



Motorboating

Merit Badge Workbook



This workbook can help you but you still need to read the merit badge pamphlet.

This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counselor

Merit Badge Counselors may not require the use of this or any similar workbooks.

You still must satisfy your counselor that you can demonstrate each skill and have learned the information. You should use the work space provided for each requirement to keep track of which requirements have been completed, and to make notes for discussing the item with your counselor, not for providing full and complete answers.

If a requirement says that you must take an action using words such as "discuss", "show", "tell", "explain", "demonstrate", "identify", etc, that is what you must do.

No one may add or subtract from the official requirements found in Scouts BSA Requirements (Pub. + 33216) and/or on Scouting.org.

The requirements were last issued or revised in 2021 • This workbook was updated in January 2021.

Scout's Name: _____ Unit: _____

Counselor's Name: _____ Phone No.: _____ Email: _____

Please submit errors, omissions, comments or suggestions about this **workbook** to: Workbooks@USScouts.Org

Comments or suggestions for changes to the **requirements** for the **merit badge** should be sent to: Merit.Badge@Scouting.Org

1. Do the following:

- a. Discuss with your counselor the following hazards you might encounter while motorboating: flammable fuel; carbon monoxide; propellers; collisions; falls overboard; capsizes; running aground. Explain what you should do to anticipate, prevent, mitigate and respond to these hazards.

flammable fuel

carbon monoxide

propellers

collisions

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falls overboard

capsize

running aground

- b. Explain first aid for injuries that could occur while motorboating, including hypothermia, heat reactions, dehydration, motion sickness, insect stings, bug bites, and blisters.

Hypothermia:

Heat reactions:

Dehydration:

Motion sickness:

Insect stings:

Bug bites:

Blisters:

- c. Identify the conditions that must exist before performing CPR on a person, and explain how such conditions are recognized.

- Demonstrate proper technique for performing CPR using a training device approved by your counselor.

2. Do the following:

- a. Before doing requirement 5, successfully complete the BSA swimmer test.
- b. Name the different types of personal floatation devices (PFDs), and explain when each type should be use.

- Show how to choose and properly fit a PFD.

3. Do the following:

- a. Explain inboard, outboard, and inboard/outboard motors and the uses and advantages of each.

Inboard motors

Uses

Advantages

Outboard motors

Uses

Advantages

Inboard/outboard motors	
Uses	
Advantages	

b. Explain the safety procedures and precautions involving handling fuel and engine servicing, and equipment storage and placement.

c. Explain how to winterize a boat motor and tell why this procedure is necessary.

- d. Explain the safety procedures and precautions involving, passenger positions under way, and boat wakes.
Swimmers and skiers in the water:

Passenger positions under way:

Boat wakes:

- 4. Show you know safety guidelines for motorboating by doing the following:

- a. Review how each item of the BSA Safety Afloat policy applies, including checking the weather prior to and during time on the water, confirming all required equipment is present and functional, and following a float plan.
- b. Explain the rules or laws that apply to recreational boating in your area or state.

- Have a permit to operate a motorboat, if required by the laws of your state. Discuss how you would find information regarding the boating laws in different states.

- c. Discuss how hazards of weather and heavy water conditions can affect safety and performance in motorboating.

- d. Discuss with your counselor the nautical rules of the road and describe the national and your state's aids to navigation.

- e. Explain and show the correct use of equipment required by both state and federal regulations to be carried aboard a motorboat.

- f. Explain federal and state rules for a ventilation system, and tell why these rules are required.

g. Explain the use of lights (sight signals) and sound signals on motorboats.

h. Discuss the common types of anchors used in motorboating and under what conditions each would be preferred.

Explain proper anchoring techniques.

5. With your counselor or other adults on board, demonstrate proper boat-handling procedures and skills by doing the following:
- a. Board and assist others in boarding. Confirm that all passengers on board are wearing properly fitted life jackets.
 - b. Fuel the boat and complete a safety check.
 - c. If equipped, attach a kill switch and safely start the motor. Get under way from dockside or from a beach launch .
 - d. Run a course for at least a mile, showing procedures for overtaking and passing slower craft, yielding right-of-way, passing oncoming traffic, making turns, reversing direction, and using navigation aids.
 - e. Stop an secure the boat in position on the open water using anchor. Raise and stow the anchor and get underway.
 - f. Land or dock the boat, disembark, and assist others in doing the same.
 - g. Moor, dock, or beach the boat and secure all gear.
 - b. Remove a boat from the water using a trailer.

When working on merit badges, Scouts and Scouters should be aware of some vital information in the current edition of the *Guide to Advancement* (BSA publication 33088). Important excerpts from that publication can be downloaded from <http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf>. You can download a complete copy of the *Guide to Advancement* from <http://www.scouting.org/filestore/pdf/33088.pdf>.

BSA groups shall use Safety Afloat for all boating activities. Adult leaders supervising activities afloat must have completed Safety Afloat training within the previous two years. Cub Scout activities afloat are limited to council or district events that do not include moving water or float trips (expeditions). Safety Afloat standards apply to the use of canoes, kayaks, rowboats, rafts, floating tubes, sailboats, motorboats (including waterskiing), and other small craft, but do not apply to transportation on large commercial vessels such as ferries and cruise ships. Parasailing (being towed airborne behind a boat using a parachute), kitesurfing (using a wakeboard towed by a kite), and recreational use of personal watercraft (small sit-on-top motorboats propelled by water jets) are not authorized BSA activities.

Safety Afloat training may be obtained from the BSA Online Learning Center at www.scouting.org, at council summer camps, and at other council and district training events. Confirmation of training is required on local and national tour permits for trips that involve boating. Additional guidance on appropriate skill levels and training resources is provided in the *Aquatics Supervision* guide available from council service centers.

1. Qualified Supervision

All activity afloat must be supervised by a mature and conscientious adult age 21 or older who understands and knowingly accepts responsibility for the wellbeing and safety of those in his or her care and who is trained in and committed to compliance with the nine points of BSA Safety Afloat. That supervisor must be skilled in the safe operation of the craft for the specific activity, knowledgeable in accident prevention, and prepared for emergency situations. If the adult with Safety Afloat training lacks the necessary boat operating and safety skills, then he or she may serve as the supervisor only if assisted by other adults, camp staff personnel, or professional tour guides who have the appropriate skills. Additional leadership is provided in ratios of one trained adult, staff member, or guide per 10 participants. For Cub Scouts, the leadership ratio is one trained adult, staff member, or guide per five participants. At least one leader must be trained in first aid including CPR. Any swimming done in conjunction with the activity afloat must be supervised in accordance with BSA Safe Swim Defense standards. It is strongly recommended that all units have at least one adult or older youth member currently trained in BSA Aquatics Supervision: Paddle Craft Safety to assist in the planning and conduct of all activities afloat.

2. Personal Health Review

A complete health history is required of all participants as evidence of fitness for boating activities. Forms for minors must be signed by a parent or legal guardian. Participants should be asked to relate any recent incidents of illness or injury just prior to the activity. Supervision and protection should be adjusted to anticipate any potential risks associated with individual health conditions. For significant health conditions, the adult supervisor should require an examination by a physician and consult with parent, guardian, or caregiver for appropriate precautions.

3. Swimming Ability

Operation of any boat on a float trip is limited to youth and adults who have completed the BSA swimmer classification test. Swimmers must complete the following test, which should be administered annually.

Jump feetfirst into water over the head in depth. Level off and swim 75 yards in a strong manner using one or more of the following strokes: sidestroke, breaststroke, trudgen, or crawl; then swim 25 yards using an easy, resting backstroke. The 100 yards must be completed in one swim without stops and must include at least one sharp turn. After completing the swim, rest by floating.

For activity afloat, those not classified as a swimmer are limited to multiperson craft during outings or float trips on calm water with little likelihood of capsizing or falling overboard. They may operate a fixed-seat rowboat or pedal boat accompanied by a buddy who is a swimmer. They may ride in a canoe or other paddle craft with an adult swimmer skilled in that craft as a buddy. They may ride as part of a group on a motorboat or sailboat operated by a skilled adult.

4. Life Jackets

Properly fitted U.S. Coast Guard–approved life jackets must be worn by all persons engaged in boating activity (rowing, canoeing, sailing, boardsailing, motorboating, waterskiing, rafting, tubing, and kayaking). Type III life jackets are recommended for general recreational use.

For vessels over 20 feet in length, life jackets need not be worn when participants are below deck or on deck when the qualified supervisor aboard the vessel determines that it is prudent to abide by less-restrictive state and federal regulations concerning the use and storage of life jackets, for example, when a cruising vessel with safety rails is at anchor. All participants not classified as swimmers must wear a life jacket when on deck underway.

Life jackets need not be worn when an activity falls under Safe Swim Defense guidelines—for example, when an inflated raft is used in a pool or when snorkeling from an anchored craft.

5. Buddy System

All participants in an activity afloat are paired as buddies who are always aware of each other's situation and prepared to sound an alarm and lend assistance immediately when needed. When several craft are used on a float trip, each boat on the water should have a "buddy boat." All buddy pairs must be accounted for at regular intervals during the activity and checked off the water by the qualified supervisor at the conclusion of the activity. Buddies either ride in the same boat or stay near each other in single-person craft.

6. Skill Proficiency

Everyone in an activity afloat must have sufficient knowledge and skill to participate safely. Passengers should know how their movement affects boat stability and have a basic understanding of self-rescue. Boat operators must meet government requirements, be able to maintain control of their craft, know how changes in the environment influence that control, and undertake activities only that are within their personal and group capabilities.

Content of training exercises should be appropriate for the age, size, and experience of the participants, and should cover basic skills on calm water of limited extent before proceeding to advanced skills involving current, waves, high winds, or extended distance. At a minimum, instructors for canoes and kayaks should be able to demonstrate the handling and rescue skills required for BSA Aquatics Supervision: Paddle Craft Safety. All instructors must have a least one assistant who can recognize and respond appropriately if the instructor's safety is compromised.

Anyone engaged in recreational boating using human powered craft on flatwater ponds or controlled lake areas free of conflicting activities should be instructed in basic safety procedures prior to launch, and allowed to proceed after they have demonstrated the ability to control the boat adequately to return to shore at will.

For recreational sailing, at least one person aboard should be able to demonstrate basic sailing proficiency (tacking, reaching, and running) sufficient to return the boat to the launch point. Extended cruising on a large sailboat requires either a professional captain or an adult with sufficient experience to qualify as a bareboat skipper.

Motorboats may be operated by youth, subject to state requirements, only when accompanied in the boat by an experienced leader or camp staff member who meets state requirements for motorboat operation. Extended cruising on a large power boat requires either a professional captain or an adult with similar qualifications.

Before a unit using human-powered craft controlled by youth embarks on a float trip or excursion that covers an extended distance or lasts longer than four hours, each participant should receive either a minimum of three hours training and supervised practice, or demonstrate proficiency in maneuvering the craft effectively over a 100-yard course and recovering from a capsized.

Unit trips on whitewater above Class II must be done with either a professional guide in each craft or after all participants have received American Canoe Association or equivalent training for the class of water and type of craft involved.

7. Planning

Proper planning is necessary to ensure a safe, enjoyable exercise afloat. All plans should include a scheduled itinerary, notification of appropriate parties, communication arrangements, contingencies in case of foul weather or equipment failure, and emergency response options.

Preparation. Any boating activity requires access to the proper equipment and transportation of gear and participants to the site. Determine what state and local regulations are applicable. Get permission to use or cross private property. Determine whether personal resources will be used or whether outfitters will supply

equipment, food, and shuttle services. Lists of group and personal equipment and supplies must be compiled and checked. Even short trips require selecting a route, checking water levels, and determining alternative pull-out locations. Changes in water level, especially on moving water, may pose significant, variable safety concerns. Obtain current charts and information about the waterway and consult those who have traveled the route recently.

Float Plan. Complete the preparation by writing a detailed itinerary, or float plan, noting put-in and pullout locations and waypoints, along with the approximate time the group should arrive at each. Travel time should be estimated generously. **Notification.** File the float plan with parents, the local council office if traveling on running water, and local authorities if appropriate. Assign a member of the unit committee to alert authorities if prearranged check-ins are overdue. Make sure everyone is promptly notified when the trip is concluded.

Weather. Check the weather forecast just before setting out, and keep an alert weather eye. Anticipate changes and bring all craft ashore when rough weather threatens. Wait at least 30 minutes before resuming activities after the last incidence of thunder or lightning.

Contingencies. Planning must identify possible emergencies and other circumstances that could force a change of plans. Develop alternative plans for each situation. Identify local emergency resources such as EMS systems, sheriff's departments, or ranger stations. Check your primary communication system, and identify backups, such as the nearest residence to a campsite. Cell phones and radios may lose coverage, run out of power, or suffer water damage.

8. Equipment

All craft must be suitable for the activity, be seaworthy, and float if capsized. All craft and equipment must meet regulatory standards, be properly sized, and be in good repair. Spares, repair materials, and emergency gear must be carried as appropriate. Life jackets and paddles must be sized to the participants. Properly designed and fitted helmets must be worn when running rapids rated above Class II. Emergency equipment such as throw bags, signal devices, flashlights, heat sources, first-aid kits, radios, and maps must be ready for use. Spare equipment, repair materials, extra food and water, and dry clothes should be appropriate for the activity. All gear should be stowed to prevent loss and water damage. For float trips with multiple craft, the number of craft should be sufficient to carry the party if a boat is disabled, and critical supplies should be divided among the craft.

9. Discipline

Rules are effective only when followed. All participants should know, understand, and respect the rules and procedures for safe boating activities provided by Safety Afloat guidelines. Applicable rules should be discussed prior to the outing and reviewed for all participants near the boarding area just before the activity afloat begins. People are more likely to follow directions when they know the reasons for rules and procedures. Consistent, impartially applied rules supported by skill and good judgment provide stepping-stones to a safe, enjoyable outing.

For additional information on Safety Afloat, go to www.scouting.org/HealthandSafety/Aquatics/safety-afloat.aspx.

BSA groups shall use Safe Swim Defense for all swimming activities. Adult leaders supervising a swimming activity must have completed Safe Swim Defense training within the previous two years. Safe Swim Defense standards apply at backyard, hotel, apartment, and public pools; at established waterfront swim areas such as beaches at state parks and U.S. Army Corps of Engineers lakes; and at all temporary swimming areas such as a lake, river, or ocean. Safe Swim Defense does not apply to boating or water activities such as waterskiing or swamped boat drills that are covered by Safety Afloat guidelines. Safe Swim Defense applies to other nonswimming activities whenever participants enter water over knee deep or when submersion is likely, for example, when fording a stream, seining for bait, or constructing a bridge as a pioneering project. Snorkeling in open water requires each participant to have demonstrated knowledge and skills equivalent to those for Snorkeling BSA in addition to following Safe Swim Defense. Scuba activities must be conducted in accordance with the BSA Scuba policy found in the *Guide to Safe Scouting*. Because of concerns with hyperventilation, competitive underwater swimming events are not permitted in Scouting.

Safe Swim Defense training may be obtained from the BSA Online Learning Center at olc.scouting.org, at council summer camps, and at other council and district training events. Confirmation of training is required on local and national tour permits for trips that involve swimming. Additional information on various swimming venues is provided in the Aquatics Supervision guide available from council service centers.

1. Qualified Supervision

All swimming activity must be supervised by a mature and conscientious adult age 21 or older who understands and knowingly accepts responsibility for the well-being and safety of those in his or her care, and who is trained in and committed to compliance with the eight points of BSA Safe Swim Defense. It is strongly recommended that all units have at least one adult or older youth member currently trained in BSA Aquatics Supervision: Swimming and Water Rescue or BSA Lifeguard to assist in planning and conducting all swimming activities.

2. Personal Health Review

A complete health history is required of all participants as evidence of fitness for swimming activities. Forms for minors must be signed by a parent or legal guardian. Participants should be asked to relate any recent incidents of illness or injury just prior to the activity. Supervision and protection should be adjusted to anticipate any potential risks associated with individual health conditions. For significant health conditions, the adult supervisor should require an examination by a physician and consult with the parent, guardian, or caregiver for appropriate precautions.

3. Safe Area

All swimming areas must be carefully inspected and prepared for safety prior to each activity. Water depth, quality, temperature, movement, and clarity are important considerations. Hazards must be eliminated or isolated by conspicuous markings and discussed with participants.

Controlled Access: There must be safe areas for all participating ability groups to enter and leave the water. Swimming areas of appropriate depth must be defined for each ability group. The entire area must be within easy reach of designated rescue personnel. The area must be clear of boat traffic, surfing, or other nonswimming activities.

Bottom Conditions and Depth: The bottom must be clear of trees and debris. Abrupt changes in depth are not allowed in the nonswimmer area. Isolated underwater hazards should be marked with floats. Rescue personnel must be able to easily reach the bottom. Maximum recommended water depth in clear water is 12 feet. Maximum water depth in turbid water is 8 feet.

Visibility: Underwater swimming and diving are prohibited in turbid water. Turbid water exists when a swimmer treading water cannot see his feet. Swimming at night is allowed only in areas with water clarity and lighting sufficient for good visibility both above and below the surface.

Diving and Elevated Entry: Diving is permitted only into clear, unobstructed water from heights no greater than 40 inches. Water depth must be at least 7 feet. Bottom depth contours below diving boards and elevated surfaces require greater water depths and must conform to state regulations. Persons should not jump into water from heights greater than they are tall, and should jump only into water chest deep or greater with minimal risk from contact with the bottom. No elevated entry is permitted where the person must clear any obstacle, including land.

Water Temperature: Comfortable water temperature for swimming is near 80 degrees. Activity in water at 70 degrees or less should be of limited duration and closely monitored for negative effects of chilling.

Water Quality: Bodies of stagnant, foul water, areas with significant algae or foam, or areas polluted by livestock or waterfowl should be avoided. Comply with any signs posted by local health authorities. Swimming is not allowed in swimming pools with green, murky, or cloudy water.

Moving Water: Participants should be able to easily regain and maintain their footing in currents or waves. Areas with large waves, swiftly flowing currents, or moderate currents that flow toward the open sea or into areas of danger should be avoided.

Weather: Participants should be moved from the water to a position of safety whenever lightning or thunder threatens. Wait at least 30 minutes after the last lightning flash or thunder before leaving shelter. Take precautions to prevent sunburn, dehydration, and hypothermia.

Life Jacket Use: Swimming in clear water over 12 feet deep, in turbid water over 8 feet deep, or in flowing water may be allowed if all participants wear properly fitted, Coast Guard-approved life jackets and the supervisor determines that swimming with life jackets is safe under the circumstances.

4. **Response Personnel (Lifeguards)**

Every swimming activity must be closely and continuously monitored by a trained rescue team on the alert for and ready to respond during emergencies. Professionally trained lifeguards satisfy this need when provided by a regulated facility or tour operator. When lifeguards are not provided by others, the adult supervisor must assign at least two rescue personnel, with additional numbers to maintain a ratio of one rescuer to every 10 participants. The supervisor must provide instruction and rescue equipment and assign areas of responsibility as outlined in Aquatics Supervision, No. 34346. The qualified supervisor, the designated response personnel, and the lookout work together as a safety team. An emergency action plan should be formulated and shared with participants as appropriate.

5. **Lookout**

The lookout continuously monitors the conduct of the swim, identifies any departures from Safe Swim Defense guidelines, alerts rescue personnel as needed, and monitors the weather and environment. The lookout should have a clear view of the entire area but be close enough for easy verbal communication. The lookout must have a sound understanding of Safe Swim Defense but is not required to perform rescues. The adult supervisor may serve simultaneously as the lookout but must assign the task to someone else if engaged in activities that preclude focused observation.

6. **Ability Groups**

All youth and adult participants are designated as swimmers, beginners, or nonswimmers based on swimming ability confirmed by standardized BSA swim classification tests. Each group is assigned a specific swimming area with depths consistent with those abilities. The classification tests should be renewed annually, preferably at the beginning of the season.

Swimmers pass this test: Jump feetfirst into water over the head in depth. Level off and swim 75 yards in a strong manner using one or more of the following strokes: sidestroke, breaststroke, trudgen, or crawl; then swim 25 yards using an easy resting backstroke. The 100 yards must be completed in one swim without stops and must include at least one sharp turn. After completing the swim, rest by floating.

Beginners pass this test: Jump feetfirst into water over the head in depth, level off, and swim 25 feet on the surface. Stop, turn sharply, resume swimming and return to the starting place.

Anyone who has not completed either the beginner or swimmer tests is classified as a nonswimmer.

The nonswimmer area should be no more than waist to chest deep and should be enclosed by physical boundaries such as the shore, a pier, or lines. The enclosed beginner area should contain water of standing depth and may extend to depths just over the head. The swimmer area may be up to 12 feet in depth in clear water and should be defined by floats or other markers.

7. **Buddy System**

Every participant is paired with another. Buddies stay together, monitor each other, and alert the safety team if either needs assistance or is missing. Buddies check into and out of the area together.

Buddies are normally in the same ability group and remain in their assigned area. If they are not of the same ability group, then they swim in the area assigned to the buddy with the lesser ability.

A buddy check reminds participants of their obligation to monitor their buddies and indicates how closely the buddies are keeping track of each other. Roughly every 10 minutes, or as needed to keep the buddies together, the lookout, or other person designated by the supervisor, gives an audible signal, such as a single whistle blast, and a call for "Buddies." Buddies are expected to raise each other's hand before completion of a slow, audible count to 10. Buddies that take longer to find each other should be reminded of their responsibility for the other's safety.

Once everyone has a buddy, a count is made by area and compared with the total number known to be in the water. After the count is confirmed, a signal is given to resume swimming.

8. **Discipline**

Rules are effective only when followed. All participants should know, understand, and respect the rules and procedures for safe swimming provided by Safe Swim Defense guidelines. Applicable rules should be discussed prior to the outing and reviewed for all participants at the water's edge just before the swimming activity begins. People are more likely to follow directions when they know the reasons for rules and procedures. Consistent, impartially applied rules supported by skill and good judgment provide stepping-stones to a safe, enjoyable outing.

9.

For more information regarding Safe Swim Defense, go to www.scouting.org/HealthandSafety/Aquatics/safe-swim.aspx.