MERIT BADGE SERIES

CANOEING

Scouting America

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"Enhancing our youths' competitive edge through merit badges"

Scouting America

Note to the Counselor

Canoeing Merit Badge Counselor Requirements

All counselors should have formal training in the knowledge and skills indicated by the requirements, experience in teaching such skills to youth and experience in identifying and managing risks associated with the activities involved. For the Canoeing merit badge, appropriate credentials include: current or previous certification as a Scouting America **Aquatics Instructor**, designation as an instructor or successful completion of council-sponsored or council-approved training courses in canoeing such as **Paddlecraft Safety**, or current or previous certification as an instructor in canoeing by the **American Canoe Association Level One**. With the assistance of the council aquatics committee, the council advancement committee may approve counselors with similar experience and training in knowledge, skill, safety, and instruction.

Notes on 2025 Requirement Changes

This edition completes a 30-year transition of the Canoeing merit badge from requirements that placed a greater emphasis on solo maneuvers, self-rescue, and individual strokes to an emphasis on **tandem paddling** using a limited number of basic strokes. At a focus group held during a National Aquatics Workshop, the recommendation made to bring into line the skills in the merit badge with the most common ways in which they are applied in Scouting—tandem paddling on unit outings either on calm or moving water.

Although there is value in learning to paddle solo, there is rarely the opportunity in Scouting to paddle a canoe alone. Scouts are taught the buddy system for important reasons. It is much easier for two Scouts to reach a destination paddling together than two Scouts paddling by themselves in solo boats. In inclement weather conditions, two paddlers are often essential to paddle against wind and waves.

To be effective in tandem paddling, Scouts must learn the primary roles of the bow and stern positions. **Teamwork is essential.** Good tandem paddling requires good communication, both verbal and nonverbal. In the best tandem paddling, communication is mostly unspoken. Each paddler in each position knows the purpose of each stroke and how to use them effectively together to move the boat in a desired path. One of most important lessons learned in tandem paddling is the principle of synergy, with the boat moving at a greater speed with both paddlers doing their strokes simultaneously rather than independently at different times.

After learning to paddle tandem, learning to paddle solo is an easy transition. Solo canoe paddling canoe skills can now be found in the Whitewater merit badge.

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Other changes in the requirements have been made to better align them with the instructional system of the American Canoe Association (ACA), the premier organization in the U.S. for teaching paddlecraft skills. The requirements now closely mirror the skills and maneuvers taught at the beginner level in the ACA learning system, Level 1. Thus, when seeking an appropriately trained Canoeing merit badge counselor, it can be assumed that a Level 1 ACA canoe instructor would be qualified. Another reason that tandem and solo paddling skills are no longer mixed is that experience in ACA courses has shown these skills are best taught in separate courses. Lastly, the terminology for the canoe strokes has been standardized to the names used in the ACA. The unique names previously used in Scouting, such as the pullover stroke, quarter sweep and diagonal draw, have been replaced by names generally accepted in the paddle sport community.

Another national-standard-setting group, the **American Boat and Yacht Council**, has published the Skills-based HUMAN-propelled Boat Standard as part of its National System of Standards for Recreational Boat Operation. This new national consensus-based standard is intended to guide the design and student assessment of courses involving entry level on-water, skills-based instruction in human-propelled recreational boats such as canoes and kayaks. The Canoeing requirements meet these standards, and the language of the requirements reflects the wording as suggested in the standard. Several current and previous members of the National Aquatics Subcommittee were participants in the development of these standards.

Finally, several new techniques have been added. Canoe rescues now include the parallel tandem canoe rescue, which was first developed for this merit badge. Entries now include the heel-hook, between-the-boat, and the use of a rescue sling. Use of a throw bag, which is new with this edition, also has been added along with new methods of coiling and throwing a rope or rescue bag. Swamping is now done in a controlled fashion to avoid the possibility of the canoe flipping over on the paddlers and injuring their heads.

Notes on Teaching the Canoeing Merit Badge

The majority of Scouts who earn the Canoeing merit badge do so at a council summer camp or aquatic center. In these settings, time available for instruction is limited. To be taught correctly, a minimum of 5 hours of instruction is required. The elimination of the many solo paddling skills and self-rescue now affords more time to focus on the teaching and deeper learning of tandem skills. These skills now are based on performing maneuvers correctly, not on demonstrating individual strokes.

Different combinations of strokes can be used to perform the basic maneuvers required in this merit badge. The seven required tandem maneuvers are: paddling forward in a straight line, paddling forward along a curved line, turning 90 degrees in either direction while moving forward, stopping, paddling back, pivoting in

both directions, and moving sideways to both sides. It is recommended that the strokes required for each maneuver be taught as part of the maneuver.

For example, after introducing the requirement for moving abeam, the draw and pushaway strokes should be demonstrated, taught and practiced as the way to perform this maneuver. This associates the stroke with what happens to the boat when the strokes are used. In place of asking a Scout to demonstrate a draw or pushaway stroke, the Scout must now demonstrate moving a canoe sideways with his paddling partner. Knowing the name of a stroke is important but not as important as knowing what it does and how to use it correctly. After successfully learning to move the canoe abeam, pivots can be taught using the same draw and pushaway strokes but with the addition of the forward and reverse sweeps as alternative combinations. These are turning strokes that can be used not only in pivots but also in paddling in a straight or curved line.

Paddling forward in a straight line is the most fundamental skill; the most essential stroke for both the bow and stern paddlers to do this is the forward stroke. This stroke must be learned and practiced correctly as it will be used thousands of times on any canoe activity. Performing it badly or poorly will lead to ineffective paddling and overuse of the arm muscles. Consistently doing the forward stroke in its proper form will require repeated practice and correction.

One of the best ways to engage Scouts is the use of appropriate games, the object of which is not entertainment but rather a method of providing controlled practice. They should focus on the use of specific skills and should never be just about winning. A game of Green Light–Red Light is a fun way to practice paddling in a straight line while stopping and starting multiple times. Alternatively, a competition to determine which set of paddlers can cover a specific distance in the fewest number of strokes will cause them to focus on efficiency and teamwork.

A summary of each of the strokes with **Minimum Performance Criteria** has been included with each maneuver. These criteria should be used to first teach and then evaluate and correct the performance of each stroke as part of the required maneuver. Scouts who fail a maneuver are likely failing because they are not performing the strokes according to these **Minimum Performance Criteria**. Angled paddles, poor blade placement, and incorrect grip hand positions can all contribute to an ineffective stroke and consequently a poorly performed maneuver. All instructors should be able to model and teach to these paddling standards.

Requirements

Scouts should go to www.scouting.org/merit-badges/Canoeing or check Scoutbook for the latest requirements.

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b. Move a canoe sideways (abeam) in one direction for 10 feet and then return to the starting position using the draw and pushaway strokes.

c. While in forward motion, stop the canoe within two boat lengths using the backstroke.

d. While in the stern position and without assistance from the bow paddler, paddle in a straight line 15-20 boat lengths using an appropriate steering stroke, e.g., the J-stroke or thumb-down rudder stroke with or without a stern pry.

e. Move the canoe in a straight line 15-20 boat lengths with the bow paddler using as necessary the forward stroke, draw stroke or forward sweep and the stern paddler using an appropriate steering stroke, e.g., the J-stroke or thumb-down rudder stroke with or without a stern pry.

f. While maintaining forward motion, turn the canoe 90° in an arc to the right in 5-10 boat lengths with the bow paddler using as necessary either the draw stroke or forward sweep and the stern paddler using only the forward stroke. Repeat the maneuver turning the canoe 90 degrees to the left.

g. Move the canoe backward in a straight line 3-4 boat lengths using as necessary the back stroke, reverse sweep or draw stroke in the bow or the stern.

h. Complete a figure of 8 course around markers 3-4 boat lengths apart using appropriate strokes including the draw stroke, and the forward and reverse sweeps.

Introduction

Earning the Canoeing merit badge will introduce you to the wonderful world of canoeing. The skills you learn will embark you on a lifetime of canoeing experiences.

The word *canoe* originates with Christopher Columbus and his report that the Arawak Indians from the West Indies used a seagoing boat, or *kenu,* made from a hollowed-out tree trunk. The American Indians of the northeastern woodlands used the boats that we call *canoes.* The birch-bark canoe they perfected had a wood frame covered with sheets of birch bark that were sewn together with white pine root and sealed with pine or spruce resin.

When European explorers arrived in North America, they quickly adopted the birch-bark canoe as the best way to move people and goods. For several centuries, the canoe was a primary method of travel for explorers and settlers. During the 1880s, canoe companies in Old Town, Maine, began making canoes of wood and canvas. These boats became very popular, and canoeing became a fashionable weekend activity.

In the 20th century, canoes made of new materials in new shapes and designs replaced the wood-canvas canoe. Aluminum canoes appeared in large numbers after World War II, when several aircraft manufacturers retrofitted their production lines to build canoes from metal. Today, plastics and other advanced materials are used to make boats for many kinds of recreational and competitive paddling.

The benefits of earning the Canoeing merit badge will continue throughout your life. Canoeing in Scouting America most commonly is a two-person activity, teaching communication, teamwork, and physical fitness. Other benefits include being in and observing nature. You will experience the ecology of lakes and rivers, which will help you understand why it is important to preserve these resources for future generations.

Whether you become a lifelong paddler or try canoeing for the first time at Scout camp, remember to enjoy your experience. If it isn't fun and rewarding, it is not canoeing.

Birch-bark canoes were lightweight and easy to carry, and they could hold a load of paddlers and supplies.

Safety and First Aid

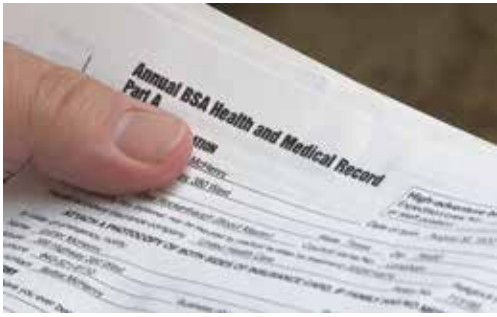
When earning any of the aquatic merit badges, it is important to follow safety rules and use self-discipline and good judgment. Canoeing will be among the most memorable of your Scouting experiences if you understand and follow the nine points of Safety Afloat. These guidelines were developed to promote boating and boating safety and to set standards for safe unit activity afloat. They apply to all canoeing activities.

Safety Afloat

The following version of the Safety Afloat policy has been modified for this merit badge. The complete version is found in the *Guide to Safe Scouting.*

1. Qualified Supervision. All canoeing activities 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 nine points of Safety Afloat. That supervisor must be skilled in safe canoeing, knowledgeable in accident prevention, and prepared for emergency situations. If the adult with Safety Afloat training lacks the necessary canoe 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. 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 Safe Swim Defense standards. It is strongly recommended that all units have at least one adult or older youth member currently trained in Aquatics Supervision: Paddle Craft Safety to assist in the planning and conduct of all canoeing activities.



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 canoe is limited to youth and adults who have completed the Scouting America swimmer classification 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.

Anyone not classified as a swimmer may paddle or ride in a canoe as a buddy with an adult swimmer skilled in that craft.

4. Life Jacket. Properly fitted, U.S. Coast Guard–approved life jackets must be worn by every person in a canoe. Type III life jackets are recommended for general recreational use.

5. Buddy System. All participants 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 canoes are used on a trip, each canoe should have a buddy boat. All buddy pairs must be accounted for at regular intervals and checked off the water by the qualified supervisor at the end of the activity. Buddies either ride in the same canoe or stay near one another in single-person canoes.

6. Skill Proficiency. Everyone in a canoeing activity must have enough knowledge and skill to participate safely. Passengers should know how their movement affects the canoe's stability and should have a basic understanding of self-rescue. Paddlers must meet government requirements, be able to control the canoe, know how changes in the environment influence that control, and participate only in activities that are within their or their group's capabilities.

- Participants should be instructed in basic safety procedures prior to launch and allowed to proceed once they have demonstrated the ability to control the canoe adequately to return to shore.
- Before embarking on a long float trip or outing lasting more than four hours, paddlers should have either three hours of canoe training and supervised practice or should be able to successfully complete a 100-yard course and recover from a capsize.
- Unit trips on Class III whitewater must be done with either a professional guide in each canoe or after all participants have received American Canoe Association or equivalent training for the class of water and type of craft involved. Unit trips on Class IV whitewater are allowed only in rafts with a professionally trained guide in each raft. Trips above Class IV are not allowed.

Minimum training takes at least 3 hours.

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

Preparation. Any canoeing activity requires access to the proper equipment and transportation of gear and participants. 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 float plan, noting put-in and pull-out 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 forecast just before setting out, and keep an alert weather eye. Anticipate changes and bring all canoes ashore when rough weather threatens. Wait at least 30 minutes before resuming activities after the last 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 departments, or ranger stations. Check your primary communication system, and identify backups, such as the nearest residence to a campsite. Cellphones and radios may lose coverage, run out of power, or suffer water damage.

8. Equipment. All canoes must be suitable for the activity and seaworthy, and must float if capsized. All canoes 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 Class II and above. 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.

9. Discipline. Rules are effective only when followed. All participants should know, understand, and respect the rules and procedures for safe canoeing activities provided by Safety Afloat guidelines. Applicable rules should be discussed before the outing and reviewed 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 steppingstones to a safe, enjoyable outing.

Prevention goes hand in hand with mitigation, which means "to lessen in force or intensity" and "to make less severe." By taking precautions to manage risk and the possibility of injury, you can be prepared to anticipate, help prevent, mitigate, and respond to just about any incident that might happen.

First Aid

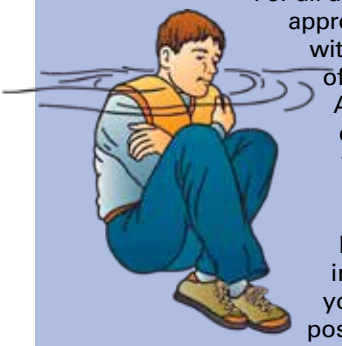
Following the nine points of Safety Afloat reduces many of the serious risks in canoeing, but some major and minor injuries still might occur. First aid for some of the temperature-related injuries can be lifesaving while treatment for other conditions is less urgent.

Because canoeing is a physical activity that takes place in the outdoors, participants are at risk for a range of injuries.

COLD-RELATED INJURIES

There are two primary cold related dangers encountered in canoeing. The first is cold-water shock which a paddler can experience by falling into very cold water. The second danger is hypothermia, which is a gradual lowering of the body's core temperature caused by spending minutes to hours in water or being in wet clothing when the air is cooler than 70 degrees.

Cold-water shock occurs when a paddler falls into very cold water, especially below 60 degrees. The colder the water, the more severe the effects. The first response will be the reflex to take a deep, gasping breath, which is dangerous if the paddler is underwater. Wearing a life jacket could save the paddler's life in this case. Next the paddler will start taking many quick, short breaths, as if panting for air. This can make the paddler light-headed and dizzy, unable to hold his or her breath. The paddler will also likely lose any sense of up and down, and his or her heart rate and blood pressure will go up. All of these effects can occur in about 60 seconds. It is important that you concentrate on self-rescue initially. If that is not possible, minimize your exposure to the water by using the HELP position (see box below) and wait for help.



For all activity afloat on cold water or in cold weather, appropriate clothing should be worn for warmth, with the life jacket worn at all times. A dry change of clothes should be available in case of a spill. Activity afloat should include procedures and equipment for warming anyone showing symptoms of chill.

If alone in cold water and more than a short distance from safety, you can reduce heat loss by avoiding movement, using clothing and the life jacket for insulation, keeping your head above water, and maintaining a tuck position. This is called the heat escape lessening posture (HELP).

The only treatment for cold-water shock is to get the paddler out of the water **immediately**. They might need to be treated for hypothermia. Take care when paddling in cold waters. The best prevention for cold-water shock and related injuries is to dress appropriately for the weather and stay dry.

Hypothermia occurs when the body's core temperature falls below the normal range. Exposure to cold, or even cool, water can lower your core temperature dangerously. Early signs of heat loss include bluish lips and shivering. Further cooling will upset the ability to think clearly and to do simple tasks. Further chilling will lead to unconsciousness and, eventually, death.

Treatment for **hypothermia** involves carefully removing the person from the water, removing wet clothing, and drying the person. Put them in warm, dry clothes and wrap him or her in blankets. Be sure to cover the head, as most heat loss occurs there. Warm the trunk first, not the hands and feet as this can cause shock. If using hot-water bottles or chemical hot packs, wrap them in cloth; don't apply them directly to the skin. Place the heating sources on the chest, neck, and groin. Avoid rough handling of the person, especially if they are lethargic or unconscious. This may cause the heart to develop life-threatening irregular rhythms. If conscious, give the person a warm drink. Avoid caffeine or alcohol. Once the body temperature begins to rise, keep the person dry and in a warm blanket with the head and neck covered. Avoid rapid rewarming, as it can induce fatal heart rhythms.

Frightened or anxious victims might breathe too heavily or too deeply, which can result in hyperventilation. Calmly encourage the person to relax and breathe slowly.

HEAT-RELATED INJURIES

Heat-related illnesses result when the body cannot keep itself cool enough. When the surrounding temperatures are above normal body temperature, the body will begin to absorb heat. An important way to cool the body is through sweating. If a person is dehydrated and cannot sweat, the risks of heat-related illnesses go up dramatically. For this reason, avoid exercising outdoors when the temperature and humidity are high.

Before setting out during hot weather, check with the National Weather Service to find out the predicted heat index. If the air temperature is 90 degrees and the relative humidity is 100 percent, the heat index—how hot it feels—is 132 degrees. Heat index values are calculated for shady conditions with a light wind; direct exposure to sunlight can increase heat index values by as much as 15 degrees. Strong winds, especially with very hot, dry air, can also be extremely hazardous.

A body temperature of 106 degrees or greater is a life-threatening medical condition and requires immediate medical treatment by health-care professionals.

If someone feels dizzy, faint, nauseated, or weak; develops a headache or muscle cramps; or looks pale and is sweating heavily, treat for **heat exhaustion.** Have the person rest in a cool, shady spot. Loosen or remove clothing to promote heat loss. Wet the skin with a damp cloth and then fan to promote cooling through evaporation. Have the victim sip water or a diluted sports drink. Gently massage and stretch cramped muscles. If the condition worsens, get medical help. Recovery should be rapid but may take up to 24 hours.

Heatstroke can be caused by dehydration (water loss), overexercising, or both when the heat index is high. The victim may be wet or dry but always will be flushed and hot. The pulse will be extremely rapid, and the person may be disoriented or unconscious. Cool the victim immediately by placing cold packs in the groin area and armpits. Increase the body's fluid level by having a conscious victim sip water. Seek emergency help immediately and treat for shock.

Sunburn is a familiar condition commonly associated with aquatic activity. Remember that sunlight reflected from the water surface can be as damaging as direct exposure. Cover up and use a waterproof sunscreen with a sun protection factor (SPF) of at least 15. Apply every two hours, and limit your exposure time. If your skin begins to redden or if you feel discomfort, get out of the sun or cover the area with clothing that will block the sun's rays.

OTHER MINOR INJURIES

A **blister** is a small pocket of fluid that forms when the skin is irritated. Blisters often occur when the paddle shaft rubs against the paddler's thumbs or the pads of the fingers. Help prevent blisters by keeping your hands and fingers as dry as possible. Wearing gloves designed for paddling will help. Protect a **hot spot** or blister with a piece of moleskin or molefoam and a waterproof bandage. Blisters are best left unbroken, but if a blister bursts, treat it as you would a minor cut or abrasion.

Losing more water than you take in can lead to **dehydration.** Symptoms of mild dehydration include increased thirst, dry lips, and dark yellow urine. Symptoms of moderate to severe dehydration include severe thirst, dry mouth with little saliva, dry skin, weakness, dizziness, confusion, nausea, cramping, loss of appetite, decreased sweating (even with exertion), decreased urine production, and dark brown urine.

For mild dehydration, drink one to two quarts of water or a sports drink over two to four hours. Rest for 24 hours and continue drinking fluids. See a physician for moderate dehydration; severe dehydration requires emergency care. Prevent dehydration by drinking plenty of fluids while you are canoeing, both in hot and cold weather. Drink enough so that your urine stays clear.

A **sprain** usually indicates that a ligament was overstretched or possibly torn, such as when the joint is put in an unnatural position and force is suddenly applied to the joint. For canoeists, sprains are more likely to affect the arm and shoulder joints.

A **strain** can happen when muscles are made to work extra hard or are overused. Because a canoeist uses the same muscles repeatedly, the muscles and tendons can become strained.

Pain, swelling, and spasms often accompany sprains and strains. The pain from a joint sprain is immediate. Muscle strains may not be painful until the day after a muscle is used over and over. The muscle/tendon or ligament will then begin to swell. Once pain and swelling occur, the muscles surrounding the injured area often will begin to contract and tighten (spasm).

Treating Sprains and Strains

The treatment of sprains and strains involves rest, immobilization, cold therapy, and elevation, or RICE therapy.

R = Rest. Avoid any movements or activities that cause pain.

I = Immobilize. Stabilize the injured area in the position that it was found or that is most comfortable. If the person must be moved, a splint and/or sling may be needed.

C = Cold. Use a cold pack or crushed ice wrapped in a thin towel to reduce pain and swelling. Apply to the injured area for no more than 20 minutes to avoid ice burn or frostbite. Remove the pack for 40 to 60 minutes before repeating.

E = Elevate. If possible, hold the injured area above the level of the heart to reduce swelling.

Type I

Type II

Type III

Type IV

Type V

Life Jackets

A life jacket should be worn properly every time you paddle a canoe, whether on a peaceful lake, a slow-moving stream, or a whitewater river. The labeling on life jackets has changed recently, combining the requirements of the United States and Canada into a single standard and providing a simple way of understanding how the life jackets should and should not be used. The standard is similar to the standard used in Europe, so an approved life jacket can also be worn there.

In the 1980s, the U.S. Coast Guard created four wearable life jacket "types" and one throwable flotation "type" for recreational boaters. These categories of Type I, II, III, and V (wearables) and Type IV (throwable) are no longer being used. Life jackets with labels using these categories that were previously approved by the U.S. Coast Guard can still be worn until they do not meet USCG standards. This means the straps, zippers and buckles must all work, the label is legible and there are no rips or tears in the fabric or changes to its construction.

In the new classifications, there are still two categories of life jackets, wearable and throwable, but they are classified into four levels depending on their *buoyancy*. Buoyancy measures the force that pushes an object up when it is floating and is measured in Newtons. The new life jacket buoyancy or performance levels are 50, 70, 100, 150 and 275 Newtons. Here are how these levels compare with the older "types" of life jackets:

Performance Level/Icon	Previous "Type"	Uses
	None	Not currently approved for boating by the USCG. Will be used for water skiing, wakeboarding.
	Types II and III	***Near Shore Buoyant Vest*** **(Type II), horse-collar shape.** ***Flotation Aid*** **(Type III), best for paddling; level 70 is recommended for canoeing.**
	Type I	***Offshore Life Jacket,*** **Used for passengers on cruising vessels, such as ferries on large bodies of water.**
	Type I	Level 150 life jacket will be similar to current offshore inflatable life jacket. Not recommended for canoeing.
275	Type I or V	Used for extreme conditions. Intended for commercial users.

Besides the buoyancy level, the label will show the ability of the life jacket to turn an unconscious person from floating face down to floating face up. The label will also indicate for what types of water sports the life jacket should *not* be used.

The new labels will use icons or pictures instead of words for the performance levels, turning ability and usage warnings:

	Meaning
	**Has no self-turning ability**
	**Will turn most unconscious wearers face up**
	**Warning symbol**
	**Do not use with towing water sports**
	**Do not use for towing tubes**
	**Do not use for personal watercraft**
	**Do not use for whitewater (Class II or higher)**


EXTRASPORT®
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ADULT
SIZE: EXTRA SMALL MODEL
CHEST SIZES: 32" - 34" IMPACT CLASS 30 MPH H-9
UNITED STATES COAST GUARD APPROVAL
NO. 160.064/1967/0
TYPE III PERSONAL FLOTATION DEVICE
INSPECTED AND TESTED IN ACCORDANCE WITH U.S. COAST GUARD REGULATIONS. APPROVED FOR USE ON ALL RECREATIONAL BOATS AND ON UNINSPECTED COMMERCIAL VESSELS LESS THAN 40 FEET IN LENGTH NOT CARRYING PASSENGERS FOR HIRE, BY PERSONS WEIGHING MORE THAN 90 POUNDS.
POLYVINYL CHLORIDE FOAM
BUOYANT MATERIAL PROVIDES A MINIMUM BOUYANT FORCE OF 15½ POUNDS
SAILING, KAYAKING OR CANOE

Before you put on a life jacket, check that there is a U.S. Coast Guard approval number on it.

Sizing a Life Jacket

To be effective, a life jacket must be fitted and worn properly. Make sure that all side straps are adjusted to fit snugly, all ties are appropriately tied, all zippers are zipped, and all buckles are fastened. To check the fit, perform the shoulder strap test with a partner: Stand behind your partner and firmly pull up both shoulder straps. If you can pull the shoulder straps up to ear level, your partner should readjust the life jacket or try a different style or size. In calm, shallow water, test the fit of your life jacket by relaxing your body and tilting your head back. A properly fitted and sized life jacket will keep your chin well above water. If this does not occur, readjust your life jacket or try one with a higher buoyancy rating (found on the label).

Zip up and clip buckles.

Check buddy's buckles and straps.

Tighten buddy's side straps.

Life jacket is too loose.

Life jacket fits correctly.

Life jacket fits snuggly; straps stay on shoulders.

Common Paddling Hazards

Safe canoeing includes being aware of potential weather and water-related hazards such as storms, wind, and waves. Always be prepared for unexpected weather and water conditions. Check weather advisories before starting, and know what to do when hazardous conditions occur.

STORMS

Depending on the area and the time of year, storms can be predicted with some regularity. However, storms can develop at any time and with a speed that surprises even the National Weather Service.

Once you notice an approaching storm, get off the water as quickly as possible. Carry the canoes onto shore and use ropes to secure them from blowing winds and large waves. If caught in a storm, stay low and get to shore. Be prepared to bail water out of the canoe if the rain is heavy.

If you see lightning, keep a low profile in the canoe until you reach shore. During a lightning storm, get off and stay off the water and away from open or exposed shorelines. On shore, stay away from tall geographical features such as trees. Remove your life jacket, place it on the ground, and squat on it.

Near an ocean or a large body of water, winds blow toward the land during the day and toward the water at night.

Knowing the local weather patterns, such as the direction from which storms come during certain times of the year, will help you spot a storm before it is upon you.

WIND AND WAVES

Wind and the waves it creates have the potential to give you a thrilling ride or to swamp your boat. Learning about wind and waves and the hazards they create is an essential part of canoeing.

Wind is created when air moves from a high-pressure area to a low-pressure area. Usually absent in the early morning, wind increases as the rising sun heats the ground and air throughout the late morning and early afternoon. Winds often reach maximum strength by midafternoon. By sundown, they usually subside to an occasional breeze.

Waves result when wind collides with the water. A keen eye will see the ripple effect on the water surface as a gentle wind moves across it. As the wind increases, so will the size

of the waves until they become frothy whitecaps. Waves can become so big that they can easily swamp a canoe.

Always anticipate wind as part of any canoeing activity. If you are on a canoe trip, start before the winds increase and land before midafternoon to avoid the peak wind periods. Paddle along the shoreline to minimize the effects of wind and waves. Whether paddling with or against the wind, it is wise to work your way gradually to the downwind side of an island or point of land. If strong winds make paddling difficult, go ashore and take a break until the winds die down enough to make paddling safe and fun again.

When the wind starts really blowing and waves begin to build, kneel in the canoe to keep your center of gravity low and reduce the chances of the boat capsizing.

Do not attempt to paddle across a large lake when strong winds are likely.

Storms result when air masses of different barometric pressures meet. When cold, dry air meets warm, moist air, the cold air wedges under the warm air and cools it. As the warm, moist air cools, it condenses into rain.

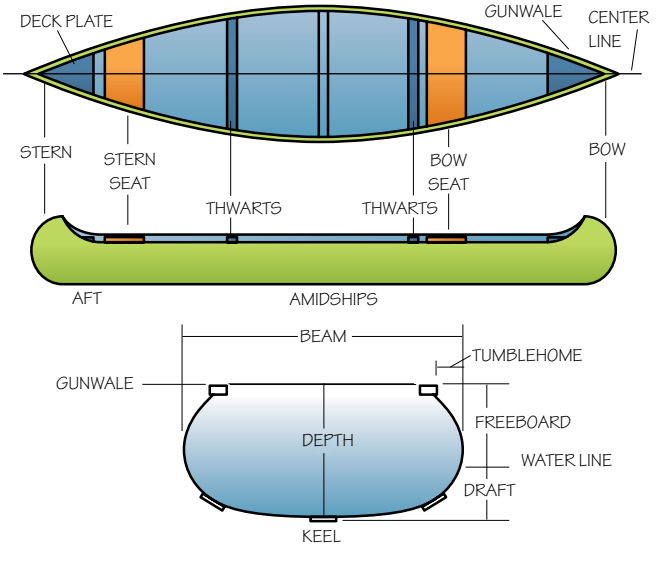
Canoes

The canoes you learn to paddle are likely to be whatever boats are handy—at a camp or local watercraft organization, or boats available to your family or neighbors. As you move beyond the basics, you might want to find a canoe that better matches your activities on the water.

Parts of a Canoe

The body of the canoe is the **hull**. The front end is called the bow, and the back end is called the **stern**. Each end is covered with a triangular reinforcement called a **deck plate**. Ropes attached to the bow and stern are called **painters**. **Amidships** is the midsection of the canoe. The length of a canoe spans from the tip of the bow to the tip of the stern, and the width of the canoe at amidships is its **beam**. The length of the hull that comes in contact with the water is the **waterline**.

In this pamphlet, the first mention of terms found in the glossary is shown in **bold**.



Gunwales (pronounced "gunnels") are rails that run along the top edge of both sides of the canoe. Gunwales add strength to the hull and help it keep its shape. Braces, called **thwarts** (pronounced "thorts"), span the width of the canoe and provide rigidity and support. Some canoes also have a small **keel**, a ridge that runs the length of the bottom of the canoe along its **center line**. A keel improves a canoe's ability to travel in a straight line but hinders its ability to turn. When you are facing forward in your canoe, **ahead** is the direction in front of the bow, and **astern** is the direction behind the boat.

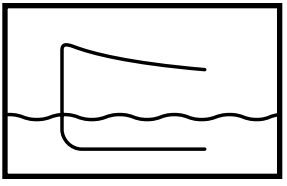
Canoe Shape and Performance

A canoe's dimensions affect how the canoe will perform on water. For example, a longer waterline enhances speed and improves *tracking,* the ability to go straight. A keel further improves a canoe's tracking ability.

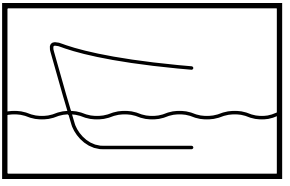
LENGTH

The length of the waterline of a canoe varies depending on the length of the hull and the shape of the canoe's ends. Canoes with a longer waterline glide farther and go faster with each stroke and can carry a heavier load than a shorter boat. A 17-foot canoe on flat water would hold more cargo and go faster than a 13-foot canoe. The ability of a canoe to go straight is called **tracking**. Longer canoes track better than shorter boats because they are harder to turn out of a course once in motion.

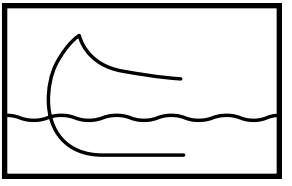
The contour of the ends of a canoe as seen from the side is called the stem. Stems can be straight (**plumb**), slated (**raked**) or curved inwards (**recurved**). The curve of the hull from bow to stern is the **rocker**, like the bottom of a rocking chair. The more curve in the rocker, the shorter the waterline. A canoe with a lot of rocker can turn and spin easily and is suited for whitewater paddling, which often involves quick navigation



The canoe with the longest waterline length will have a *plumb* stem and will track better and go faster.



A *raked,* or slanted, stem prevents waves from splashing into the canoe.



A *recurved* stem, or one that curves inward, gives the canoe its traditional shape.

WIDTH

The width of a canoe, or its *beam,* mainly affects stability. Wider canoes can carry bigger loads and are less likely to tip over. The width of the bow also is a factor in a canoe's performance. A narrow, pointed bow cuts through the water like a knife. A wider, blunt bow more easily navigates waves and deflects rocks. A bow that is longer and narrower than the stern—asymmetrical, or irregular in shape—will slice through the water better than a symmetrical one, increasing the speed of the canoe.

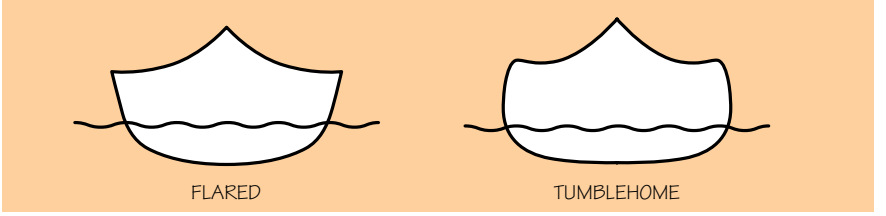
DEPTH

The taller the sides of the canoe, the more equipment and weight the boat can carry. More depth also prevents waves from washing into the canoe. But taller sides mean the canoe is more vulnerable to wind. A canoe of lesser depth resists the wind, but it is more likely to take on water on a windy day when the waves are choppy.

HULL SHAPE

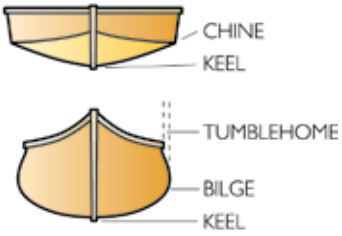
Canoes with flat bottoms are easy to turn, allow for better sideways movement, and feel more stable. Canoes with rounded bottoms are easy to lean to one side and lean back up again, but they can feel easy to tip over. Shallow V-shaped hulls have some characteristics of each type.

Flared sides curve outward to deflect waves. Whitewater canoes often have flared sides. Inwardly curved sides, or *tumblehome,* decrease the distance between the gunwales, making it easier to paddle efficiently.



The point of the hull where the bottom curves into the side of the canoe is the **bilge**. A **chine** in boating refers to the angle between the side and the bottom of the hull.

It is acceptable for Scouts to use an outrigger canoe to fulfill the Canoeing merit badge requirements.



A canoe with straight sides and a flat bottom has a hard chine with almost a 90-degree angle where the side and bottom meet. This canoe has **primary stability**; that is, it does not easily tip and will stay upright if leaned over quite far. However, once the tipping point is exceeded, the boat will easily flip over and cannot be stopped by leaning back in the opposite direction. Aluminum canoes are good examples of boats that have good primary stability.

A canoe with a soft chine is rounded where the side and bottom meet and might feel unstable. This is called secondary stability. A canoe with a soft chine and good **secondary stability** is easy to lean over but can be quickly leaned back to an upright position. Whitewater boats and canoes used in freestyle paddling are designed to have good secondary stability so they can be purposely leaned to help in making a turn or performing an artistic maneuver

Recreational canoes range in length from 9 feet for a solo boat to 18 feet for a tandem boat. For most Scouts, a 15- to 17-foot canoe is about right.

Canoe Care and Maintenance

Store canoes out of the water and upside down in a covered area away from direct sunlight and extreme heat or cold. Do not store canoes with wooden gunwales on the ground. To prevent damage, do not drag a canoe across the ground or run it up onto the shore or into trees or rocks. Make sure to wipe sand, mud, and other debris out of the canoe after each trip, and make repairs as needed. Oil wooden gunwales, seats, and thwarts of a canoe at least twice a year.


RECTANGULAR BLADE
PEAR GRIP
T-GRIP
BEAVER-TAIL BLADE
BENT-SHAFT PADDLE
TULIP-SHAPED BLADE
CURVED-FACE BLADE
ASYMMETRICAL GRIP

Paddles

On even the shortest canoe journey, you will lift your paddle thousands of times, making a lightweight paddle worth plenty. Canoe paddles are made of wood, fiberglass, metal, plastic, or combinations of these. Shorter blades are best for shallow rivers, while blades that are long and narrow can be quieter and more manageable. A blade width of 7 to 8 inches is good for beginners.

The top of the paddle, where one hand is placed, is called the **grip**. The grip of your paddle should fit your hand smoothly and comfortably. The T-grip runs parallel to the blade (forming a T shape), giving the paddler precise control over the angle of the blade in the water. Paddlers who do a lot of turning, especially whitewater paddlers, prefer the T-grip. The pear grip looks like an upside-down pear on the end of the paddle. It is larger than a T-grip and allows for different hand placements. Symmetrical (looks the same on both sides) pear grips can be flipped over so that either side of the paddle blade can be used. Asymmetrical (each side looks different) pear grips are molded to fit the curve of the palm to improve comfort and help reduce fatigue. Flatwater paddlers usually prefer a pear grip.

Below the grip is the **shaft** or **loom** of the paddle. The shaft may be round or oval shaped. Oval shafts can be much more comfortable to hold onto while paddling. The **throat** is where the shaft and blade join.

The blade is the wide part of the paddle that is placed into the water. Blades have different shapes, lengths, and widths. Paddle blades have names that describe their shapes. A beaver tail blade has a rounded blade tip, an even width and tapers off at the throat. The otter tail has a slightly less rounded blade tip and is narrower at the bottom of the blade. Because these blades are narrower, usually about 6 inches wide, they are also longer. These blade shapes don't catch as much water with each stroke, which can make for less tiring and more enjoyable paddling on extended flatwater trips.

When not in use, hang paddles away from direct sunlight and extreme heat or cold. Make sure they have been wiped clean.

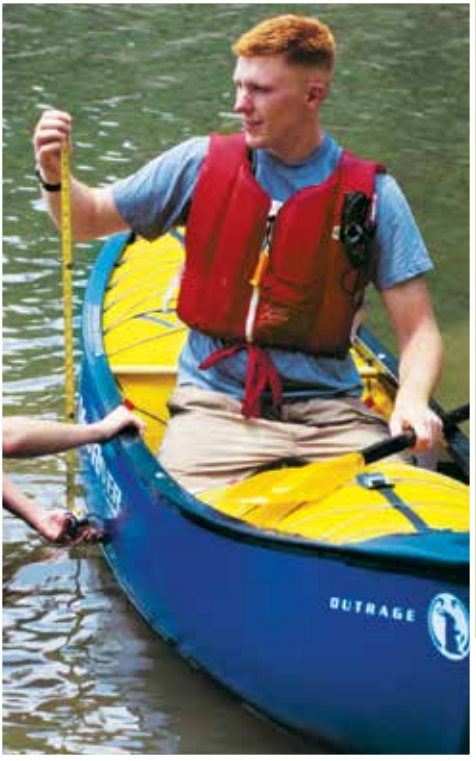
Sizing a Paddle

The length of the paddle you need depends in large part on the kind of canoeing you will be doing, whether you will be sitting or kneeling in your canoe, and whether the paddle is straight or bent. If you can, size your paddle while you are in the canoe in paddling position, either sitting or kneeling. Sitting or kneeling makes a difference because it changes the height of your torso above the waterline, and thus the length of the paddle shaft.

Place the blade in the water up to the throat. Keep the paddle vertical in the water while you do this. The grip should be between your shoulder and your chin for a proper fit.

To size a paddle while you are on land, crouch about the height you would be above the water if you were kneeling or sitting in the canoe. Put the grip on the ground. The throat of the paddle should be between your shoulder and nose.

Economy paddles come in standard sizes from 4 to 5½ feet in ½-foot increments. More expensive paddles come in finer increments. Proper paddle length is a matter of preference and feel rather than a precise measurement. As long as your paddle is within a few inches of the suggested guidelines, you will be able to learn the strokes properly. Before you buy a paddle, try out a range of sizes to see which best suits your paddling style.

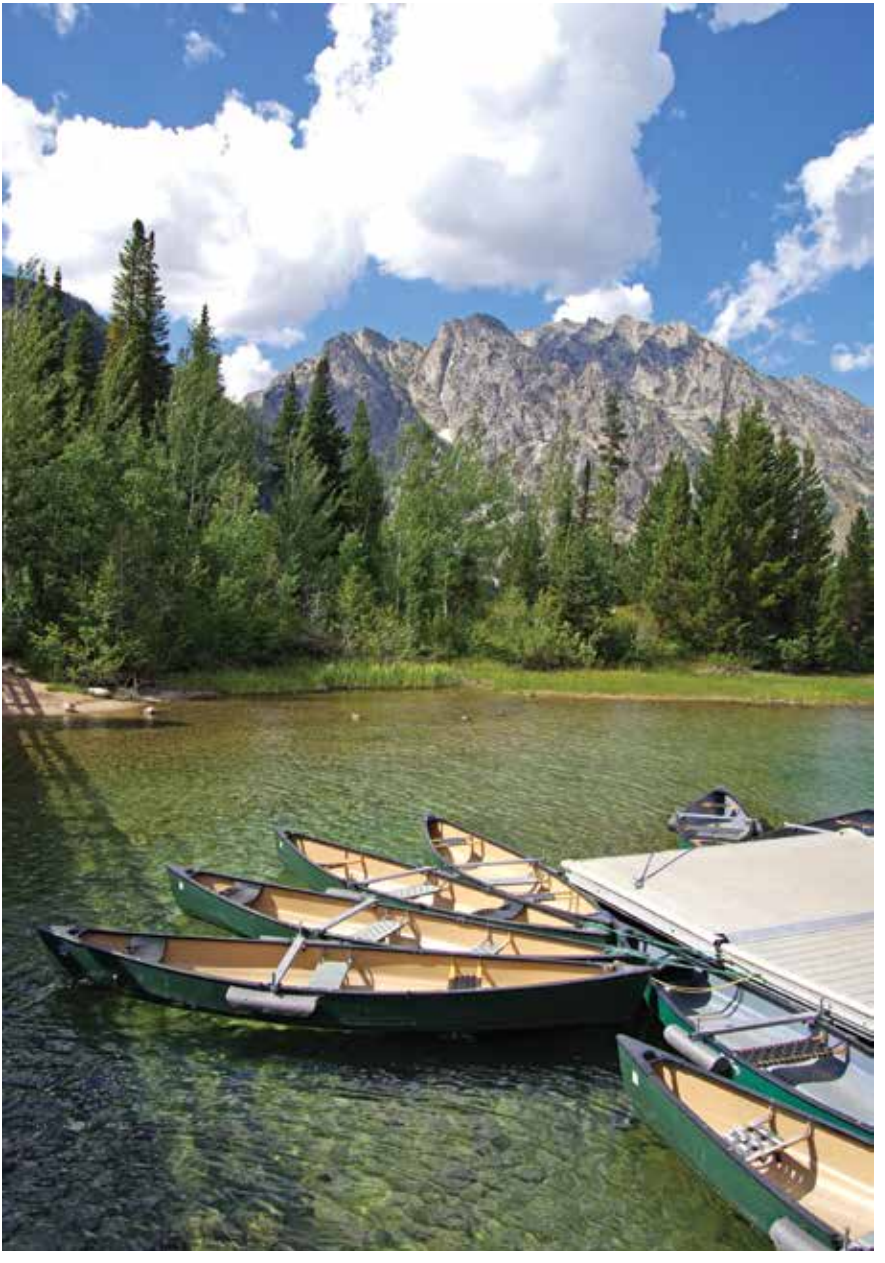


Rectangular shaped blades with rounded or square corners at the bottom are usually wider and shorter. They are designed to catch more water with each stroke. They are used when a powerful stroke is needed such as in whitewater or in competition. Blades can also be flat or curved. A curved face blade is more efficient for strokes like the forward stroke but are awkward to use for turning.

The end of the blade is called the tip. The tip of a paddle is easy to damage. To prevent damage to the tip, never rest the paddle on its tip on the ground or use the tip to push away from the shore or rocks. Place the tip on top of your foot if you need to rest it somewhere.

Paddles are made of a variety of materials. For many years, paddles were always made of wood. Today wooden paddles are made from solid pieces of wood or wood laminates. They can range from being plain and inexpensive to beautiful creations using multiple kinds of wood and can be very expensive. Most well-made wood paddles will have a protective layer made from a synthetic resin to prevent them from getting wet. Inexpensive wood paddles will have a simple coat of marine varnish that often wears off quickly and must be revarnished frequently to prevent them from splitting and cracking. Most paddles used by Scouts are made with plastic blades and grips with shafts made from aluminum. They are moderately priced and maintenance free and if properly cared for, will last for many years. The most expensive paddles are made from carbon fiber and fiberglass. They are extremely light and very strong. For any long trip or competition, these paddles are highly preferred. Even a difference of only a few ounces in weight over a multiday trip or in a race can provide a big advantage.

Tips on the toes, not in the dirt



Launching, Paddling Positions, and Landing

Before launching a canoe, put on your life jacket and shoes that you won't mind getting wet. Team up with another person to carry the canoe to the water.

Moving the Canoe From Rack or Trailer

Step 1—Face your paddling partner on opposite ends of the upside-down canoe. Place your top hand on the keel and your bottom hand on the deck plate. If the rack is permanent and has one level, turn the boat over and rest it on the rack before removing it. If the rack is on a trailer, lift the canoe up and move it clear of the rack.

Step 2—Decide in advance which way you will turn the canoe, then turn it over while holding on to it and without letting it touch the ground. If the canoe is too heavy to turn safely in the air, set it on the ground upside down and turn it over.

Step 3—From opposite sides, carry the canoe by the deck plates or handles.

Launching a Canoe

Moving a canoe from where it is stored on land to where it is to be launched and then safely getting into it requires teamwork and good communication. Most canoeing injuries take place while entering and exiting the canoe. For this reason, you should enter and exit the canoe only when it is *completely* in the water. Never bridge a canoe by having a part of one end above the water on the shore or dock with the other end floating. A bridged canoe is unstable and stepping into one can result in injury to the paddler or damage to the boat.

Enter, exit, or move about the canoe only when both hands are free of equipment or gear.

- Never enter or exit a canoe with something in your hands. Place all equipment including paddles, pads, water containers, sunscreen, etc. in the boat before entering it. When entering, exiting, or moving about the canoe, keep three points of contact with the boat: your hands on opposite gunwales while moving one foot at a time or keeping your feet in one place while moving your hands along the gunwales.
- Never stand in a canoe without three points of contact. Bend over and stay low as you move, keeping your center of gravity low. This will help prevent you from losing your balance as you move around in the boat and tip over the canoe.
- Never launch when part of the canoe is on the shore. The canoe must be floating when you enter it and remain floating after both paddlers are situated. Avoid contact between the bottom of the canoe and rocks, gravel, and sand because it can wear away the bottom of any canoe.

Tandem Perpendicular Launch

On a sloping shore or beach, the easiest and most stable way to launch the canoe is stern first at a right angle, or perpendicular, to the shore. After carrying the canoe to the water's

edge with one paddler holding the bow and the other holding the stern, each paddler moves toward the middle of the canoe while holding on to the gunwales and walking hand-over-hand along the gunwales until they are facing each other. The canoe should not touch the ground. They walk to the shoreline and hand-over-hand slide the canoe into the water, stern first, until the boat is floating and the bow is at the water's edge.

If the paddlers do not have the strength to hold the canoe while walking hand-over-hand to the middle, they can carefully set the boat down at the water's edge, walk to the middle of the canoe and pick it up by the gunwales. They can then place the canoe stern first into the water by moving hand-over-hand until the canoe floats free. Before anyone enters the canoe, the tip of the bow must be at the edge of the water.

When paddling tandem, only one paddler moves at a time. Having one paddler stabilize the canoe while the other moves is an easy way to prevent accidents. Once in the canoe, one paddler can use a paddle to keep the boat steady while the other paddler enters, exits, or moves about the canoe.

Step 1—The bow paddler steadies the bow with his or her knees while holding on to the bow deck plate.

Step 2—With his or her paddle already in the canoe, the stern paddler steps into the boat on the center line, facing the bow, then backs up to the stern and sits or kneels, keeping three points of contact.

Step 3—To steady the boat, the stern paddler places his or her paddle in the water up to the throat and holds the paddle shaft against the side of the canoe, locking the thumb of the shaft hand over the gunwale. The paddle blade should be parallel to the side of the boat to reduce side-to-side movement of the boat.

Step 4—Facing the stern paddler, the bow paddler uses three points of contact and moves to the middle of the canoe until the bow floats off the shore, then turns around and moves to the bow paddling position.

Step 5—As the bow floats free, the stern paddler backstrokes to move the canoe away from the shoreline and the bow paddler moves forward to his or her paddling position.

If you are launching into a current or wind, or if a turn would be difficult after launch, a bow-first launch might be appropriate. The same procedure as with the stern-first launch is followed, except that the bow paddler enters the boat first, facing the bow. Once the bow paddler is settled, the stern paddler enters from the water's edge and moves amidships, allowing the stern to float free of the shore. After the bow paddler has moved the canoe forward a few feet, the stern paddler can back up to paddling position.

Tandem Parallel Launch

When launching from a dock, riverbank, or lakeshore with a sharp drop off, the canoe should be parallel instead of perpendicular to the launch site. If standing on a dock or riverbank, place the canoe in the water just as you would for a stern-first launch. Standing amidships and facing your paddling partner, pass the canoe hand-over-hand into the water. Bring the canoe parallel to the dock or shore and place the paddles and equipment in the boat.

While the bow paddler holds the gunwale (kneeling or sitting if launching from a dock or shore), the stern paddler enters the boat at amidships and using three points of contact, moves to the stern and gets in a kneeling or sitting paddling position. Once in

position, the stern paddler can steady the canoe for the bow paddler by placing a paddle in the water. The shaft should be vertical, with the blade parallel to the side of the boat and the shaft held against the side of the canoe with the thumb of the shaft hand locked over the gunwale. The bow paddler then enters the canoe amidship and using three points of contact and moves to the designated paddling position in the bow.

Executing the Tandem Parallel Launch

If the middle of the canoe is loaded with gear, then the bow paddler steadies the boat by holding the gunwale amidship. The stern paddler enters at the stern with one hand on each gunwale and places one foot into the boat over the center line while the other foot is on the dock or shoreline. The weight of the paddler is then shifted onto the foot in the canoe and the other foot is moved into the boat. The bow paddler does the same while the stern paddler steadies the canoe with the paddle blade in the water and the paddle shaft locked over the gunwale with the thumb.

Shallow Water Launch

If entering the canoe from shallow water, walk the canoe into the water until the canoe is fully afloat and parallel to the shore. Be sure to load all equipment, including paddles, in the boat before putting it in the water. The water should be deep enough that the canoe will float with both paddlers in it but not so deep that it is difficult to raise a foot and put it in the canoe. One paddler should steady the boat while the other gets into position by stepping carefully onto the centerline of the boat. The first person in the boat then steadies the boat while the second person gets into position. If there is current, carefully consider which direction to point the boat, and who enters first. It is usually easier to point the boat downstream and the bow paddler enters the boat before the stern paddler.

When launching from a dock or bank, place each hand on top of the paddle shaft where it touches each gunwale. Lock your thumbs around the paddle shaft and hold onto the gunwales with your fingers.

Paddling Positions

Good position and body mechanics lead to effective paddling.

Sitting Position

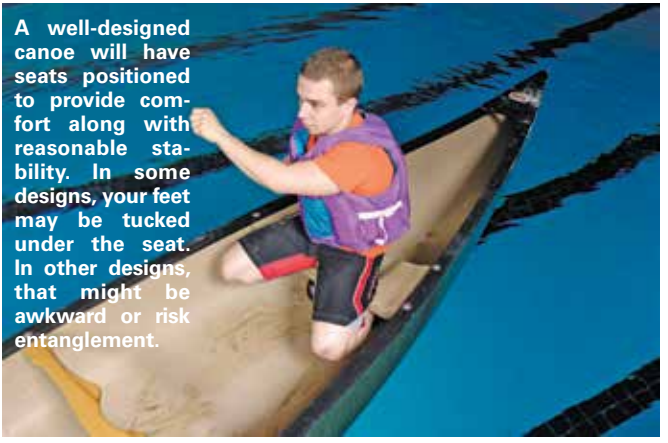
Canoes usually come with seats in the bow and stern. Consequently, the paddling position most commonly assumed by new paddlers in a canoe is a sitting one. This position is generally the most comfortable for long paddle trips. The legs should be extended in front of the paddler. When the legs are flexed at the knees and the knees are lifted, they interfere with the normal arm movements of the forward stroke. The lower the seats in the boat, the more stable the seated position becomes. The sitting position is appropriate for quiet water conditions. However, if there are winds and waves, then a kneeling position is the safest and most stable position in the canoe.

While paddling in the sitting position, sit up straight and do not bend forward.

Kneeling Position

In the kneeling position, the paddler's center of gravity is lower than in the seated position. This puts the paddler in a more stable position in the boat. When kneeling in the canoe, the paddler should sit up straight with their buttocks leaning against the seat or thwart behind them. Avoid kneeling with the back and upper legs in alignment. The body should be slightly shifted to the paddling side of the paddler so the knee is in the curved part of the hull. A kneeling cushion or pad of closed cell foam is almost always needed for the kneels even for short trips. Some canoes are not designed for the kneeling position with little room under the seat for the feet and lower legs. In these canoes, avoid getting the legs entangled by using only the sitting position.

The cruising position is the most stable kneeling position and it lends the most power to a variety of strokes.



A well-designed canoe will have seats positioned to provide comfort along with reasonable stability. In some designs, your feet may be tucked under the seat. In other designs, that might be awkward or risk entanglement.

Relief Position

Paddling in the kneeling position for extended periods of time can be uncomfortable for the knees and legs. An alternative position to either the full sitting or kneeling positions is the relief position. In this position the knee opposite the paddling side may be raised with the leg extended forward.

In the relief position, kneel on the knee closest to the paddling side and wedge it into the bilge. Extend the other leg in front of you, keeping the knee slightly bent.

Whether you canoe with a partner or alone, either kneel in the canoe or sit solidly on a seat for stability and more efficient paddling. Think of yourself as part of the canoe, locked in place.

Landing a Canoe

Land a canoe by reversing the steps you took to launch it.

Tandem Perpendicular Landing

Bring the canoe perpendicular to the shore with the bow at the water's edge. No part of the canoe should be resting on the shore. While the stern paddler stabilizes the boat in the stern with the paddle, the bow paddler should step out of the boat onto land. The canoe should remain fully afloat during this process. The bow paddler should exit first and stabilize the boat by holding the bow with their hands and between their knees. The stern paddler stows the paddle in the bottom of the canoe, moves to the bow using three points of contact, and steps onto the shore.

When landing, do not drive the canoe up onto shore. Over time, this will cause the bottom of the bow to wear all the way through the hull.

If the boat is going to be moved to a location for storage, remove paddles and gear before carrying the canoe onto land. Facing each other on opposite sides of the canoe, the paddlers should lift the bow of the canoe by the gunwales and walk toward the middle of the canoe while moving hand over hand on the gunwales. Once they are amidships, the boat is carried away from the water. When the canoe is completely clear of the water, the paddlers move back to their respective ends while holding on to the gunwales and walking hand-over-hand until they reach the bow and stern. The paddlers can then carry the boat to its desired location without the bottom of the canoe ever touching the ground.

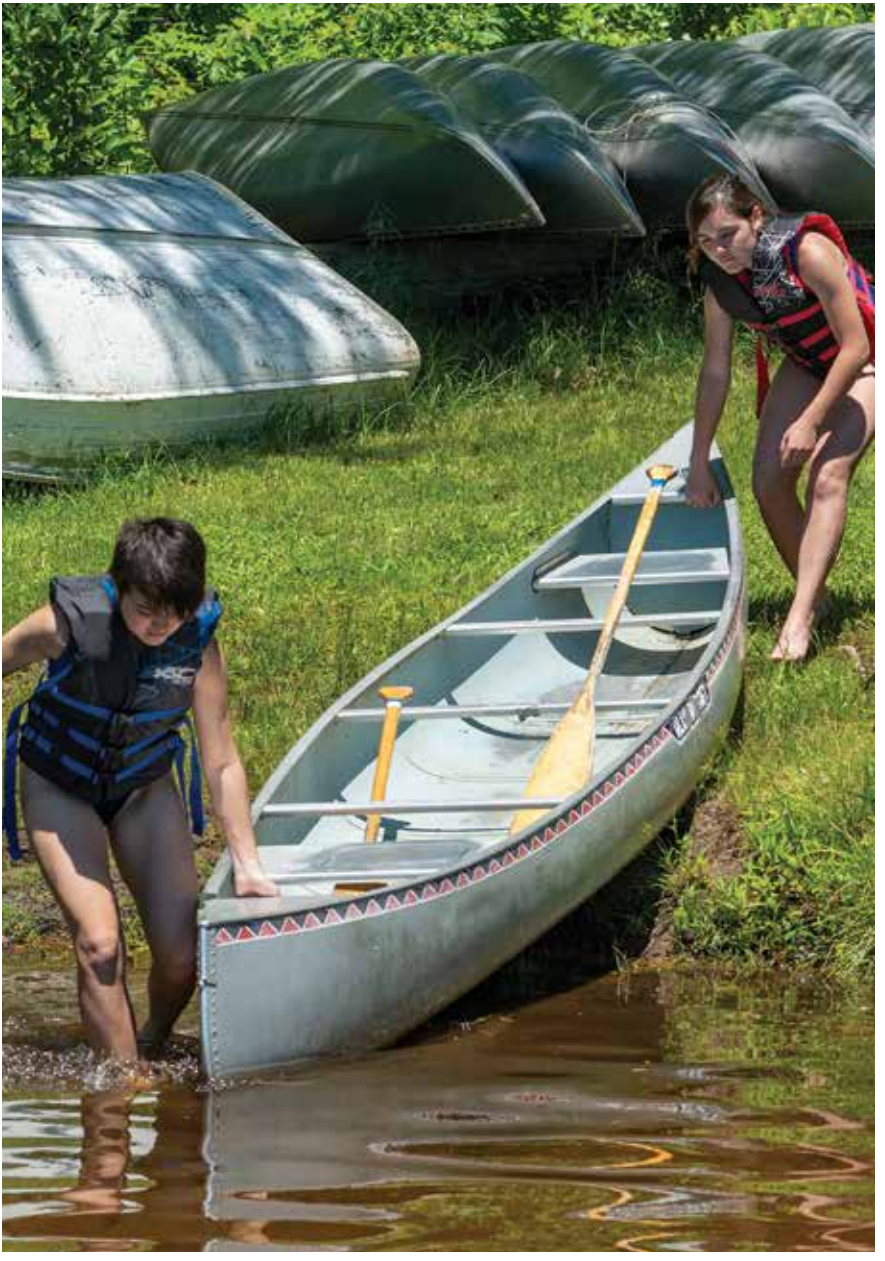
If the paddlers do not have the upper body strength to walk hand-over-hand to the ends of the boat, they may put the boat on the ground, go to the bow and stern, and carry the boat by its handles or deck plates.

Tandem Parallel Landing

When landing a canoe against a dock or a bank, or in shallow water, bring the canoe parallel to the shore or dock. Using an appropriate combination of strokes, e.g. draws and pushaways, bring the side of the canoe next to the landing site.

The stern paddler stabilizes the boat by holding on to the dock or bank, or by keeping the paddle in a locked vertical position on the opposite side. The bow paddler stows her or his paddle and backs up to amidships. Holding on to the gunwales, the paddler puts one foot ashore or into shallow water and exits by shifting weight to the landed foot.

Once out of the boat, the bow paddler turns to steady the canoe by holding on to the gunwales for the stern paddler. The stern paddler stows his or her paddle, moves amidships, and exits just as the bow paddler did. Both paddlers can lift out the boat by the gunwales or turn it so it is perpendicular and lift it out as though they had landed on the shore.



Paddling Tandem and Maneuvers

Tandem paddling provides Scouts with the opportunity to learn to work together in ways that complement each other. There are two paddling positions in the canoe, the bow and stern positions. Using the same stroke but in different paddling positions can make the boat perform differently. Tandem paddling requires learning both positions so that the two paddlers can work together to produce the desired result, e.g. going straight, pivoting, moving sideways.

Good Communication

Good communication is essential for effective tandem paddling. This communication can be both verbal and nonverbal. Usually the stern paddler, gives the verbal commands to paddle such as "paddle ahead," "hold water", "curve to the onside," etc. If the bow paddler wants to slow the pace, the bow paddler simply slows the rhythm and the stern paddler follows suit without having to say a word. Initially, until both paddlers have more experience with each other, an overabundance of verbal communication is required.

The two paddling positions, bow and stern, share common roles as well as have some important differences. Because the bow paddler cannot see the stern paddler, the bow

Paddling Commands

Ready?: Asks if the other paddler is ready to start
Paddle ahead: Move the canoe forward
Paddle back: Move the canoe backward
Hold water: Brake the canoe, stop it from moving
Let it run: Stop paddling and let the boat coast
Move abeam: Move sideways
Pivot to the onside: Spin the boat to the paddling side of the bow paddler.
Curve to the offside: Paddle in a curved path away from the paddling side of the bow paddler

paddler sets the pace of the strokes that are used in each maneuver. If the bow paddler wants to slow the pace, they can do so without having to verbalize it to their stern partner. However, if the stern paddler wants to change the pace, this will have to be communicated verbally.

Usually, the stern paddler does not specify which strokes the bow paddler will use when a command is given for a specific maneuver. Rather, the bow paddler chooses the most appropriate stroke for the conditions and the stern paddler follows with the appropriate, complimentary stroke. This is usually done without any verbal communication.

Synergy: Paddling in Unison

One of the most important principles of tandem paddling is "synergy." Synergy means both paddlers performing their strokes together at exactly the same time which produces a combined effect that is greater than the individual strokes performed separately. Thus, the stern paddler is constantly watching the bow paddler who sets the pace of the strokes. Each phase of each stroke should be matched identically. This includes power and turning strokes.

Paddling on Opposite Sides

Kayakers use double-bladed paddles to paddle on one side and then the other. The effects of a stroke on one side is countered by the effects on the other side. Canoeists use single-bladed paddles. Instead of switching sides as solo kayakers do, tandem paddlers in a canoe paddle on only one side and their partner paddles on the opposite side. It is essential then for tandem paddlers in a canoe to pick one side and only paddle on that

side. Switching sides should only be done when it is agreed that both paddlers will switch, as commonly happens when the muscles on the paddling side get tired.

Effective Paddling Mechanics

Each paddling stroke can be divided into three phases in a specific order. Think **CRP**:

Catch: When the paddle blade is placed in the water and pressure is applied by the upper-body muscles so that a resistance is felt.

Power: Energy is transferred from the muscles to the paddle. This is met by the resistance of the water. This transfer should be done as rapidly as possible to produce the greatest movement. Think of this part of the stroke as planting the blade in the water and pulling the canoe toward it.

Recovery: The paddle is returned to the catch position using the least amount of energy and as slowly as needed to give muscles an opportunity to relax and recover until the next stroke begins.


Catch


Power


Recovery

Paddle Blade Position: Vertical

To generate the most power during a canoe stroke it is important to keep the paddle blade as vertical as possible to the water for the forward, back, draw and pushaway strokes and as horizontal as possible for the forward and reverse sweeps strokes. The blade should kept as perpendicular to the water as possible for the longest period of time possible.

This principle is based on the law of physics that states that for every action there is an equal and opposite reaction. The greater the angle of the paddle blade is from being perpendicular to the water, the less power there will be directed toward moving canoe in the desired direction.

Left: Paddle shaft vertical, top hand directly above the lower hand. Above: Paddle shafts vertical, hands stacked.

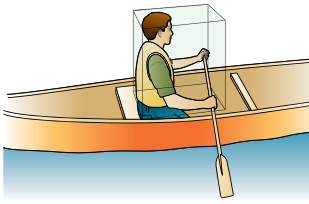
Maintain good posture. Sitting straight will allow you to balance the boat more easily and to use your muscles more efficiently. Avoid hunching or leaning forward and overreaching with your arms, especially in the forward stroke.

Sitting up with good posture, leaning back against the seat.

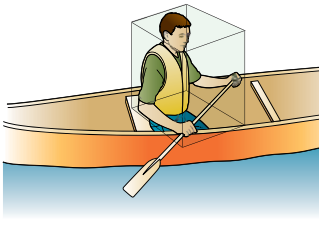
Avoid leaning forward.

Center your body over the boat. Keeping your head over your upper torso where your center of mass (CM) is located above the boat's center of buoyancy (CB) will help keep the boat balanced. Even when sitting or kneeling close to the side of the boat, you can still maintain good balance by following this principle.

Paddle in the box. Imagine a box about as wide as your shoulders, as high as the top of your head, and as low as the top of the gunwales. It extends forward from your back to as far as your arms will reach while keeping good posture. Keeping your hands and arms in this box while you paddle will help prevent muscle strain and help you use the larger muscle groups of your abdomen, shoulders, and back to power your strokes. It is also the safest way to paddle because staying in the box protects your shoulder joints from being put in unstable positions.



Rotate from the waist. If you rotate your upper body to perform each stroke, the large, strong muscles of the torso will power the stroke and prevent fatigue. As you paddle, imagine your torso twisting around your backbone. Following the paddle blade with your eyes will help you learn to rotate your torso through each stroke.



Course Direction is a Team Effort

The paddler in the stern position is better able to steer the canoe since the stern paddler is closer to the pivot point of the boat. That is why the J-stroke and Thumb-down rudder stroke are only performed in the stern. However, the bow paddler can also affect the direction of the canoe by making continuous course corrections with either the forward sweep and the draw stoke in concert with the stern paddler.

Maneuvers

There are seven required tandem maneuvers for the Canoeing merit badge:

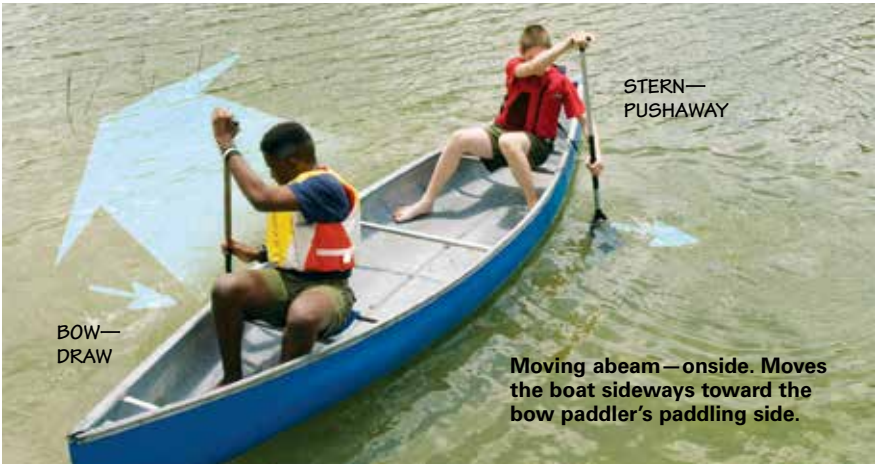
- Moving sideways to both sides.
- Pivoting or spinning in both directions
- Paddling forward in a straight line
- Stopping
- Paddling back
- Paddling forward along a curved line
- Turning 90 degrees while moving forward

Moving sideways (abeam) to both sides.

Moving sideways or abeam in the canoe requires the use of the draw and pushaway strokes at the same time but using opposite strokes in the bow and stern positions. If the bow

paddler does a draw stroke, the stern paddler does a pushaway and the boat moves to the onside. If the bow paddler does a pushaway stroke, the stern paddler does a draw stroke, and the boat moves to the offside.

Direction	Bow	Stern
Onside	Draw stroke	Pushaway stroke
Offside	Pushaway stroke	Draw stroke



Moving abeam—onside. Moves the boat sideways toward the bow paddler's paddling side.

To be effective, each paddler must perform each of the three stroke phases at the same time with the bow paddler taking the lead. The maneuver should be done slowly and in a controlled fashion using a minimum of strokes.

Draw stroke moves the canoe toward the side of the paddler:

- The paddler rotates their body 60-90 degrees from the front of the boat. Shoulders are parallel to the gunwale.
- For the **catch**, arms are fully and equally extended over the water with the hands stacked one above the other on the grip and paddle shaft. The blade should not be angled, and the paddle shaft should be vertical to the water. Grip hand should be no higher than shoulder level. Insert the blade into the water until it is fully submerged to the throat.
- The **power** phase is made by the torso muscles drawing the canoe toward the point in the water where the paddle is planted. The power phase is an accelerated motion.
- For flatwater conditions, an **in-water recovery** is preferred with the paddle blade remaining in the water. In whitewater, an **out-of-water recovery** is used if there

is a chance of the blade hitting obstacles under the water. The in-water recovery begins with the paddle reaching the side of the canoe. The grip hand rotates the paddle shaft and blade 90 degrees so the grip thumb is pointing away from the paddler. The paddle blade is perpendicular to the side of the canoe. The hands move away from the canoe until the arms are fully extended again while keeping the paddle shaft vertical and the grip hand directly above the shaft hand. Finally, the grip thumb is rotated back 90 degrees, so the blade is parallel to the side of the canoe.

-

Minimum Performance Criteria: Draw Stroke
Catch
• Paddler rotates 60-90 degrees toward the paddling side and faces outward toward the water. • Paddle shaft is vertical, and arms are fully extended when blade is placed in water. • Unacceptable: Paddle shaft is more than 30 degrees from a vertical position. • Grip hand is over the water not inside the boat; shaft hand is directly below grip hand.
Power
• Grip hand remains directly above shaft hand until paddle blade is next to the side of the boat. Unacceptable: Grip hand is pulled into boat past the shoulder or in front of the face. • Grip hand is at the level of the shoulder.
Recovery
• In-water recovery with blade at right angle to side of canoe and grip thumb pointing away from boat.

Draw stroke: Catch.

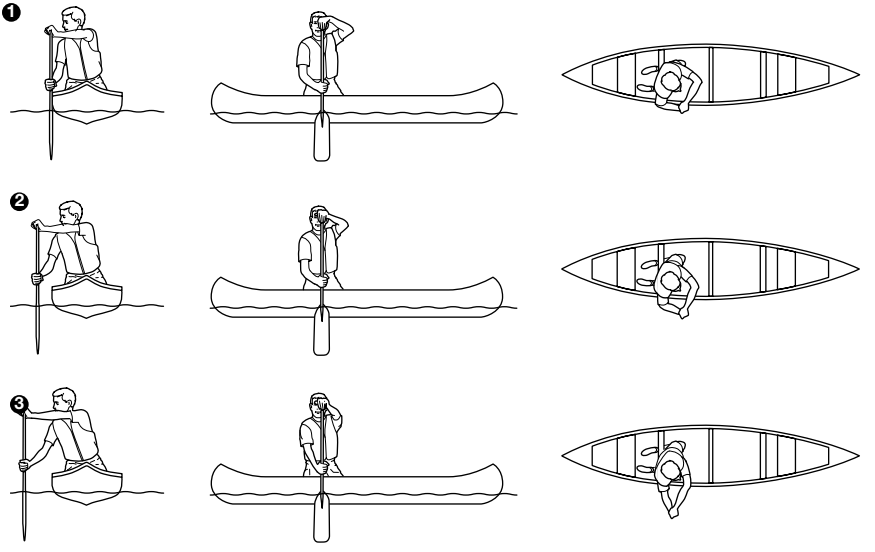
Draw stroke: Power.

Draw stroke: Recovery.

The stern paddler must follow the bow paddler while performing the opposite stroke during the moving abeam maneuver.

Pushaway stroke is performed in exactly the same manner as the draw stroke but in reverse order.

- The paddler rotates their body so it is 60-90 degrees from the front of the boat and their shoulders are as parallel to the gunwale as possible.
- For the **catch**, the paddle shaft should be 90 degrees to the water, the blade next to and parallel to the side of the boat. The grip hand should be no higher than shoulder level. The blade should be inserted into the water until it is fully submerged at the level of the throat.
- The **power** phase is made by the upper body and arm muscles pushing the shaft and blade away from the boat until the arms are fully extended and the hands are directly above and below each other on the paddle shaft. The power phase should be performed as an accelerated motion.
- Like the pushaway stroke, an **in-water recovery** is preferred. As the arms reach their maximum extension, the grip hand rotates the paddle shaft and blade 90 degrees so that the grip thumb is pointing toward the paddler. The hands move toward the side of the canoe until the edge of the blade reaches the side of the boat. Finally the grip thumb is rotated back 90 degrees so the blade is parallel to the side of the canoe.



Minimum Performance Criteria: Pushaway Stroke
Catch
• Paddler rotates 60-90 degrees toward the paddling side and faces outward toward the water. • Paddle shaft is vertical and the blade is placed next to the side of the boat. • The shaft hand is directly below grip hand. • Unacceptable: Grip hand is not out over the water and inside the boat.
Power
• Arms fully extend keeping the paddle shaft vertical. • Unacceptable: Paddle shaft is >30 degrees from a vertical position. • Grip hand remains directly above shaft hand until paddle blade is next to the side of the boat. Unacceptable: Grip hand is pulled into boat past the shoulder or in front of the face. • Grip hand is at the level of the shoulder.
Recovery
• In water recovery with blade at right angle to side of canoe and grip thumb pointing away from boat

Common Errors for the Draw and Pushaway Stokes

No Body Rotation: Although it is more comfortable for the paddler to remain facing forward, this greatly limits the effectiveness of the stroke. The more rotation the paddler can do, the more the arms can be extended and the longer and more efficient the stroke will be.

Paddle Angled-Grip Hand Too High or Inside Boat: Instead of keeping the shaft vertical, the paddler tries to reach out too far and angles the paddle away from the side of the boat with the top hand closer to the boat than the hand on the shaft. This can occur either on the entry of the paddle into the water for the draw stroke or at the end of the pushaway stroke. When the paddle is angled, the pressure of the paddle on the water lifts or pushes down on the boat instead of moving them sideways either toward the paddle (draw stroke) or away from the paddle (pushaway stroke).

Out-of-Water Recovery: Lifting the paddle out of the water to recover it at the end of the pushaway stroke when the arms are fully extended or at the end of the power phase of the draw stroke is wasted motion. Instead of lifting the paddle out of the water only to put it back in is unnecessary and unproductive motion. The in-water recovery is simple and a more economic use of the arm and shoulder muscles.

Rotating the Grip Hand Incorrectly During Recovery: At the end of the power phase of both the draw and the pushaway strokes, the grip hand must rotate the paddle shaft 90 degrees so that it is perpendicular to the side of the canoe. The wrist and hand are designed to comfortably rotate the thumb so it is pointing away from the paddler. However, it much less flexible rotating the thumb toward the paddler and usually requires that the entire upper arm be moved to rotate the paddle. This is much less efficient and should be avoided.

Pivoting or Spinning in Both Directions

The strokes needed to pivot or spin the boat are a combination of the draw or pushaway strokes or the forward and reverse sweeps. If using the draw or pushaway strokes, both paddlers use the same stroke. If using the forward and reverse sweeps, the paddlers do opposite strokes. Pivots are performed either to the onside, to the paddling side of the bow paddler or to the offside, the opposite side on which the bow paddler is paddling. Each paddler must perform each of the three stroke phases at the same time, with the bow paddler taking the lead. The maneuver should be done slowly using a minimum of strokes.

Direction	Bow	Stern
Onside	Draw stroke	Draw stroke
Offside	Pushaway stroke	Pushaway stroke
Onside	Reverse sweep	Forward sweep
Offside	Forward sweep	Reverse sweep

Sweeps: Forward and Reverse

During a sweep, the paddle moves in a curved direction, about a quarter of a circle. The goal is to make the arc as long as possible with the blade in the water and the tip as far away from the boat as possible. The shorter the arc, the less powerful the stroke. Forward sweeps turn the canoe away from the paddling side; reverse sweeps turn the boat toward the paddling side.

THE BOW FORWARD SWEEP

- The onside shoulder is rotated toward the bow.
- The grip hand is kept low, about the level of the waist, and the shaft hand slides up the paddle shaft away from the throat as the blade is placed alongside the bow with the edge perpendicular to the water. This is the **catch** position.
- The **power** phase begins as the hand on the shaft pulls the blade away from the canoe as the upper body rotates a quarter of a circle until the paddle shaft is at a right angle (perpendicular) to the side of the canoe. The blade is kept under the water to the throat.
- In **recovery**, the blade is lifted straight up until it is just out of the water. The grip hand turns the blade so it is parallel to the water by pointing the thumb of the grip hand away from the paddler. With the lower arm relaxed and straight, the hand on the shaft swings the paddle back toward the bow. At the bow, the grip hand rotates the blade back into a vertical position.

Bow forward sweep

1. Catch.

2. Power.

3. End of power phase; shaft perpendicular to the gunwale.

4. Recovery.

THE STERN FORWARD SWEEP

- Similar to the bow forward sweep except the starting and ending points are shifted to the second quarter of a circle.
- The **catch** begins with the shaft perpendicular to the canoe. The blade is placed in the water in a vertical position up to the throat.
- The **power** phase starts with the lower arm straight and the body rotating so the paddle moves toward the stern of the canoe. The phase ends when the blade is next to the side of the side of the boat.
- **Recovery** begins with the grip hand rotating the paddle shaft so the blade is parallel to the water and the grip thumb is pointing away from the paddler at waist level. The lower arm is straight and swings the paddle forward until the shaft is perpendicular to the side of the canoe. The thumb on the grip hand turns upward until it is pointing straight up, and the blade is vertical to the water. Drop the blade back into the water until it is at the throat.

Stern forward sweep

1. Catch.

2. Power.

3. End of power phase; blade next to stern.

4. Recovery with grip-hand thumb pointing away from paddler.

MINIMUM PERFORMANCE CRITERIA: BOW AND STERN FORWARD SWEEP
Catch
• Bow: Blade and shaft are placed parallel to the side of the canoe next to the bow. • Stern: Paddle shaft is at right angle to side of canoe • The paddle blade is in the water to the throat.
Power
• Grip hand is at the waist, Unacceptable if hand is in middle of chest or in front of face. • Shaft hand moves in a quarter circle while torso rotates. Acceptable if shaft arm is slightly bent at elbow. • Bow: Paddle stops when at right angle to side of canoe. • Stern: Paddle stops when paddle blade is next to the side of the stern.
Recovery
• Blade is recovered parallel to water. • Grip thumb is pointing away from paddler.

THE BOW REVERSE SWEEP

The bow reverse sweep is the same as the bow forward sweep but in reverse. It is rarely used in except in doing pivots.

- The **catch** begins with the shaft perpendicular to the side of the canoe and the paddle blade is placed in the water up to the throat with the blade vertical. The grip hand is kept low, about the level of the waist.
- The **power** phase begins as the upper body rotates a quarter of a circle toward the bow of the canoe until the paddle blade is next to the side of the bow of the canoe. The lower arm remains straight and the phase ends when the shaft is perpendicular to the side of the canoe. The blade is kept under the water to the throat.

Bow reverse sweep

1. Catch.

2. Power.

3. Recovery.

- In **recovery**, the grip hand turns the blade so it is parallel to the water by pointing the thumb of the grip hand away from the paddler. With the lower arm relaxed and straight, the hand on the shaft swings the paddle back toward the bow with the blade just above the water. At the bow, the grip hand rotates the blade back into a vertical position.

THE STERN REVERSE SWEEP

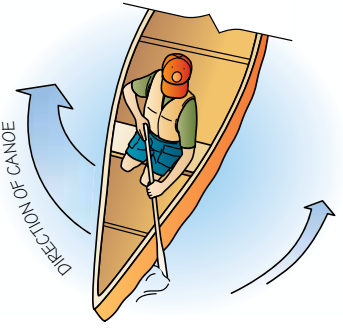
The stern reverse sweep is similar to the bow reverse sweep except the starting point is next to the stern and the ending point is a quarter circle from the stern toward the bow when the paddle shaft is at a right angle to the side of the canoe.

- The **catch** begins with the shaft parallel to the side of the canoe and the paddle blade is placed in the water up to the throat with the blade vertical. The grip hand is kept low, about the level of the waist.
- The **power** phase begins as the upper body rotates a quarter of a circle from the stern toward the front of the canoe until the paddle blade is perpendicular to the side of the canoe. The lower arm remains straight during the rotation of the upper body. The blade is kept under the water to the throat.
- In **recovery**, the grip hand turns the blade so it is parallel to the water by pointing the thumb of the grip hand away from the paddler. With the lower arm relaxed and straight, the hand on the shaft swings the paddle back toward the stern with the blade just above the water. At the stern, the grip hand rotates the blade back into a vertical position.

MINIMUM PERFORMANCE CRITERIA: BOW AND STERN REVERSE SWEEP
Catch
• **Bow: Blade is at right angle to side of canoe** • **Stern: Paddle is parallel to side of canoe next to stern.**
Power
• **Grip hand is at the waist** • **Shaft hand moves in a quarter circle while torso rotates** • **Bow: Paddle stops when the blade is next to the bow of the canoe.**
Recovery
• **Blade is recovered parallel to water.**

Common Errors for the Forward and Reverse Sweeps

Holding the Grip Hand Too High: When the grip hand is in the center of the chest or in front of the face, the arc of the paddle is greatly reduced. The grip hand should be at about the level of the gunwale.



Sweeping More Than a Quarter Circle: Since the bow paddler is located in front of the pivot point of the boat, doing a 180-degree sweep turns the boat away from the paddling side for the first 90 degrees but then pulls the boat back toward the paddling side for the second 90 degrees. These two motions cancel each other out. The same is true for the stern paddler who starts at the 90-degree position and finishes at the 180-degree position.

Grip Hand Rotates Incorrectly on Recovery: The thumb of the grip hand should point away from the paddler during the recovery phase so that the paddle blade is parallel to the surface of the water as the blade is brought back to the catch position. Although rotating the thumb in the opposite direction toward the paddler does place the blade parallel to the water, the wrist is not constructed to do this without having to move the entire lower arm bending at the elbow instead of just flexing the wrist.

Grip thumb correctly pointing away from paddler during recovery.

Grip hand incorrectly toward paddler during recovery.

Paddling Forward in a Straight Line

The direction and speed of a canoe is the sum of the power, turning and steering strokes used by the paddlers in it. To paddle in a straight line, all Scouts must learn an effective forward stroke combined with appropriate turning and a steering stroke in the stern and turning strokes in the bow.

The forward stroke is called a power stroke because it is the primary force that moves the canoe forward. An efficient forward stroke is essential for any canoeing activity, especially for canoe trips over long distances.

- The **catch** begins with the shaft and blade as vertical as possible to the water with both the grip and paddle shaft hands stacked one above the other. Both hands are over the water outside of the boat. Ideally the torso is rotated so the shoulder and arm of the paddler on the paddling side reach forward while the opposite shoulder is rotated back. The paddle blade is placed in the water up to the throat with the blade vertically and without splashing. The grip hand is kept at about the level of the shoulder.
- The **power** phase uses the muscles of the abdomen and back to pull the canoe ahead toward the paddle. The paddler should remember that water is not moving but that the hull of the boat is sliding across the top of water. The paddlers plant their paddles ahead of themselves in the water and pull the boat forward to where their paddles are located. The most important part of the power phase is using all the muscles of the upper torso and not just the arms. To avoid using only the muscles of the upper arm, the paddler must keep both arms relatively straight. There should be only a slight bend in the elbow. The power phase ends somewhere before the paddle shaft reaches the hip. For additional time to relax the arm and shoulder muscles between strokes, it is acceptable to allow the paddle blade to drift past the hip as long as there is no pressure being applied to the blade before the recovery phase.
- In **recovery**, the grip hand drops down to the waist and turns the blade so it is parallel to the water by pointing the thumb of the grip hand away from the paddler. With the lower arm relaxed and straight, the hand on the shaft swings the paddle forward toward the bow with the blade above the water. Just before reaching the full extension of the arms, the grip hand rotates the blade back into a vertical position for the next stroke.

Forward stroke

1. **Entry is about 30 degrees from vertical, top hand is over the water, outside the boat about shoulder level.**
2. **Catch.**
3. **Power.**
4. **Recovery.**

Minimum Performance Criteria: Forward Stroke
Catch
• Paddle blade tip enters water as vertical as possible without splashing • Unacceptable: Paddle blade enters water more than 30 degrees off vertical
Power
• Lower arm remains straight and upper torso rotates • Acceptable: Slight bend in elbow, minimal rotation • Unacceptable: Pulling only with lower arm and finishing with more than 45-degree bend at the elbow
Recovery
• Grip hand drops to waist level above the gunwale

If both paddlers simply perform forward strokes, the canoe generally curves away from the paddling side of the stern paddler or toward the paddling side of the bow paddler. Instead of the two paddlers trying to alternate paddling sides, the canoe can be kept on course and moving at a good speed if the paddler in the stern position using a steering stroke. There are two steering strokes that the stern paddler can use to keep the boat on track toward the desired destination, the **thumb down rudder stroke with a stern pry** or the **J-stroke**. The J-stroke is preferred, but by learning the thumb down rudder stroke with a stern pry, a paddler can more easily transition into doing the J-stroke. If the stern paddler cannot do an efficient J-stroke, the thumb down rudder stroke with a stern pry is a good alternative.

THE THUMB DOWN RUDDER STROKE WITH A STERN PRY

Begin with the forward stroke. At the end of the power phase, the grip (top) hand rotates the paddle shaft and blade by turning the thumb of the top hand away and down so that the thumb is pointing down at the water. The grip hand must turn the shaft and blade a full 90 degrees so that the blade is now parallel to the side of the canoe like a rudder on a ship. The stern paddler can hold the paddle in the rudder position and steer the boat like a ship but that leaves the bow paddler doing all of the work to move the boat forward while the stern paddler rudders.

However, if the paddler places the shaft of the paddle against the gunwale and makes a sharp, short pull of the grip hand toward the boat, the stroke will move the bow of the boat toward the paddling side of the stern paddler. To be effective, the pry stroke must begin with blade next to the

stern of the boat and top hand down toward the gunwale. The stroke must be done quickly, and the blade should move only a short distance from the side of the boat, less than a foot. Once completed, the grip hand returns to its normal recovery position with the thumb pointing away and the paddle blade parallel to the water. The recovery of the paddle is identical to the recovery of the forward stroke.

THE J-STROKE

There are several versions of the J-stroke. The J-stroke taught in Scouting is sometimes also called a hook-J because the last part of the stroke looks like the hook part of the letter "J."

The J-stroke follows the same steps as the forward stroke and the rudder stroke with the blade turning to a 90-degree position parallel to and next to the side of the canoe. But instead of moving the top hand in toward the boat with the paddle shaft against the gunwale, the bottom hand pushes the blade away from the side of the boat without the shaft touching the canoe. This causes the bow of the boat to move toward the paddling side of the stern paddler. The paddle blade moves away from the side of the boat for only a short distance similar to the stern pry and must be done very quickly.

This allows the stroke to be done in almost the same amount of time as the forward stroke allowing for the two paddlers to continue paddling in unison.

Rudder stroke position

Common Errors for the Forward Stroke

Angling the Paddle and Reaching Too Far Forward: Reaching too far forward usually results in the paddle blade entering the water at an angle greater than 30 degrees. This results in a force that lifts the boat instead of pulling it forward.

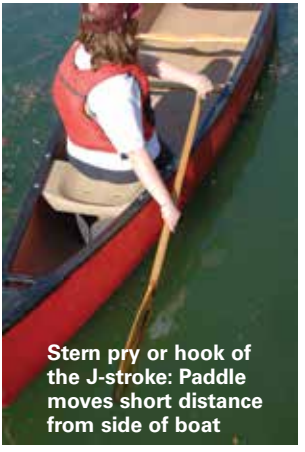
Pulling Only with the Upper Arm Muscles: Moving the paddle by using only the biceps muscles of the upper arm is very tiring instead of keeping the arms straight and rotating the upper torso. The stroke is characterized by the elbow being bent more than **[TEXT MISSING IN MASTER DOCUMENT]**

Grip Hand is Not Above the Hand on the Shaft During Catch and Power Phases: Most beginner paddlers find it unnatural and uncomfortable to bring the grip hand across their body to the other side so it is directly above the hand on the shaft instead of keeping the top hand in front of their face or chest. However, without correct hand placement, the forward stroke can become a forward sweep causing the boat to curve away from the paddling side.

Common Error for the Rudder and J-Stroke

Not Rotating the Grip Hand 90 Degrees: Rotating the grip hand 90 degrees for the rudder stroke and the J-stroke takes some practice and at first it can feel uncomfortable. However, only partially rotating the paddle to a position that is less than 90 degrees significantly reduces the ruddering effect of the blade making it function more as a fin than as a rudder.

Common Error for the Stern Pry and J-Stroke



Performing a Reverse Sweep Instead of a Pry or the Hook of the J-Stroke: A common error made by novice paddlers in performing either the stern pry or hook part of the J-stroke, is to move the paddle blade an excessive distance, more than 12 inches, away from the stern as though doing a stern reverse sweep. This greatly slows the forward motion of the canoe and kills the synergy of the two paddlers that comes from paddling in unison. To prevent this, the bow paddler can slow the paddling rhythm so the stern paddler has more time to make the corrective stroke and stern paddler can shorten the distance the blade moves away from the side of the canoe.

Paddling in a straight line requires constant assessment and adjustments using the turning and steering strokes by both paddlers. First, the two paddlers should try to match the strength of their strokes so one does not overpower the other. If the bow paddler is overpowering the stern paddler, the canoe will move to the opposite side of the paddling side of the bow paddler, the offside. To correct this, the Scout in the bow position can paddle less forcefully or the paddler in the stern position can paddle harder. However, there are several other ways to keep a canoe on course.

If the canoe is curving toward the offside, the side away from the paddling side of the bow paddler, the bow paddler can do an occasional draw stroke instead of a forward stroke to move the bow back toward the onside. If the canoe is veering toward the onside, the paddling side of the bow paddler, the bow paddler can perform a forward sweep which not only moves the canoe forward but also the bow toward the offside.

In the stern position, the paddler can keep the canoe on course with a good steering stroke. When conditions such as winds or waves make this difficult, the stern paddler can use the turning strokes of the draw and forward sweep like the bow paddler to do course corrections. If the stern paddler wishes to move the bow of the canoe to the onside, the bow paddler's paddling side, a forward sweep can be done instead of the forward stroke. In the stern to move the boat toward the offside, the opposite paddling side of the bow paddler, one or two quick draw strokes can get the boat back on course.

Forward Course Correction	Bow Paddler Performs	Stern Paddler Performs
Moving to the offside (away from the bow paddler's paddling side)	• Weaker forward stroke • Draw stroke	• Stronger power phase of the steering stroke • Weaker stern pry or hook of the J-stroke • Draw stroke
Moving to the onside (toward the bow paddler's paddling side)	• Stronger forward stroke • Forward sweep	• Weaker power phase of the steering stroke • Stronger stern pry or hook of the J-stroke

Turning 90 Degrees While Moving Forward

Changing the course direction by 90 degrees can be done by a variety of strokes but the easiest is for the bow paddler to use one of the two turning strokes while the stern paddler continues moving the canoe forward by using the forward stroke. Turning toward the offside can be accomplished by the bow paddler doing only a forward sweep. Turning to the onside can be easily done by performing draw strokes until the course change has been made. The stern paddler can assist by switching to only a forward stroke with varying levels of strength or force.

To Turn…	Bow Paddler Performs	Stern Paddler Performs
Onside (the bow paddler's paddling side)	• Draw stroke • Weaker forward stroke	• Strong forward stroke only
Offside (opposite from bow paddler's paddling side)	• Forward sweep • Stronger forward stroke	• Weak forward stroke only

Paddling Back in a Straight Line

If tandem paddlers can paddle forward in a straight line, they are prepared to paddle back as well, using the **back stroke**. In this maneuver, the roles of the two paddling positions are reversed with the bow paddler responsible for steering.

- The **catch** phase stroke begins where the power phase of the forward stroke ends. The paddle shaft is next to the side of the paddler with the grip hand at the level of the shoulder. The blade is at a 90-degree angle to the side of the canoe with the water at the throat of the paddle.
- The **power** phase starts with the arms straight and the torso rotated slightly backward on the paddling side. The paddle is pushed forward with the shaft next to the gunwale with the top hand directly over the hand on the shaft until the arms are fully extended.
- **Recovery** is performed in water with the blade remaining in the water for the entire stroke. The top hand is rotated 90 degrees, so the thumb of the grip hand is pointing toward the paddler's shoulder on the paddling side. With the blade parallel to the side of the canoe, the paddle is moved back toward its starting position when the shaft hand reaches the paddler's hip. The top hand rotates 90 degrees until it is perpendicular to the side of the canoe.

Although some paddlers lift the paddle out of the water for the recovery, this is unnecessary unless the canoe is in shallow water or where there are hidden obstacles like large rocks. In those circumstances, the blade is removed from the water by dropping the grip hand to a level just above the gunwale and turning the grip hand so the thumb is pointing away from the paddler. This puts the paddle blade parallel to the water. The lower arm swings the paddle back to the hip where it is again placed in the catch position.

To keep the canoe going straight, the bow paddler who is now in the steering position, uses either a reverse sweep or draw stroke to keep the canoe on course. If the boat is moving to the offside of the bow paddler, a reverse sweep is performed. If the boat is curving to the onside, a draw stroke is used until the boat is straight again. During this time, the paddler in the stern position should be doing a back stroke.

Backward Course Correction	Bow Paddler Performs	Stern Paddler Performs
Moving to the offside (away from the bow paddler's paddling side)	• Reverse sweep	• Reverse sweep
Moving to the onside (toward the bow paddler's paddling side)	• Draw stroke	[NO TEXT IN MASTER DOCUMENT]

Stopping the Canoe

To stop the canoe in the water, the stem paddler gives the command "Hold water" and both paddlers perform a single, strong backstroke in unison. Focus on a clean, deep catch, and at the end of the power phase, lock the arms with the paddle shaft in a vertical position. Don't recover until the canoe has stopped. It may be helpful to lock the thumb of the lower hand over the gunwale at the end of the stroke.

Paddling a Figure of 8 Course

Paddling a figure of 8 course is an excellent method of developing and demonstrating the maneuvers taught in this merit badge. Two buoys are anchored 45-60 feet apart. The course begins on one side of the first buoy and the paddlers then paddle a straight course for the opposite side of the second buoy where they then make a turn around it.

After making a 180 degree turn around the buoy, they then paddle a straight line toward the first buoy aiming for the opposite side from which they started. After reaching the first buoy, the paddlers make another turn around it until they have reached their original starting position.

Paddling a figure of 8 course should be done at typical paddling speeds and not as an attempt to race. Paddling at faster than normal speeds will usually result in overrunning the buoy and then having to stop the canoe to begin the turn. Upon reaching the buoy, the canoe should pass the buoy until the pivot point is just past it and then begin the turn. Although the boat can go past the buoy, stop and then can do a pivot, it is generally easier to use a combination of sweeps and draws to go around the buoy without having to stop.

Use a combination of draw stroke and forward sweep to make an onside turn around a buoy.

Direction of Turn	Bow Paddler Performs	Stern Paddler Performs
Onside	• Draw stroke	• Forward sweep
Offside	• Forward sweep	• Reverse sweep or pushaway stroke

Exits and Entries on the Open Water

Sometimes, on a hot day, you might hop overboard to cool off. Other times, you might find yourself overboard by accident. In either case it is important to learn how to safely exit the boat and reenter it.

Under supervision, practice in open water close to shore in an area that has been checked for and determined free of underwater hazards. Dress appropriately for the weather and water temperature. Dress may range from a T-shirt and bathing suit to a wet suit. A properly fitted life jacket is required for each participant.

Going Overboard—Exiting the Canoe

Tandem paddlers can use the following technique. Although tandem paddlers can time their exits so they land in the water at the same time, it is safer to exit the canoe one person at a time. In this way, one person always has control of the boat.

Step 1—If possible, move amidships, where there is more room to exit. However, you can exit safely from the bow and stern as well. Stay as close as you can to the seat or thwart in front of you to maximize the amount of free space behind you. Lean over with a hand on each gunwale and balance on your toes.

Step 2—Place your hand on the gunwale on the side of the canoe from which you will exit. Turn the hand that is on the side of the boat from which you will exit so that your thumb points toward the stern and your elbow points away from you. The other fingers of that hand should be inside the boat and wrapped over the inside part of the gunwale.

Step 3—Holding on to the gunwale with the hand that is turned inward, let go of the other gunwale. Without losing your grip on the canoe, swing your free arm around toward your back as you turn your body and fall out of the canoe backside first. You should land facing the opposite direction from where you started.

Never lose contact with the boat when going overboard. If you fail to hold on to the canoe as you go overboard, you might go under the water and the canoe might drift away from you.

Exiting the canoe—going overboard

Reentering the Canoe

You can reenter a canoe in open water at either end of the canoe where there is enough open space, but amidships usually provides the most room for maneuvering. Amidships also has the smallest freeboard, so there is less height to overcome when pulling yourself up and over the gunwale.

Here are a few simple techniques for reentering a canoe in open water that you can use with a partner. Practice these techniques under supervision so you can learn how to do them correctly.

Do not push down on the gunwale at the point where you are entering—you could swamp the boat.

Duck-and-Roll Reentry—When the canoe has a middle section free of thwarts and portage yoke, the duck-and-roll reentry works best. At the most open section of the middle of the canoe, place your hands inside the canoe, resting in the bilge. Straighten your arms so that the weight of your upper body rests on your hands and your waist is even with gunwale. Keep your head as low as possible and lean into the canoe. Push, kick, and lean forward until your hips are on top of the gunwale. Bend one arm and drop your shoulder toward the bottom of the boat. Then roll onto your back and swing your legs into the canoe.

Arms-Across Reentry—This reentry technique can be used when the middle of the canoe is open or when entry must be made on the ends because the middle is blocked by equipment or thwarts and a portage yoke. First, grab the gunwale closest to you and bring your body up to the surface of the water. Lay as flat as possible on the surface with your feet behind you on top of the water. It is much easier to enter the canoe from this horizontal position rather than trying to pull up your body from below the water's surface in a vertical position.

Arms-across reentry

With one hand on the gunwale, rapidly reach across the canoe with your other hand as far as you can to the opposite side. Grab the opposite gunwale or a nearby thwart. Then do the same with your other hand so that both hands are in front of you. Kick and pull your body toward the opposite gunwale until your hips rest on top of the gunwale. Roll your body over and sit down in the canoe with your legs and feet hanging outside the canoe. Now bring in your feet and take your paddling position. Avoid trying to put your knee or foot in the boat. Just turn onto your back and sit down.

For both of these entries, the buddy paddler can assist in several ways. If both paddlers are in the water, the paddler not entering the boat can be positioned on the other side of the canoe hanging onto the gunwales. If the paddler who is attempting to reenter the canoe is using the duck-and-roll technique, the other paddler can help by leaning the canoe toward the reentering paddler and counterbalancing their weight as they pull themselves into the boat. If the partner is in the boat, they can do the same by first leaning the canoe toward the entering paddler and then leaning away to counterbalance their entry.

Simultaneous Reentry—If both paddlers are about equal in weight and size, they can work together to enter the canoe at the same time. First they position themselves on opposite sides of the canoe, one slightly forward and one slightly back of amidships. On signal, both of them scissor kick and push down on the gunwale to raise themselves up to the point where their arms are straight and their waists are even with the gunwale. If both have done this successfully, they each simply lean forward and duck-and-roll into the canoe. If one slips off, falls backward, or is unable to pull up, the other should immediately drop back into the water to prevent the canoe from capsizing.

A bilge pump can be a real lifesaver when your canoe takes on water.

Rescues and Swamping

Every paddler should have and know how to use **basic safety and rescue equipment**. These include a sound signal device, extra paddle, sponge, bailer, bilge pump, rescue sling, ropes and throw bag.

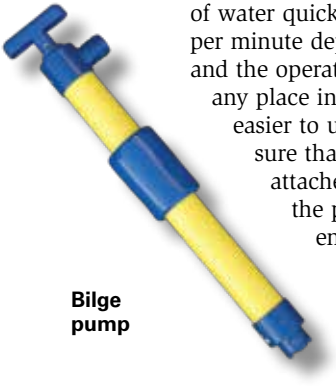
Sound Signal Device—U.S. Coast Guard regulations require that all vessels less than 26 feet long must carry a whistle, horn, or some other mechanical sound device. The device must be audible for a half mile. The easiest sound device that a paddler can carry is a whistle. Do not get a metal whistle which can become corroded or one with a little ball in it that can get stuck in the whistle chamber. There are several well-made and relatively inexpensive plastic whistles on the market. It should be kept on a short cord in a pocket of the lifejacket. Avoid attaching it to the outside of your life jacket where it can get caught or snag on parts of the boat or other pieces of equipment. In an emergency, paddlers usually blow a whistle three times on a river or five times in coastal areas or harbors with larger vessels. In some locations, paddlers also might blow a whistle once to get another person's attention or five times to signal danger.

Sponge—A sponge can be a useful item to have in a canoe to soak up water that may have splashed into the boat or to wipe out the inside of the boat when it gets dirty. Tie a cord or short rope around the sponge and attach it to a thwart so you can access it easily if water gets into your boat.

Bailer—A bailer is a scoop that can be used to empty out water out of a canoe. Bailers are not commercially available and so they are frequently made from a large, plastic bottle or jug with a handle such as a one-gallon bleach, liquid detergent or food bottle. The bottom quarter of the bottle is cut away on the same side as the handle and attached with a piece of rope or cord inside the boat.

You can make a *bailer* for emptying water from your canoe by cutting the bottom off of a 1-gallon plastic jug. Secure the bailer to your canoe with a short piece of line, leaving no slack.

Bilge Pump—This hand-operated pump can remove a large volume of water quickly, from 5-20 gallons per minute depending on the pump and the operator. They can be used any place in the boat making them easier to use than a bailer. Be sure that there is a hose firmly attached to the spout from the pump which is long enough to pump the water outside the canoe and that there is flotation of some type attached to both the pump and the hose since both will sink if dropped overboard.



Bilge pump

Rescue Sling—A rescue sling is simply a loop of rope that can be secured to a thwart where it connects at the end to the gunwale. The loop extends down into the water where it can act as a stirrup for a paddler's foot as an aid in reentering the canoe. A short piece of PVC pipe can be added to the loop to make it easier for the paddler to stand on.

Rescue sling hanging from the thwart

Ropes—A rope in the canoe—in addition to the ropes used as painters—is a good item to have for rescues, especially if you are in moving water. The rope should be made of polypropylene because it will float while materials such as cotton or nylon will sink. It should be long enough that you could reach a victim or boat in the water that is at least 30 feet away. Throwing a coiled rope can be done in multiple ways. First the rope needs to be secured by the non-throwing hand. It can be simply held in the hand or a loop can be made around the back of the wrist and held in the palm of the hand. A permanent loop should NEVER be made and placed around the wrist.

The rope can be thrown either with the all the loops of rope in the throwing hand and the loose end in the non-throwing hand or the loops can be split between the two hands. The second method is recommended as it is much less likely that the rope will become tangled. When throwing the rope by the second method, the throwing hand throws its loops first followed immediately by the second hand holding the end of the rope.

Rescue/Throw Bag—All paddlers should carry a throw bag and know how to use it. They allow paddlers to throw a line to a person in distress by extending their reach by 30 or more feet. They are available in various sizes depending on the length and size of the rope. Bags keep the rope from becoming tangled,

ensuring it is ready for use when needed. Ropes are typically a quarter-inch to three-eighths inch diameter and at least 50 to 70 feet long. Ropes generally are made of highly visible, brightly colored polypropylene because it floats and is relatively inexpensive. Although the bag can be thrown underhand, overhand, or sidearm, the underhand method is recommended for Scouts.

Before throwing a bag, identify a good throwing location. Ideally, this should be on flat ground near the water's edge, with no obstruction or loose debris. Rescuers should be able to move up and down the shoreline without difficulty.

To throw the bag, stand on the shoreline and:

1. Step as close to the water as possible.
2. Completely open the bag at the drawstring and pull out about 3 feet of the rope and hold it in the non-throwing hand about 3 feet from the end.
3. Firmly grab the edge of the bag with the hand of the throwing arm and stand in the throwing stance with the foot on the throwing side moved back, e.g right hand throwers would have their left foot forward and their right foot back.
4. Hold the rope from the bag in the opposite hand and point it toward the target.

5. Just before throwing the bag, yell "*Rope, Rope, Rope*" to get the attention of the person in distress.
6. While bending at the knee of the back leg, swing the bag back with a straight arm and a slight rotation of the upper body.
7. Move the throwing arm and hand forward in an underhand throwing position and release the bag when the throwing hand is somewhere between the waist and the level of the shoulder.

Aim the bag should so the rope lands over the victim's shoulder. Once the victim has caught hold of the rope, the victim should be instructed to roll over on their back and put the rope over their shoulder while holding the bag to their chest. The rescuer then hauls in the victim by pulling the rope hand-over-hand while keeping one leg back and bracing against the weight of the victim and the drag of the water.

If the intended target is missed, recover the bag as quickly as possible. Although the most efficient way to throw a rescue bag is with the rope in it, it would take an excessive amount of time to restuff the bag for a second throw. Consequently, the rescuer must be ready to quickly make a second throw.

There are several ways to retrieve the bag and rapidly make a second attempt.

1. An easy way to prepare for a second throw is to let the rope fall to the ground as the retrieval of the bag is made. When the bag is at the shoreline, pick it up with a small amount of water in it to provide enough weight that it can be easily tossed again. Holding the loose end of the rope with the other hand, throw the bag again toward the victim and let the rope trail behind from the ground.
2. Another way is to pull the bag in while coiling the rope using the "butterfly method." This involves alternating the loops of rope so the coiled rope looks like butterfly wings. This prevents the rope from becoming tangled. Pinch the

Method 1: A little water in the bag will make it easier to toss.

Method 2: "Butterfly" the rope to prevent tangles upon retrieval.

standing end of the rope between the thumb and palm of the non-throwing hand. Use the throwing hand to place a "U" shaped loop of rope about two feet long into the non-throwing hand, with the loop dropping out of the thumb side of the hand. Next, place a similar "U" loop so it comes out of the pinky side of the hand. Alternate side to side until the rope is fully recovered. This creates the "wings" of the butterfly method. Then, still holding the loose end of the rope in the non-throwing hand, grasp the entire coil of rope and empty bag and throw them together toward the victim using an underhand throw.

3. The rope can also be retrieved with the throwing hand creating loops of rope in a continuous, clockwise pattern and putting them in the opposite hand which is held against the leg on the opposite side. Pinch the standing end of the rope between the thumb and palm of the non-throwing hand. Use the throwing hand to

Method 3: The non-throwing hand is held against the knee and does not move.

place a coil of rope into the palm of the non-throwing hand. By only moving the throwing hand to create the loops, they are less likely to become tangled. When the length of the rope has been retrieved, the empty bag and coil of rope can be thrown to the victim while the opposite hand holds the other end of the rope. Depending on how the rope has been coiled, the rope may or may not become tangled. To reduce the chance of the rope tangling, the coil can be split between the two hands and the coils thrown one after the other while holding on to the end of the rope with the second throwing hand.

4. An alternative method is to gather the rope in either the butterfly loops or clockwise loops and instead of throwing the empty bag and loops together, throw only the coiled rope and hold on the end of the rope with the bag.

At no time should a loop be tied on the loose end of the rope. This will avoid the possibility of an inexperienced rescuer placing their hand through the loop and then not being able to release the rope should the need arise. For this same reason, the loose end of the rope should not be wrapped around the wrist or hand. It would be unlikely that a rescuer would need to let go of the loose end of the rope in the conditions in which this merit badge is to be taught. However, this could easily occur if the victim was in a river and the force of the current was too strong for the rescuer to maintain hold of the rope. To avoid being pulled into the water, the rescuer must be able to release the loose end of the rope. More detailed discussions about using a rescue bag in moving water or whitewater conditions can be found in the Whitewater Merit Badge pamphlet. Regardless of the circumstances, all paddlers should learn the correct way to use a throw bag.

Restuffing A Throw Bag

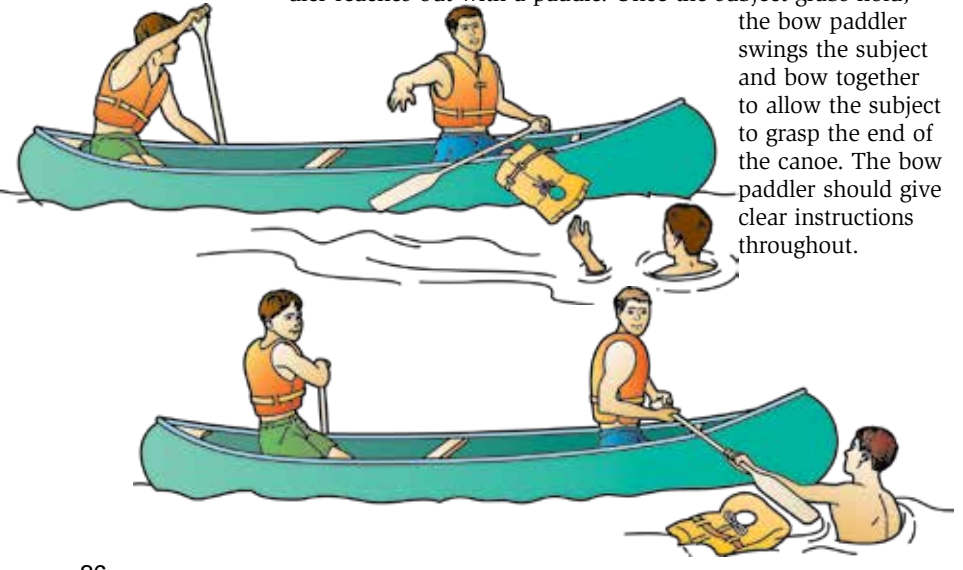
Before restuffing the bag, inspect it to be sure that it does not have any tears, that the knot at the outside end of the bag is tight and that the closed cell foam disc inside the bag is intact. The rope should be dry unless you are planning to reuse the bag immediately. There is more than one way to restuff a bag but the most important principle is that the rope not be coiled but rather "stacked" into the bag. Many paddlers choose to place the rope over their shoulder so it goes down directly into the bag but this is a matter of personal preference.

One way to get the rope back into the bag without tangling it, is to hold the edge of the bag with the non-throwing hand and place the rope so it is under the palm and between the pointer and index fingers. Grab the rope with the thumb and pointer finger of the throwing hand and push a length of rope the bottom of the bag. Repeat until all the rope is in the bag.

Canoe Rescue of a Conscious Swimmer

Sometimes a swimmer is beyond the reach of a rope thrown from shore. In this case, the canoe can be used as a rescue craft. If the canoe is going to launch from shore to rescue a distressed swimmer, the paddlers should carry a flotation aid of some type that can be given to the swimmer. The most convenient aid would be an extra life jacket. Units on float trips may also be in a position to rescue swimmers or boaters without a life jacket who have been separated from their craft. In either situation, the paddlers should approach the distressed swimmer with vocal reassurances that they are there to help.

The rescue boat should keep a safe distance from the swimmer while they offer assistance. At no time should the rescue boat attempt to bring the swimmer aboard the canoe. The rescuers should determine the exact nature of the swimmer's condition and specifically what they can do to help. If possible, throw a flotation aid to the swimmer. After the subject has grasped the aid, or if there is no aid available, the bow paddler reaches out with a paddle. Once the subject grabs hold, the bow paddler swings the subject and bow together to allow the subject to grasp the end of the canoe. The bow paddler should give clear instructions throughout.



Swamping

Every paddler manages to swamp a boat now and then. To be prepared for this, you should intentionally capsize your craft in calm water and practice rescues and recoveries until they become familiar to you.

Regardless of the cause, one of the most important rules of boating is to stay with the boat if you capsize. You are much more likely to be seen if you stay with a swamped canoe than if you swim away alone.

If the shore is not too far away, try to move the boat to shallow water where you can empty it out. Otherwise, stay with the boat until help arrives. A canoe can stay afloat even if it is full of water. You can rest inside a swamped canoe, sitting on the bottom and facing the same direction as your partner.

One important boating safety rule is "Stay with the boat."

Controlled Capsize

To safely capsize a canoe, sit next to your paddling partner in the bottom of the canoe facing the same side and with your legs hanging over the gunwale. Put the arm that is closest to your partner on the gunwale behind you. Put the other hand on the gunwale in front of you. Rock forward and backward until the gunwale in front of you goes below the water level and the canoe begins to fill with water. Keep rocking until the canoe is full of water.

Moving a Swamped Canoe

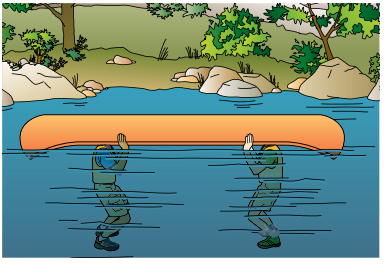
You can swim, tow, or paddle a swamped canoe. An empty canoe can be paddled to shore. Sit in the bottom and use the paddles or your arms to paddle the boat forward. Use different combinations of forward strokes and backstrokes to turn the boat if necessary. Back paddle well short of landing to slow the canoe and avoid colliding with a dock or the shore.

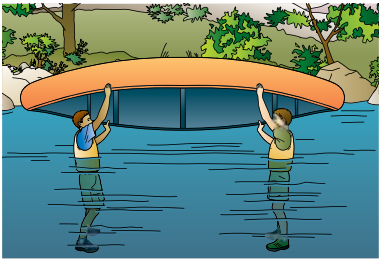
If the canoe is full of gear and there is no place for the paddlers to sit in the boat, one paddler can push it from the stern using the breaststroke kick. The other paddler can pull it from the bow using a one-arm sidestroke. The paddlers can also tow the canoe by holding on to a bow or stern painter and swimming side stroke together toward shore.

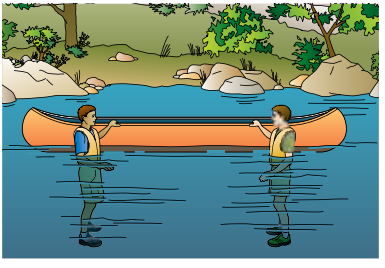
To tow a canoe to shore, two paddlers can hold on to the same painter, either the bow or stern, and together pull the canoe using a one-armed sidestroke.

Shallow Water Emptying

The easiest way to empty a swamped canoe is to pull the canoe to shallow water and remove any gear that might be in the way. Roll the canoe on its side to empty out half the water and then turn it upside down, without lifting the canoe out of the water, to empty out the remaining water. Once the water is out, turn the canoe right side up.







If you and your partner cannot lift the canoe completely clear of the water, you can move the canoe to shallower water where one end of the canoe can be rested on the shore. Stand at the other end of the canoe, where the water is deeper. Together, turn the canoe on its side and then completely over, with the other end of the canoe supported by the ground. Once emptied, turn the canoe upright and stow the gear.

Shallow Water Capistrano Flip

The Capistrano flip usually is performed in deep water, but it also can be done in shallow water. With your paddling partner, stand in waist-deep water and turn the canoe upside down. Squat under the gunwale and come up into the air pocket underneath the canoe. Facing each other and with one hand on each gunwale, tip the canoe slightly to one side until one gunwale is raised above the water line and the air seal is broken. Then stand up quickly, lifting the canoe up and over to the side. Make sure to tip the canoe toward the shoreline and to hold on to it so that it does not float away.

Canoe Rescues

When using a canoe for a rescue, remember these **priorities:**

- The first priority in any canoe rescue is the safety of the paddlers in the water, then their boat, and finally their equipment.
- Approach the victims in the water cautiously, keeping their canoe between you and them so they do not try to hold onto your canoe and attempt to enter it.
- Call out to them and given them instructions to hold onto *their* canoe and that you are there to help them.

Canoe-Over-Canoe Rescue

If paddlers capsize far from shore, a canoe-over-canoe rescue can be used to empty a swamped canoe. Perform the rescue quickly, especially if the water is frigid and the paddlers are at risk of hypothermia. Ignore the free-floating gear until the paddlers are safely back in their boat. You can retrieve the gear later and return it to them. Before approaching the capsized canoe, instruct the paddlers in the water to move to the side of the canoe opposite the side you are going to approach.

Step 1—The rescue canoe comes alongside the capsized canoe on the side away from paddlers in the water.

Step 2—The rescuers hold onto the capsized canoe and direct the paddlers in the water to maintain contact with the rescue boat and move hand over hand to the far side of the rescue canoe with a paddler holding on to each end.

Step 3—Facing each other, the rescuers move toward the middle of the rescue boat and kneel. Together they move capsized canoe, so it is at right angle to rescue boat. Both rescuers will be needed to turn the canoe over, so it is bottom up. Then the capsized boat must be turned slightly to one side to break the air seal and the end lifted up so it is resting on the gunwale of the rescue boat.

If the rescuers do not have enough strength to raise the end of the canoe up to the gunwales, one of the paddlers in the water can be sent to the opposite end of the swamped canoe and instructed to push down on the far end of the boat while the rescuers lift the end nearest to the rescue boat.

Step 4—Once the end of the swamped boat is resting upside down on the gunwale of the rescue boat, the rescuers face each other and move the canoe across the gunwales of the rescue

boat until the middle of the swamped boat is resting and balances in the middle of the rescue boat.

Step 5—When the water has drained from the boat, the two rescuers decide on which way they will roll the capsized canoe, so the bottom is resting on the rescue canoe's gunwales. The boat is then pushed back toward the side of the rescue boat where it was first located.

Step 6—The emptied boat is brought parallel to the rescue boat and the paddlers are instructed to maintain contact with the boat and assisted in reentering their canoe.

Parallel Canoe Rescue

Step 1—The swamped canoe is brought parallel, alongside the rescue boat. The paddlers in the water are instructed to move to the opposite side and ends of the rescue boat.

Step 2—Both rescuers turn and kneel in their boat, facing the swamped canoe.

Step 3—Both rescuers reach across the swamped canoe and take hold of the gunwales on the side farthest from the rescue boat.

Step 4—Pulling on the gunwales of the swamped canoe toward the gunwales of the rescue boat, the canoe is turned so the bottom is up and its gunwales are resting on the gunwales of the rescue boat.

Step 5—The rescuers then pull the swamped canoe up on the gunwales of the rescue boat until the gunwales on the opposite side are completely out of the water. The canoe is held in this position until all the water has drained from it.

Step 6—Together at the same time, the rescuers flip the canoe away from the rescue boat while holding on to a thwart or to the gunwale of the empty canoe.

Step 7—With the canoe now empty and upright next to the rescue boat, it is ready for the paddlers in the water to reenter their canoe.

Reentering after Rescue

The **heel-hook assisted reentry** requires less upper-body strength and flexibility of a tired paddler who is overboard but it can only be done with the assistance of another canoe and its paddlers.

Step 1—Bring the empty canoe next to the side of the buddy boat.

Step 2—Have the paddler in the water float on their back and hold on to the gunwale. The buddy boat paddlers raise the nearest gunwale of the empty canoe so the gunwale closest to the paddler is just above the water.

Step 3—The paddler in the water rolls toward the lowered gunwale and places their outside leg inside the canoe, under a thwart, and rolls onto the gunwale without pushing it down under the water. At the same time, the paddler extends their arm farthest from the boat, and reaches toward the paddlers in the other boat. They clasp the paddler's hand and forearm. If the paddler in the buddy boat cannot reach the hand and arm of the paddler in the water, the paddler in the water should grab the seat or thwart as far across the canoe as possible.

Step 4—Once the paddler in the water has completed steps 2 and 3, the buddy boat paddlers say, "*Roll into the canoe on the count of three.*" On "*three*," the paddler straightens their leg, lets go of the rescuers arm, and rolls into the canoe while at the same time the buddy boat paddlers push down on the boat's gunwales closest to them. This will help lever the paddler into the boat.

Step 5—The paddler should continue to roll into the canoe until they are sitting on the bottom of the canoe. If a second paddler needs to reenter the craft, the process is repeated, with the first paddler kneeling in the canoe and assisting in the boat's stability.

Between-the-Boat Reentry

Another method to reenter a canoe from the water is to **use the buddy boat**.

Step 1—The paddlers in the buddy boat bring the two canoes together while the paddler in the water lies on their back between the two canoes. The paddler in the water then grabs the gunwale on the right with the right hand and the gunwale on the left with the left hand.

Step 2—The paddler in the water then places the right foot and right lower leg in the canoe on the right, and the left foot and left lower leg in the canoe on the left.

Step 3—Pulling up between the canoes, the paddler uses their arms and legs to lift themselves out of the water.

Step 4—After the paddler's body has reached the level of the gunwales, they shift their weight to their legs and feet and begins to stand with a foot in each canoe.

Step 5—Once the paddler has risen to a low standing position, they step into their own canoe and settles into a paddling position.

Reentry Using a Rescue Sling

A simple device to assist a paddler in reentering his or her canoe is a rescue sling. The sling can be made from a loop of rope or webbing. The loop should be long enough so that the end in the water is just below the bottom of the canoe. In this position, the rescue sling is like a stirrup on a saddle.

Step 1—Attach the rescue sling to a thwart or the end of a paddle in the middle of the canoe. The opposite side of the canoe is balanced by the paddlers in the buddy boat, a paddler in the water on the opposite side, or the paddler in the boat leaning the other way.

Step 2—The paddler places a foot in the loop and puts both hands on the gunwales.

Step 3—The paddler steps down on the rescue sling and pulls themself up. Once they are out of the water, they can reach across the boat and use the arms-across reentry or enter the canoe using the duck-and-roll reentry technique.

Canoeing Terms

abeam. The direction that is perpendicular, or at a right angle, to the center line.

ahead. The direction in front of the bow.

amidships. The middle section of a canoe.

astern. The direction aft, or behind, the canoe.

bailer. A scoop used to empty water from the canoe.

beam. The canoe's width at the widest point.

bilge. The part along the hull of a canoe where the bottom curves into the side. Sometimes confused with *chine,* which is a seam line between flat portions of a hull.

catch. The phase of a paddle stroke during which the paddle is placed into the water.

chine. The angle between the bottom and side of the canoe.

deck plate. A triangular reinforcement that overlays the gunwales at each end of the canoe.

feather. Turning the paddle sideways, so that its edge leads first, to reduce wind resistance during the recovery phase of a paddle stroke.

flare. The outwardly curved sides of a canoe. Flared sides more easily deflect waves.

freeboard. The distance between the surface of the water and the gunwales.

grip. The top of the paddle, where one hand is placed. A T-grip is shaped like a T and allows for precise control of the paddle. A pear grip is shaped to fit in the curve of the palm to improve comfort when paddling.

gunwales. The rails that run along the top edge of both sides of the canoe.

keel. A ridge that runs along the center line of the bottom of a canoe.

offside. For solo paddlers, the opposite side from the paddling side. Or, in tandem paddling, the side opposite from the bow paddler.

onside. The solo or bow paddler's paddling side.

painters. The lines attached to a canoe's bow and stern.

port. The left side of the boat.

portage yoke. A detachable or built-in shoulder frame for carrying a canoe.

primary stability. The ability of a canoe to stay steady and not tip. The flatter and wider the bottom of the canoe, the more primary stability the canoe has.

recovery. The phase of a paddle stroke when the paddle blade exits the water and moves toward the catch position.

rocker. The curve of the hull from the bow to the stern. The more curve in the rocker, the shorter the waterline length of the canoe.

secondary stability. The ability of a canoe to return upright when leaned to the side.

starboard. The right side of the boat.

stem. The vertical portion of the center line where the sides come together at the canoe's bow and stern. A *plumb* stem is straight, a *raked* stem is slanted, and a *recurved* stem curves inward.

tracking. The ability of a canoe to travel straight.

thwart. A brace that spans the gunwales and gives rigidity and support to the canoe.

trim. The horizontal position of a canoe in the water when it is balanced from end to end and side to side.

tumblehome. The inward curve of a boat's sides; narrows the distance between the gunwales without affecting the width of the canoe, making it easier to paddle.

waterline. The boundary along the hull between air and water.

Canoeing Resources

Scouting Literature

Basic Illustrated Canoe Paddling; Basic Illustrated Canoeing; Deck of First Aid; Emergency First Aid pocket guide; Scouts BSA handbooks and *Fieldbook; First Aid, Kayaking, Rowing, Small-Boat Sailing,* and *Whitewater* merit badge pamphlets

With your parent's permission, visit Scouting America's official retail website, www.scoutshop.org, for a complete listing of all merit badge pamphlets and other helpful Scouting materials and supplies.

Books

American Canoe Association. *Introduction to Paddling.* Menasha Ridge Press, 1996.

American Canoe Association; Dillon, Pamela S. and Oyen, Jeremy, eds. *Canoeing: Outdoor Adventures*. Human Kinetics, 2008.

McGuffin, Gary and McGuffin, Joanie. *Paddle Your Own Canoe: An Illustrated Guide to the Art of Canoeing*. Boston Mills Press, 2003.

Westwood, Andrew. *Canoeing The Essential Skills & Safety: An Essential Guide—The Essential Skills and Safety*. The Heliconia Press, 2012.

Organizations and Websites

American Canoe Association
P.O. Box 7996
Fredericksburg, VA 22404-7996
Telephone: 540-907-4460
www.americancanoe.org

American Whitewater
P.O. Box 1540
Cullowhee, NC 28723
Telephone: 866-262-8429
www.americanwhitewater.org

United States Canoe Association
www.uscanoe.com

Scouting Canoe Adventures

The Northern Tier National High Adventure Base offers wilderness treks through Minnesota and Canada. Information is available at www.ntier.org. Several local councils offer high-adventure canoe treks and whitewater experiences.

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