or injected with the gasoline,***
 - marine grease packed in the bearings,
 - oil pumped throughout the engine,
 - oil in the crankcase.
- 10-15. The first thing to check if your fully charged battery will not crank your engine is:
- your battery isolation switch,
 - your battery terminals,***
 - the level of fluid in the battery,
 - the voltage of the battery.
- 10-16. Maintenance procedures include:
- routine,
 - winterizing,
 - springtime fitting out,
 - all of the above.***
- 10-17. Sacrificial metals are used to keep other metals from eroding. They are made of:
- stainless steel,
 - magnesium,
 - zinc,***
 - copper.
- 10-18. To prevent explosions from backfires, stern drive and inboard engines are equipped with:
- marine type parts,
 - backfire flame arresters,***
 - sealed distributors,
 - vapor locks.

- 10-19. To protect against gasoline gum when your engine is not in use for a long period of time:
- flush it out with water,
 - run the fuel out of the engine,**
 - fill your tank with diesel fuel,
 - buy a high grade of gasoline that does not have gum in it.
- 10-20. Most marine engines will start only in:
- forward,
 - reverse,
 - neutral,**
 - idle speed.
- 10-21. The newest engines available use what kind of ignition system:
- electronic,**
 - magneto,
 - distributor,
 - closed.
- 10-22. Which of the following is an advantage of an outboard over a stern drive:
- weighs more,
 - uses fuel more efficiently,
 - easier to replace,**
 - are quieter.
- 10-23. The easiest way to approach the problem of corrosion on battery terminals is to:
- tighten the terminals,
 - spray them with a water and baking soda mixture,
 - coat them with grease,**
 - turn the switch off when the battery is not in use.
- 10-24. To check the oil level in the gears of an outboard or stern drive lower unit:
- remove the upper screw cap,**
 - remove the lower screw cap,
 - remove both screw caps,
 - see if you can add additional oil.

LESSON 11

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The art of handling and working rope known as marlinspike seamanship,*
2. *Materials used in making rope,*
3. *How rope is made,*
4. *The use, selection, and care of rope,*
5. *How to store rope,*
6. *About the hardware associated with ropes,*
7. *Some useful knots, and*
8. *How to secure a boat's lines.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Line or rope?	
(3) Rope materials	(a) Natural fiber ropes (b) Synthetic rope <ol style="list-style-type: none">1. Nylon2. Polyester rope3. Polypropylene rope4. Special ropes5. Wire rope
(4) Kinds of rope	(a) Laid rope (b) Braided rope (c) Webbing
(5) Measuring rope	
(6) Selecting ropes	
(7) Care of ropes	(a) Uncoiling rope (b) Overstressed lines (c) Dry your lines (d) Chafing (e) Keep your lines clean (f) Fraying (g) Care of wire rope

- (8) Making up line
 - (a) Coiling a line
 - (b) Faking-down a line
 - (c) Flemishing a line

- (9) Knots, bends, and hitches
 - (a) Knots and line strength
 - (b) Characteristics of good knots
 - (c) Parts of a line
 - (d) Some useful knots
 - 1. Stoppers
 - a. Overhand knot
 - b. Figure eight knot
 - 2. Reef knot
 - 3. Sheet or Beckett bend
 - a. Sheet bend
 - b. Double sheet bend
 - c. Slippery sheet bend
 - 4. Clove hitch
 - 5. Two half-hitches
 - 6. Anchor or fisherman's bend
 - 7. Rolling hitch
 - 8. Bowline

- (10) Splices
 - (a) Short splice
 - (b) Eye splice
 - (c) Splicing double-braided and wire rope

- (11) Securing lines
 - (a) Through-bolt the fittings
 - (b) Cleats
 - 1. Horn cleat
 - 2. Jam cleat
 - 3. Cam cleat
 - (c) Turnbuckles
 - (d) Samson posts
 - (e) Bow bitts
 - (f) Chocks
 - (g) Other hardware items

- (12) Lead lines

- (13) Dipping the eye

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. **h** nylon
2. **a** ski rope
3. **d** standing part
4. **c** Dacron
5. **j** turn
6. **i** hitch
7. **g** bend
8. **b** anchor bend
9. **e** bowline
10. **f** clove hitch

The Responses:

- a. Polypropylene
- b. Fisherman's bend
- c. Polyester
- d. Main part of a line
- e. Forms a temporary loop
- f. Will slip if not under tension
- g. Ties one line to another
- h. Elastic
- i. Line attached to an object
- j. Bight around an object

Multiple-Choice Study Questions.

- 11-1. Which of the following types of lines will float:
 - a. **polypropylene**,
 - b. polyester (dacron),
 - c. nylon,
 - d. all of the above.
- 11-2. Most boat owners prefer ropes made from:
 - a. natural fiber,
 - b. wire,
 - c. **synthetic fiber**,
 - d. a mixture of synthetic and natural fibers.
- 11-3. Which of the following types of line stretches the most:
 - a. manila,
 - b. polypropylene,
 - c. **nylon**,
 - d. polyester.
- 11-4. Whipping a line is done to:
 - a. make it easier to manage,
 - b. reduce stretching,
 - c. cover a damaged spot,
 - d. **keep it from unravelling**.

- 11-5. Wrap your mooring and anchor lines with canvas or leather to prevent:
- a ***chafing***,
 - b. soiling,
 - c. bleaching from the sun,
 - d. whipping.
- 11-6. A square knot is useful:
- a. for most purposes,
 - b. when you are in a hurry,
 - c. ***if it is not subject to a heavy load or critical load***,
 - d. for mooring a boat.
- 11-7. A bowline is useful when you want:
- a. ***a temporary, fixed sized loop in the end of a line***,
 - b. to tie two lines together.
 - c. to tie a line to a cleat,
 - d. to tie up to a mooring.
- 11-8. The “king of knots” is the:
- a. square knot,
 - b. half hitch,
 - c. clove hitch,
 - d. ***bowline***.
- 11-9. Synthetic and natural fiber lines should be protected from:
- a. kinks,
 - b. mildew,
 - c. dirt,
 - d. ***all of the above***.
- 11-10. The best knot for tying different sized lines together is:
- a. ***sheet bend or becket bend***,
 - b. square knot,
 - c. bowline,
 - d. clove hitch.
- 11-11. An eye splice is made in a manner similar to a:
- a. ***short splice***,
 - b. back splice,
 - c. long splice,
 - d. dual splice.
- 11-12. One of the most secure knots for attaching a line to an object is the:
- a. weaver’s knot,
 - b. sheet bend,
 - c. clove hitch,
 - d. ***anchor bend***.

- 11-13. Pulleys on a boat are called:
- a. **blocks**,
 - b. sheets,
 - c. winches,
 - d. hitches.
- 11-14. A horn cleat is:
- a. used to hold up a boat's rail,
 - b. a device through which a line is passed,
 - c. a means of warning for other nearby vessels,
 - d. **an anvil shaped fitting**.
- 11-15. Which of the following is used to moor a vessel:
- a. cleat,
 - b. bitt,
 - c. samson post,
 - d. **all of the above**.
- 11-16. Lead lines are used:
- a. to pass a line from one boat to another,
 - b. where strength is important,
 - c. **to measure the depth of the water**,
 - d. all of the above.
- 11-17. The half hitch you use as the last step in securing a line to a cleat is called a:
- a. clove hitch,
 - b. **weather hitch**,
 - c. anchor bend,
 - d. wedding hitch.
- 11-18. If you tie a line to itself, it is called a:
- a. bend,
 - b. hitch,
 - c. **knot**,
 - d. reef.
- 11-19. The tool used in working rope is called a:
- a. splicer,
 - b. awl,
 - c. pick,
 - d. **fid**.
- 11-20. The best type of line for anchoring and mooring is:
- a. **nylon**,
 - b. orlon,
 - c. dacron,
 - d. polypropylene.

11-21. The end of a line tied to a vessel is the:

- a. working end,
- b. standing end,
- c. ***bitter end***,
- d. whipped end.

11-22. To make a clove hitch secure, finish tying it by adding a:

- a. ***half hitch***,
- b. square knot,
- c. reef knot,
- d. bowline.

LESSON 12

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *Weather information sources,*
2. *Basic weather patterns,*
3. *Storm forecasting and precautions,*
4. *Go-no-go decision making,*
5. *Personal weather, equipment, and experience checklist.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Sources of weather information	(a) Broadcast and newspaper forecasts (b) Telephone information (c) National Weather Service (d) Internet (e) Other information sources (f) Pennants, flags, and lights
(3) Wind and boating	
(4) Wind and waves	(a) Swells (b) Breaking waves (c) Wave height (d) Waves in shallow water
(5) Understanding weather	
(6) Weather and heat	(a) Heat and air pressure <ol style="list-style-type: none"> 1. Land and sea breezes (b) Heat and temperature changes (c) Global air circulation <ol style="list-style-type: none"> 1. The Coriolis force 2. Columbus and wind patterns (d) Temperature and humidity (e) Moisture and energy (f) Air masses (g) Air flows from highs to lows

- (h) Fronts
 - 1. Types of fronts
 - 2. Changes as fronts pass
 - a. Temperature differences
 - b. Moisture
 - c. Wind
 - d. Pressure
- (i) Cold fronts
- (j) Warm fronts
- (k) Clouds and fronts
 - 1. Weather clues from clouds
 - 2. Cold front clouds
 - 3. Warm front clouds
- (7) Fog
 - (a) Conditions favoring fog formation
 - (b) Advection fog
 - (c) Predicting fog
 - (d) Fog precautions
- (8) Nonfrontal weather
 - (a) Thunderstorms
 - 1. Stage one
 - 2. Stage two
 - 3. Stage three
 - (b) When thunderheads form
 - (c) How far away is the storm?
 - (d) Microbursts
 - (e) Lightning
 - 1. If you are caught
 - 2. Ground the boat?
 - (f) Tornadoes and waterspouts
 - 1. Waterspouts
 - (g) Tropical storms
 - 1. Tropical waves
 - 2. Tropical cyclones
 - 3. Winds in tropical cyclones
 - 4. Hurricanes

REVIEW QUESTIONS AND ANSWERS

This lesson's review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. e high
2. d front
3. h dewpoint
4. a fair weather clouds
5. i Cirrus clouds
6. b nimbus clouds
7. f swells
8. g thunderstorm
9. c middle level clouds

The Responses:

- a. Cumulus clouds
- b. Rain clouds
- c. Alto-
- d. Zone between two air masses
- e. Cool or cold, dry air
- f. Waves that have travelled a long way
- g. Cumulonimbus
- h. Moisture condenses
- i. Ice crystals

Multi-Choice Study Questions.

- 12-1. A condition favoring fog formation is:
 - a. cold front,
 - b. ***moisture laden air,***
 - c. non-frontal weather,
 - d. air moving over warm water.
- 12-2. The temperature behind a cold front is:
 - a. higher than that in front of it,
 - b. ***lower than that in front of it,***
 - c. about the same as that in front of it,
 - d. none of the above.
- 12-3. The air pressure behind a cold front is:
 - a. ***higher than that in front of it,***
 - b. lower than that in front of it,
 - c. about the same as that in front of it,
 - d. none of the above.
- 12-4. The majority of weather systems in the United States come from a(n):
 - a. easterly direction,
 - b. southerly direction,
 - c. ***westerly direction,***
 - d. northerly direction.

- 12-5. Which one of the following is the best source of marine boating weather information:
- National Weather Service,*
 - TV broadcasts,
 - newspapers,
 - telephone.
- 12-6. In the northern hemisphere, winds flow around and into a low in what direction:
- westerly,
 - easterly,
 - clockwise,
 - counterclockwise.*
- 12-7. Warm air:
- rises,*
 - falls,
 - is very dry,
 - is present in high pressure areas.
- 12-8. Warm moist air, in comparison with dry, cool air is:
- heavier,
 - lighter,*
 - higher pressure,
 - about the same weight.
- 12-9. Stand with your back to the surface wind and then turn 45° to your right. A low pressure area will be:
- in front of you,
 - behind you,
 - to your right,
 - to your left.*
- 12-10. A high pressure air mass is characterized by:
- warm, moist air,
 - counterclockwise rotation,
 - calm winds,
 - cool, dry air.*
- 12-11. The fastest moving fronts are usually:
- warm fronts,
 - stationary fronts,
 - cold fronts,*
 - occluded fronts.
- 12-12. A hurricane is a tropical storm with sustained winds:
- greater than 50 knots,
 - less than 64 knots,
 - 64 knots or greater,*
 - blowing from the south.

- 12-13. A tropical cyclone is:
- a whirling, funnel shaped wind,
 - a low pressure area over warm, tropical waters,**
 - a local storm,
 - a thunderstorm over the Caribbean.
- 12-14. Clouds from which rain is falling are called:
- stratus,
 - cirrus,
 - nimbus,**
 - cumulus.
- 12-15. The basic problem in thunderstorms, tornadoes, tropical storms, etc. is:
- heavy rain,
 - wind,**
 - lightning,
 - reduced visibility.
- 12-16. Which of the following poses the most serious problem for boaters:
- fog,
 - wind,**
 - rain,
 - sleet.
- 12-17. The height of wind created waves depends on:
- how long the wind has been blowing,
 - the extent of the fetch,
 - the strength of the wind,
 - all of the above.**
- 12-18. Fog occurs most often near a:
- warm, dry surface,
 - cold front,
 - large body of cold water,
 - warm front.**
- 12-19. A particularly dangerous phenomenon that can occur several miles away from a thunderstorm and a squall line is a:
- willy-nilly,
 - microburst,**
 - cyclone,
 - fetch.
- 12-20. Fronts are named for the kind of air that is:
- in front of them,
 - behind them,**
 - being displaced,
 - being cooled.

- 12-21. Thunderstorms form ahead of:
- cold fronts***,
 - warm fronts,
 - stationary fronts,
 - occluded fronts.
- 12-22. On a colored weather map warm fronts are:
- blue,
 - red and blue,
 - red***,
 - orange.
- 12-23. Weather is caused by:
- wind,
 - rain,
 - heat***,
 - all of the above.
- 12-24. Thunderstorms are produced by:
- cumulus clouds,
 - stratus clouds,
 - cirrus clouds,
 - cumulonimbus clouds***.
- 12-25. The clouds in front of a warm front are:
- cumulus,
 - stratus***,
 - cirrus,
 - cumulonimbus.

LESSON 13

THE OBJECTIVES OF THIS LESSON ARE TO DESCRIBE:

1. *The types of radios in use in recreational boats,*
2. *The function of marine radios and their proper use,*
3. *The three types of safety messages,*
4. *The necessity for, and how to obtain, a station license,*
5. *When a radio operator’s license is needed and how to get one,*
6. *What to look for when buying a radio,*
7. *The limits of VHF-FM radio sets,*
8. *How to select an antenna,*
9. *The mechanics of operation of a VHF-FM radio,*
10. *The proper use of a VHF-FM radio,*
11. *How to make a radio check,*
12. *How to make distress, urgency, and safety calls.*

PRESENTATION OUTLINE

To assist the instructor in organizing material, the following Presentation Outline is provided.

<u>Topics</u>	<u>Subtopics</u>
(1) Introduction and lesson objectives	
(2) Radios used on boats	(a) VHF-FM radios (b) Single-sideband radios (c) CB radios (d) Amateur radio service (e) Cellular telephones
(3) Functions of radios	(a) Safety messages (b) Operations messages (c) Commercial messages
(4) Licenses	(a) Station license (b) Licenses for other radio sets (c) Operator’s permit
(5) Selecting a VHF-FM radio	(a) Global Maritime Distress and Safety System (b) Sensitivity (c) Selectivity (d) Audio output

- (6) Installation
 - (e) Signal strength
 - 1. Signal suppression
 - 2. Line-of-sight transmission
 - (f) Available channels
 - 1. USA and international channels
 - 2. Channels you need
 - (g) Channel selector
 - (h) Current usage
 - (a) Installing a radio
 - (b) The radio antenna
- (7) Operating a VHF-FM radio
- (8) Maintain a radio watch
- (9) Channels have special purposes
- (10) Channels 9 and 16 operations
- (11) Some No-Nos
 - (a) Obscenity, indecency, and profanity
 - (b) Secrecy of communication
 - (c) Using a VHF-FM radio on land
- (12) Copies of the rules
 - (a) Rules violations
- (13) Calling another station
 - (a) Public correspondence calls
 - (b) Making ship-to-ship calls through a coast station
 - (c) Making shore-to-ship calls
 - (d) Limited coast stations
- (14) Procedure words
- (15) Phonetic alphabet
 - (a) Numbers
- (16) Routine radio checks
- (17) Distress, urgency, and safety calls
 - (a) Spoken emergency signals
 - 1. Distress signal—MAYDAY
 - 2. Urgency signal—PAN-PAN
 - 3. Safety signal—SECURITY
 - (b) The radiotelephone alarm signal
 - (c) Sending a distress call
 - (d) Acknowledging a distress message

- (e) Imposing silence
- (f) Radiotelephone station log
- (g) Urgency calls
- (h) Sending an urgency call
- (i) Sending a safety message

(18) Crew training

(19) An invitation

REVIEW QUESTIONS AND ANSWERS

This lesson’s review questions and their correct answers are provided below.

Important Boating Terms:

The items:

1. g distress signal
2. h VHF-FM
3. d urgency signal
4. a safety signal
5. j Public Correspondence channels
6. c OUT
7. i I SPELL
8. f channel 16
9. e WILCO
10. b OVER

The Responses:

- a. Security
- b. I am through but I expect a response
- c. I am through and I do not expect a response
- d. Pan-Pan
- e. Message received, will comply
- f. Distress, urgency, and safety
- g. Mayday
- h. Most commonly used marine radio
- i. Use phonetic alphabet
- j. Public telephone system

Multi-Choice Study Questions.

- 13-1. VHF-FM licenses are issued by the:
 - a. Coast Guard,
 - b. state in which you live,
 - c. **FCC,**
 - d. marine patrol.
- 13-2. You will need an operator’s license for your VHF-FM if you:
 - a. broadcast on your station,
 - b. **plan to dock in a foreign port,**
 - c. want to communicate with the Coast Guard,
 - d. all of the above.

- 13-3. If a VHF-FM channel number has the letter “A” attached to it, this means the channel is:
- an alternate one,
 - already in use,
 - available,
 - U. S. A only.***
- 13-4. Before you transmit:
- listen to see if someone else is using the channel,***
 - write out what you want to say,
 - review the correct procedure,
 - give your station call letters.
- 13-5. At the beginning and end of each message, you must:
- state your name,
 - give your call sign,***
 - turn your radio on and off,
 - tell who you are calling.
- 13-6. The most important purpose of a marine radiotelephone is:
- to arrange for boat repairs,
 - to contact other skippers to find out where the fish are biting,
 - to keep in touch with your home so they will know everything is ok,
 - safety.***
- 13-7. The alternate calling channel for non-commercial purposes is:
- 9,***
 - 6,
 - 16,
 - 22A.
- 13-8. If you set your squelch control too low you will:
- reduce your ability to receive signals,***
 - lower your transmission power,
 - interfere with weaker stations,
 - receive too many stations.
- 13-9. The distress signal that is used to indicate grave and imminent danger and to request immediate assistance is:
- PAN-PAN (said three times),
 - SECURITY (said three times),
 - MAYDAY (said three times),***
 - radio check (said three times).
- 13-10. Which channel is the Coast Guard liaison channel:
- 6,
 - 16,
 - 22A,***
 - 83.

- 13-11. When you have completed your radiotelephone communication and do not require a reply, use the proword:
- over and out,
 - over,
 - wilco,
 - out.**
- 13-12. If you hear “SEELONCE MAYDAY” on your marine radio, you know that,
- a MAYDAY is in progress,
 - you are not supposed to use your radio,
 - radio silence is requested,
 - all of the above.**
- 13-13. The range of your VHF-FM radio depends on:
- the height of your antenna,
 - the height of the receiving antenna,
 - the gain of your antenna,
 - all of the above.**
- 13-14. Keep a watch on the calling (or alternate calling) channel at all times except when:
- you are communicating on another channel or when your radiotelephone is not turned on,**
 - you are underway,
 - no one is using the calling channel,
 - you are maintaining a watch on another channel.
- 13-15. A radio message concerning weather or safety of navigation is preceded by the word(s):
- MAYDAY,
 - PAN-PAN,
 - NOW HEAR THIS,
 - SECURITY.**
- 13-16. Do not call a Coast Guard Station on channel 16 to request:
- a radio check,**
 - assistance,
 - a tow,
 - a message be relayed.
- 13-17. Although you may install your VHF-FM radio, any repairs or internal adjustments must be made by:
- a Coast Guard Auxiliarist communication specialist,
 - a qualified electrician,
 - a short wave ham,
 - an FCC licensed general class commercial operator.**
- 13-18. Although a CB radio may be useful, it should not be seen as a means of:
- getting fishing information,
 - contacting the Coast Guard,**
 - chit-chat with other operators,
 - calling home.

- 13-19. When calling another vessel, the preliminary call must not exceed:
- 10 seconds,
 - 30 seconds,**
 - one minute,
 - two minutes.
- 13-20. If you can't reach a limited coast station on its working channel, call it on channel:
- 6,
 - the local calling channel,**
 - 16,
 - 22A.
- 13-21. If another station answers your call, and you identify yourself, then:
- wait 10 seconds before talking,
 - ask the other station to identify itself,
 - request that it switch to a working channel,**
 - give your message.
- 13-22. If you do not get a reply to your call to another station wait:
- at least one minute before trying again,
 - at least two minutes before trying again,**
 - at least three minutes before trying again,
 - at least five minutes before trying again.
- 13-23. After you have tried three times to call another station, wait at least:
- 10 minutes before calling again,
 - 15 minutes before calling again,**
 - 20 minutes before calling again,
 - 30 minutes before calling again.
- 13-24. An urgency message is preceded by the urgency signal:
- SECURITY,
 - MAYDAY,
 - PAN-PAN,**
 - all of the above.
- 13-25. If you willfully or repeatedly violate the communications act or the FCC rules, you may:
- have your license revoked if you have one,
 - be fined,
 - be sent to prison,
 - any of the above.**