

Advancement Updates 2024

As of January 1, 2024, the following changes to Scouts BSA requirements become effective.

Rank Requirements:

There were minor changes to Scout (6), and Star (6).

The Cyberchip has been phased out. Scouts should use the Personal Safety Awareness training at <https://www.scouting.org/training/youth-protection/scouts-bsa/> for both Scout and Star ranks.

Eagle Palms:

Scouts BSA will no longer have to wait three months between Eagle Palms. They will have to earn five additional merit badges, and live by the Scout Oath and Law.

Merit badge with significant changes to content are:

- Automotive Maintenance – updated to include electric/hybrid vehicles (1c,d,e,f,g,h) (2a,b,c,d,e) (3c) (8a,e,f)
- Canoeing – major reorganization (3) (4b) (7) (8) (9)
- Coin Collecting – reorganization and updated for new/retired coinages (3) (4) (5) (6) (7)
- Fire Safety – safety updates (1c) (2) (4) (6b,c,d,g) (7a) (9a) (10a) (11)
- First Aid* – more hands-on (2) (4) (7) (8d) (10) (11) (12) (13) (14) (15) (16)
- Golf – reorganized and added disc golf option (1) (2)
- Insect Study – expanded requirements (2) (4) (6a,b) (12)
- Journalism – included social media (2a1)
- Nuclear Science – updated, more active options (1a,b,c,d,e) (2b) (3a,b) (4,4c) (6a,b)
- Safety – updated to include natural disasters (1c) (2c,d,e)
- Skating – added skateboarding option (1b)(2) (Skateboarding Option), Ice Skating Option (2b1) (2d2), Roller Skating Option (2c1)(2d2)
- Surveying – added use of drones (2) (3) (4) (5) (6)
- Sustainability* – major reorganization (1) (2) (3) (4) (5) (6) (7) (8) (9)
- Swimming* – added correct demonstration of strokes (3) (4) (5) (6) (7) (8) (9)

Merit badges with minor changes

include:

Backpacking (11b)

Bird Study (2) (4) (7) (8c) (9d) (11) (12)

Camping* (9c)

Chemistry (2c) (5)

Cooking* (5 a,b,c,d,e)

Digital Technology (1)

Engineering (5) (6c)

Fly-Fishing (3b,c) (10)

Indian Lore (2) (3) (4) (5)

Law (1) (5) (11)

Mining in Society (8c)

Photography (1b)

Plant Science (8 Option 1: Agronomy E5c)

Programming (1a)

Radio (9a5)

Scouting Heritage (2b3, b4) (3) (4c)

The current merit badge requirements are found at <https://www.scouting.org/skills/merit-badges/>

"*" indicates Eagle required merit badge

The Guide to Advancement Section 7.0.4.3 addresses what to do when merit badge requirements change and Section 4.0.0.1 addresses changes to rank requirements. This can be found at <https://filestore.scouting.org/filestore/pdf/33088.pdf>

Scouts BSA Merit Badge Updates Effective January 1, 2024

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MERIT BADGE	CHANGED REQUIREMENT (Including Requirement Number)	EXISTING REQUIREMENT (Including Requirement Number)
Automotive Maintenance	<p>1. Safety and Registration. Do the following:</p> <ul style="list-style-type: none"> a. Explain to your counselor the hazards you are most likely to encounter during automotive maintenance activities, and what you should do to anticipate, help prevent, mitigate, or lessen these hazards. b. Discuss with your counselor the safety equipment, tools, and clothing used while checking or repairing a motor vehicle. Use this equipment, tools, and/or clothing (when needed or called for) in meeting the requirements for this merit badge. c. Explain the different types of motors you may encounter. d. Explain the safety considerations when performing maintenance on a vehicle equipped with a high-voltage electrical system. e. Review the maintenance chart in the vehicle owner's manual. Explain the requirements and time limits. f. Explain the purpose, importance, and limitations of safety belts and passive restraints. g. Find out the requirements for your state's emissions and safety inspections (as applicable), including how often a vehicle needs to be inspected. h. Explain the importance of registering a vehicle and find out the annual registration fee for renewing your family car's registration. 	<p>1. Do the following:</p> <ul style="list-style-type: none"> a. Explain to your counselor the hazards you are most likely to encounter during automotive maintenance activities, and what you should do to anticipate, help prevent, mitigate, or lessen these hazards. b. Discuss with your counselor the safety equipment, tools, and clothing used while checking or repairing a motor vehicle. Use this equipment, tools, and/or clothing (when needed or called for) in meeting the requirements for this merit badge.
Automotive Maintenance	<p>2. General Maintenance. Do the following:</p> <ul style="list-style-type: none"> a. Demonstrate how to check the following: <ul style="list-style-type: none"> 1. Brake fluid 2. Engine oil 3. Coolant 4. Power steering fluid 5. Windshield washer fluid 6. Transmission fluid 7. Battery fluid (if possible) and condition of the battery terminals. b. Locate the fuse boxes; determine the type and size of fuses. Demonstrate the proper replacement of burned-out fuses. c. Demonstrate how to check the condition and tension of belts and hoses. d. Check the vehicle for proper operation of its lights, including the interior overhead lights, instrument lights, warning lights, and exterior bulbs. e. Locate and check the air filter(s). 	<p>2. General Maintenance, Safety, and Registration.</p> <p>Do the following:</p> <ul style="list-style-type: none"> a. Review the maintenance chart in the owner's manual. Explain the requirements and time limits. b. Demonstrate how to check the following: <ul style="list-style-type: none"> 1. Brake fluid 2. Engine oil 3. Coolant 4. Power steering fluid 5. Windshield washer fluid 6. Transmission fluid 7. Battery fluid (if possible) and condition of the battery terminals. c. Locate the fuse boxes; determine the type and size of fuses. Demonstrate the proper replacement of burned-out fuses. d. Demonstrate how to check the condition and tension of belts and hoses. e. Check the vehicle for proper operation of its lights, including the interior overhead lights, instrument lights, warning lights, and exterior bulbs. f. Locate and check the air filter(s). g. Explain the purpose, importance, and limitations of safety belts and passive restraints. h. Find out the requirements for your state's emissions and safety inspections (as applicable), including how often a vehicle needs to be inspected. i. Explain the importance of registering a vehicle and find out the annual registration fee for renewing your family car's registration
Automotive Maintenance	<p>3. Dashboard/Driver Information Center. Do the following:</p> <ul style="list-style-type: none"> a. Explain the function of the fuel gauge, speedometer, tachometer, oil pressure, and engine temperature gauge. Point each one out on the instrument cluster. b. Explain the symbols that light up on the dashboard and the difference between the yellow and red symbols. Explain each of the indicators on the dashboard, using the owner's manual if necessary. c. Explain the messages and alerts that may be displayed on the dashboard/driver information center including maintenance-related reminders. 	<p>3. Dashboard. Do the following:</p> <ul style="list-style-type: none"> a. Explain the function of the fuel gauge, speedometer, tachometer, oil pressure, and engine temperature gauge. Point each one out on the instrument cluster. b. Explain the symbols that light up on the dashboard and the difference between the yellow and red symbols. Explain each of the indicators on the dashboard, using the owner's manual if necessary.

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Automotive Maintenance	<p>8. Ignition and Electrical Systems. Do the following:</p> <p>a. Diagram and explain the parts of one of the following electrical systems:</p> <ol style="list-style-type: none"> 1. Starting/charging system 2. Hybrid or electric vehicle inverter 3. Lighting system <p>b. Explain the engine's firing order.</p> <p>c. Explain the purpose of the spark gap.</p> <p>d. Demonstrate how to safely connect jumper cables to your car battery.</p> <p>e. Discuss with your counselor what factors can affect range on an electrified vehicle. Explain the procedure for recharging an electric or plug-in hybrid vehicle.</p> <p>f. Explain what other vehicle systems are dependent on a reliable electrical system.</p>	<p>8. Ignition and Electrical Systems. Do the following:</p> <p>a. Diagram and explain the parts of the electrical system.</p> <p>b. Explain the engine's firing order.</p> <p>c. Explain the purpose of the spark gap.</p> <p>d. Demonstrate how to safely connect jumper cables to your car battery.</p>
Backpacking	<p>11b. Using Leave No Trace principles, take the trek as planned in requirement 11a that is at least five full days, covering at least 30 miles and utilizing at least three different campsites. While on trek, complete at least one service project approved by your merit badge counselor.</p>	<p>11b. Using Leave No Trace principles, take the trek you have planned and, while on the trek, complete at least one service project approved by your merit badge counselor.</p>
Bird Study	<p>2. Show that you are familiar with the terms used to describe birds by doing the following:</p> <ol style="list-style-type: none"> a. Sketch or trace a perched bird and then label 15 different parts of the bird. b. Sketch or trace an extended wing and label six types of wing feathers. 	<p>2. Show that you are familiar with the terms used to describe birds by sketching or tracing a perched bird and then labeling 15 different parts of the bird. Sketch or trace an extended wing and label six types of wing feathers.</p>
Bird Study	<p>Delete requirement 4g</p>	<p>4. Demonstrate that you know how to use a bird field guide. Show your counselor that you are able to understand a range map by locating in the book and pointing out the wintering range, the breeding range, and/or the year-round range of one species of each of the following types of birds:</p> <ol style="list-style-type: none"> a. Seabird b. Plover c. Falcon or hawk d. Warbler or vireo e. Heron or egret f. Sparrow g. Nonnative bird (introduced to North America from a foreign country since 1800)
Bird Study	<p>7. Explain the function of a bird's song. Be able to identify five of the 20 species in your field notebook by song or call alone. Explain the difference between songs and calls. For each of these five species, enter a description of the song or call, and note the behavior of the bird making the sound. Note why you think the bird was making the call or song that you heard.</p>	
Bird Study	<p>(new) 8c. Participate in a bird banding program with an approved federal or state agency, university researcher, bird observatory, or certified private individual.</p> <ol style="list-style-type: none"> 1. Explain who is able to band birds and why. 2. Explain why birds get banded. 3. Explain what kinds of birds get banded. 4. Tell how the birds were captured, the number of bird species recorded during your visit, and your role in the program. 	<p>8. Do ONE of the following:</p> <ol style="list-style-type: none"> a. Go on a field trip with a local club or with others who are knowledgeable about birds in your area. 1. Keep a list or fill out a checklist of all the birds your group observed during the field trip. 2. Tell your counselor which birds your group saw and why some species were common and some were present in small numbers. 3. Tell your counselor what makes the area you visited good for finding birds. 4. By using a public library, the internet, or contacting the National Audubon Society, find the name and location of the Christmas Bird Count nearest your home and obtain the results of a recent count.
Bird Study	<p>(new) 9d. Build a nest box for a species of your choice using plans approved by your counselor.</p>	<p>9. Do ONE of the following. For the option you choose, describe what birds you hope to attract, and why.</p> <ol style="list-style-type: none"> a. Build a bird feeder and put it in an appropriate place in your yard or another location. b. Build a birdbath and put it in an appropriate place. c. Build a backyard sanctuary for birds by planting trees and shrubs for food and cover.
Bird Study	<p>11. Identify a nonnative bird (introduced to North America from a foreign country since 1800). Describe how nonnative birds may become damaging to the ecosystem.</p>	<p>11. Identify three career opportunities connected to the study of birds. Pick one and find out the education, training, and experience required for this profession. Discuss with your counselor if this profession might interest you.</p>
Bird Study	<p>(new) 12. Identify three career opportunities connected to the study of birds. Pick one and find out the education, training, and experience required for this profession. Discuss with your counselor if this profession might interest you.</p>	
Camping	<p>9c. On any of these camping experiences, perform a conservation project approved by the landowner or land managing agency. This can be done alone or with others.</p>	<p>9c. Perform a conservation project approved by the landowner or land managing agency. This can be done alone or with others.</p>

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Canoeing	Delete requirement 3c	<p>3. Do the following:</p> <p>a. Name and point out the major parts of a canoe.</p> <p>b. Describe how the length and shape of a canoe affect its performance.</p> <p>c. Discuss the advantages and disadvantages of the different materials used to make canoes.</p>
Canoeing	4b. Demonstrate how to correctly size a paddle for a paddler in a sitting position and a kneeling position.	<p>4. Do the following:</p> <p>a. Name and point out the parts of a paddle.</p> <p>b. Demonstrate how to size correctly a paddle for a paddler in a sitting position and a kneeling position.</p>
Canoeing	<p>7. With a companion, use a properly equipped canoe to demonstrate the following:</p> <p>a. Safely carry and launch the canoe from a dock or shore (both, if possible).</p> <p>b. Safely land the canoe on a dock or shore (both, if possible) and return it to its proper storage location.</p> <p>c. Demonstrate kneeling and sitting positions in a canoe and explain the proper use for each position.</p> <p>d. Change places while afloat in the canoe.</p>	<p>7. Do the following:</p> <p>a. Discuss what personal and group equipment would be appropriate for a canoe camping trip. Describe how personal and group equipment can be packed and protected from water.</p> <p>b. Using the containers and packs from requirement 7a, demonstrate how to load and secure the containers and other equipment in the canoe.</p> <p>c. Using appropriate knots, including a trucker's hitch, tautline hitch, and bowline, demonstrate how to secure a canoe to a vehicle or a trailer, or if these are not available, a rack on land.</p>
Canoeing	<p>8. With a companion, use a properly equipped canoe to demonstrate the following:</p> <p>a. Safely exit the canoe in deep water without losing contact with the canoe. Reenter the canoe with the assistance of the other paddler without capsizing the boat.</p> <p>b. Safely perform a controlled capsize of the canoe and demonstrate how staying with a capsized canoe will support both paddlers.</p> <p>c. Swim, tow, or push a swamped canoe 50 feet to shallow water. In the shallow water, empty the swamped canoe and reenter it.</p> <p>d. In deep water, rescue a swamped canoe and its paddlers. After checking that those in the water do not need immediate assistance, empty the swamped canoe and help the paddlers safely reenter their boat without capsizing.</p> <p>e. Perform a canoe rescue of a conscious swimmer.</p> <p>f. Using a rescue (throw) bag from shore, lay the line within 3 feet of a conscious swimmer 30 feet away. Show how to repack the bag when done.</p>	<p>8. With a companion, use a properly equipped canoe to demonstrate the following:</p> <p>a. Safely carry and launch the canoe from a dock or shore (both, if possible).</p> <p>b. Safely land the canoe on a dock or shore (both, if possible) and return it to its proper storage location.</p> <p>c. Demonstrate kneeling and sitting positions in a canoe and explain the proper use for each position.</p> <p>d. Change places while afloat in the canoe.</p>
Canoeing	<p>9. With a companion, using a properly equipped canoe to demonstrate the following tandem maneuvers while paddling in unison on opposite sides and without changing sides. Each paddler must demonstrate these maneuvers in both the bow and stern and on both sides of the canoe while maintaining trim and balance of the canoe:</p> <p>a. Pivot (spin) the canoe 180° (half circle) to the right from a stationary position, stop, and return to the starting position by pivoting to the left using draw and pushaway strokes or using forward and reverse sweeps staying within 2 boat lengths of the starting position.</p> <p>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.</p> <p>c. While in forward motion, stop the canoe within two boat lengths using the backstroke.</p> <p>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.</p> <p>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.</p> <p>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° to the left.</p> <p>g. Move the canoe backwards 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.</p> <p>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.</p>	<p>9. With a companion, use a properly equipped canoe to demonstrate the following:</p> <p>a. In deep water, exit the canoe and get back in without capsizing.</p> <p>b. Safely perform a controlled capsize of the canoe and demonstrate how staying with a capsized canoe will support both paddlers.</p> <p>c. Swim, tow, or push a swamped canoe 50 feet to shallow water. In the shallow water, empty the swamped canoe and reenter it.</p> <p>d. In deep water, rescue a swamped canoe and its paddlers by emptying the swamped canoe and helping the paddlers safely reenter their boat without capsizing.</p>

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Canoeing	Delete requirement 10	<p>10. With a companion, use a properly equipped canoe to demonstrate the following paddling strokes as both a bow and stern paddler:</p> <ul style="list-style-type: none"> a. Forward stroke b. Backstroke c. Draw <p>For stern paddling only:</p> <ul style="list-style-type: none"> d. J-stroke e. Pushaway f. Forward sweep g. Reverse sweep h. Rudder stroke i. Stern pry
Canoeing	Delete requirement 11	<p>11. Using the strokes in requirement 10, and in an order determined by your counselor, use a properly equipped canoe to demonstrate the following tandem maneuvers while paddling on opposite sides and without changing sides. Each paddler must demonstrate these maneuvers in both the bow and stern and on opposite paddling sides:</p> <ul style="list-style-type: none"> a. Pivot or spin the canoe in either direction. b. Move the canoe sideways or abeam in either direction. c. Stop the canoe. d. Move the canoe in a straight line for 50 yards.
Canoeing	Delete requirement 12	<p>12. Use a properly equipped canoe to demonstrate solo canoe handling:</p> <ul style="list-style-type: none"> a. Launch from shore or a pier (both, if possible). b. Using a single-blade paddle and paddling only on one side, demonstrate proper form and use of the forward stroke, backstroke, draw stroke, pushaway stroke, forward sweep, reverse sweep, J-stroke, and rudder stroke. Repeat while paddling on the other side. c. Using a single-blade paddle and paddling only on one side, demonstrate proper form and use of a combination of a forward stroke, rudder stroke, and stern pry by canoeing to a target 50 yards away. Repeat while paddling on the other side. d. Make a proper landing at a dock or shore (both, if possible). Store canoe properly (with assistance, if needed).
Chemistry	2c. Describe the difference between a chemical reaction and a physical change. Observe one of each and share your observations with your counselor.	2c. Describe the difference between a chemical reaction and a physical change
Chemistry	<p>5. Discuss with your counselor the 5 classical areas of chemistry (organic, inorganic, physical, analytical and biological), and two others from the following list. Explain what they are, and how they impact your daily life.</p> <ul style="list-style-type: none"> a. Agricultural chemistry b. Atmospheric chemistry c. Computational chemistry d. Electrochemistry e. Environmental chemistry and green chemistry f. Flavor chemistry, fragrance chemistry, and food chemistry g. Medicinal and natural products chemistry h. Photochemistry i. Polymer chemistry j. Or another area of chemistry of your choosing. 	<p>5. List the five classical divisions of chemistry. Briefly describe each one, and tell how it applies to your everyday life.</p>
Coin Collecting	3. Describe three different ways to store a collection, and the benefits, drawbacks, and cost of each method.	<p>3. Explain the grading terms Uncirculated, Extremely Fine, Very Fine, Fine, Very Good, Good, and Poor. Show five different grade examples of the same coin type. Explain the term proof and why it is not a grade. Tell what encapsulated coins are.</p>

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Coin Collecting	<p>4. Do each of the following and explain to your counselor the design features, designer name, designer initials, and where to find them for each item:</p> <p>a. Collect a one-cent coin from the year group: 1959-2008 (that is, dated between 1959 and 2008) and a one-cent coin from the year group 2010-present. Explain how and why the one-cent coins issued in 2009 were different from either of the other two year groups.</p> <p>b. Collect two five-cent coins, one from each of these year groups: 1959-2003 and 2006-present. Explain how and why the five-cent coins issued in 2004-2005 were different from either of the other two year groups.</p> <p>c. Collect a ten-cent coin from 1965-present.</p> <p>d. Collect a twenty-five-cent coin from 1965-1998, two examples from the 50-State Quarter®/territories Program 1999-2009, two designs from the America the Beautiful® program 2012-2021 and two designs from the American Woman Quarter® program (2022-2024). Explain the purpose of each of those programs.</p> <p>e. Collect a half dollar coin from 1965-present.</p> <p>f. Collect a dollar coin from each of these design groups: Susan B. Anthony 1979-81, Sacagawea 1990-2005, U.S. Presidents 2000-2014.</p>	<p>4. Know three different ways to store a collection, and describe the benefits, drawbacks, and expense of each method. Pick one to use when completing requirements.</p>
Coin Collecting	<p>5. Describe and discuss with your counselor the special reverse designs of the quarters, half dollar and dollar coin struck in 1975-1976 to honor the U.S. Bicentennial.</p>	<p>5. Do ONE of the following: a. Demonstrate to your counselor that you know how to use two U.S. or world coin reference catalogs. b. Read a numismatic magazine or newspaper and tell your counselor about what you learned.</p>
Coin Collecting	<p>6. Identify for your counselor the people depicted on current currency: \$1, \$2, \$5, \$10, \$20, \$50 and \$100 notes. Explain where United States currency is printed.</p>	<p>6. Describe the 1999–2008 50 State Quarters® program or the 2010-2021 America the Beautiful Quarters® program. Collect and show your counselor five different quarters from circulation you have acquired from one of these programs.</p>
Coin Collecting	<p>7. Do ONE of the following:</p> <p>a. Collect and identify for your counselor 20 different world coins from at least 7 different countries. Identify the country, major design elements and denomination of each.</p> <p>b. Collect and identify for your counselor 20 different world paper money from at least 7 different countries. Identify the country, major design elements and denomination of each.</p> <p>c. Collect and identify for your counselor 20 different tokens and or medals. Identify the issuer, and use of each.</p> <p>d. Complete one of the following and report to your counselor what you experienced:</p> <ol style="list-style-type: none"> 1. Attend a coin show 2. Attend a coin club meeting 3. Tour a U.S. Mint facility or museum 4. Tour a virtual exhibit (with your parent's/guardian's permission) approved by your counselor 	<p>7. Collect from circulation a set of current U.S. coins. Include one coin of each denomination (cent, nickel, dime, quarter, half dollar, dollar). For each coin, locate the mint marks, if any, and the designer's initials, if any.</p>
Coin Collecting	<p>Delete requirement 8</p>	<p>8. Do the following:</p> <ol style="list-style-type: none"> a. Identify the people depicted on the following denominations of current U.S. paper money: \$1, \$2, \$5, \$10, \$20, \$50, and \$100. b. Explain "legal tender." c. Describe the role the Federal Reserve System plays in the distribution of currency.
Coin Collecting	<p>Delete requirement 9</p>	<p>9. Do ONE of the following:</p> <ol style="list-style-type: none"> a. Collect and identify 50 foreign coins from at least 10 different countries. b. Collect and identify 20 bank notes from at least five different countries. c. Collect and identify 15 different tokens or medals. d. For each year since the year of your birth, collect a date set of a single type of coin.
Cooking	<p>5a. Using the MyPlate food guide or the current USDA nutrition model, plan a menu that includes four meals, one snack, and one dessert for your patrol (or a similar size group of up to eight youth, including you) on a camping trip. These four meals must include two breakfasts, one lunch, and one dinner. Additionally, you must plan one snack and one dessert. Your menus should include enough food for each person, keeping in mind any special needs (such as food allergies) and how you keep your foods safe and free from cross-contamination. List the equipment and utensils needed to prepare and serve these meals.</p>	<p>5a. Using the MyPlate food guide or the current USDA nutrition model, plan five meals for your patrol (or a similar size group of up to eight youth, including you) for a camping trip. Your menus should include enough food for each person, keeping in mind any special needs (such as food allergies) and how you keep your foods safe and free from cross-contamination. These five meals must include at least one breakfast, one lunch, one dinner, AND at least one snack OR one dessert. List the equipment and utensils needed to prepare and serve these meals.</p>
Cooking	<p>5b. Find or create recipes for the four meals, the snack, and the dessert you have planned. Adjust menu items in the recipes for the number to be served. Create a shopping list and budget to determine the per-person cost.</p>	<p>5b. Find or create recipes for at least three meals, a dessert and a snack. Adjust menu items in the recipes for the number to be served. Create a shopping list and budget to determine the per-person cost.</p>
Cooking	<p>5c. Share and discuss your menu plans and shopping list with your counselor.</p>	<p>5c. Share and discuss your meal plan and shopping list with your counselor.</p>

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Cooking	5d. In the outdoors, using your menu plans and recipes for this requirement, cook two of the four meals you planned using either a camp stove OR backpack stove. Use a skillet over campfire coals OR a Dutch oven for the third meal, and cook the fourth meal in a foil pack OR on a skewer. Serve all of these meals to your patrol or a group of youth.	5d. In the outdoors, using your menu plans and recipes for this requirement, cook three of the five meals you planned using either a camp stove OR backpack stove. Use a skillet over campfire coals OR a Dutch oven for a fourth meal, and cook the fifth meal in a foil pack OR on a skewer. Serve all of these meals to your patrol or a group of youth.
Cooking	5e. In the outdoors, using your menu plans and recipes for this requirement, prepare one snack and one dessert. Serve both of these to your patrol or a group of youth.	5e. In the outdoors, prepare a dessert OR a snack and serve it to your patrol or a group of youth.
Engineering	5. Use the systems engineering approach to design an original piece of patrol equipment, a toy or a useful device for the home, office or garage.	5. Do ONE of the following: a. Use the systems engineering approach to make step-by-step plans for your next campout. List alternative ideas for such items as program schedule, campsites, transportation, and costs. Tell why you made the choices you did and what improvements were made. b. Make an original design for a piece of patrol equipment.
Engineering	6c. <i>Understanding electronics.</i> Using an electronic device such as a smartphone or tablet computer, find out how sound, video, text or images travel from one location to another. Explain how the device was designed for ease of use, function, and durability.	6c. <i>Understanding electronics.</i> Using an electronic device such as a mobile telephone or portable digital media player, find out how sound travels from one location to another. Explain how the device was designed for ease of use, function, and durability.
Fire Safety	1c. Explain how to safely store flammable and combustible liquids. Describe the options available for safely disposing of unwanted hazardous substances in your community.	1c. Explain how to safely discard and store flammable liquids.
Fire Safety	2. Explain the concept of fire and name the parts of the fire tetrahedron. Name the by-products of combustion. Describe the life cycle of a fire.	2. Explain the chemistry and physics of fire. Name the parts of the fire tetrahedron. Explain why vapors are important to the burning process. Name the products of combustion. Give an example of how fire grows and what happens
Fire Safety	4. Do the following: a. Explain the four classifications of fire origin (accidental, natural, incendiary, or undetermined) and give an example of each. b. Describe how a fire classified as incendiary might lead to criminal prosecution of a person charged with arson. c. Explain some of the social, economic and environmental consequences that result from incendiary fires that damage or destroy structures and wildlands.	4. Explain the role of human behavior in the arson problem in this country.
Fire Safety	6b. Identify the location of all smoke alarms in your home and confirm that none are more than 10 years old. Test each smoke alarm and demonstrate regular maintenance of a smoke alarm.	6b. Test a smoke alarm and demonstrate regular maintenance of a smoke alarm.
Fire Safety	6c. Explain what to do when you smell natural gas and when you smell smoke	6c. Explain what to do when you smell gas and when you smell smoke
Fire Safety	6d. Explain how you would report a fire to have the fire department respond.	6d. Explain how you would report a fire alarm
Fire Safety	6g. Explain how to extinguish a stovetop pan fire.	6g. Explain how to extinguish a grease pan fire.
Fire Safety	7a. Demonstrate lighting a match safely, the proper way to extinguish it and to dispose of it.	7a. Demonstrate lighting a match safely
Fire Safety	9a. Describe for your counselor the safe way to refuel a liquid fueled engine, such as a lawn mower, weed eater, outboard motor, farm machine, or automobile with fuel from an approved gasoline container.	9a. Describe for your counselor the safe way to refuel a liquid fuel engine, such as a lawn mower, weed eater, outboard motor, farm machine, or automobile with gas from an approved gas can .
Fire Safety	10a. Explain the costs associated with outdoor and wildland fires and how they can be prevented.	10. Do the following: a. Explain the cost of outdoor and wildland fires and how to prevent them. b. Demonstrate setting up and putting out a cooking fire. c. Demonstrate using a camp stove and lantern. d. Explain how to set up a campsite safe from fire
Fire Safety	11. Visit a fire station. Identify the various types of fire trucks and describe the functions of each. Find out about the fire prevention activities in your community during your visit.	11. Visit a fire station. Identify the types of fire trucks. Find out about the fire prevention activities in your community.
First Aid	Delete requirement 2c	2. Explain how you would obtain emergency medical assistance from: a. Your home b. A remote location on a wilderness camping trip c. An activity on open water
First Aid	4. Explain the precautions you must take to reduce the risk of transmitting an infection between you and the victim while administering first aid.	4. Explain the universal precautions as applied to the transmission of infections. Discuss the ways you should protect yourself and the victim while administering first aid.

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First Aid	7. Do the following: a. Describe the conditions that must exist before performing CPR on a person. b. Demonstrate proper CPR technique using a training device approved by your counselor. c. Explain the use of an automated external defibrillator (AED). d. Demonstrate or simulate the proper use of an automated external defibrillator (AED), using an AED training device if available. e. Identify the location of the AED at your school, place of worship, and troop meeting place, if one is present.	7. Do the following: a. Describe the conditions that must exist before performing CPR on a person. Then demonstrate proper CPR technique using a training device approved by your counselor. b. Explain the use of an automated external defibrillator (AED). Identify the location of the AED at your school, place of worship, and troop meeting place, if one is present.
First Aid	(new) 8d. Demonstrate the application of a tourniquet without tightening it.	8. Do the following: a. Show the steps that need to be taken for someone who has a large open wound or cut that is not bleeding severely. b. Show the steps that need to be taken for someone who has a large open wound or cut that is severely bleeding. c. Tell the dangers in the use of a tourniquet and the conditions under which its use is justified.
First Aid	10. Describe the signs, symptoms, and potential complications of a fracture and dislocation.	10. Describe the signs and symptoms and demonstrate the proper procedures for handling and immobilizing suspected closed and open fractures or dislocations of the: a. Forearm b. Wrist c. Upper leg d. Lower leg e. Ankle
First Aid	11. Demonstrate the proper procedures for handling and immobilizing suspected closed or open fractures or dislocations of the: a. Finger b. Forearm c. Wrist d. Upper leg e. Lower leg f. Ankle	11. Describe the signs, symptoms, and possible complications and demonstrate care for someone with a suspected injury to the head, neck, or back.
First Aid	12. Describe the signs, symptoms, and possible complications and demonstrate care for someone with a suspected injury to the neck or back.	12. Describe the symptoms, proper first-aid procedures, and possible prevention measures for the following conditions: a. Anaphylaxis/allergic reactions b. Bruises c. Sprains or strains d. Hypothermia e. Frostbite f. Burns—first, second, and third degree g. Convulsions/seizures h. Dehydration i. Muscle cramps j. Heat exhaustion k. Heat stroke l. Abdominal pain m. Broken, chipped, or loosened tooth

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First Aid	<p>13. Describe the symptoms, proper first-aid procedures, and possible prevention measures for the following conditions:</p> <ul style="list-style-type: none"> a. Concussion b. Anaphylaxis/allergic reactions c. Asthmatic attack d. Bruises e. Sprains or strains f. Hypothermia g. Frostbite h. Burns—first, second, and third degree i. Convulsions/seizures j. Dehydration k. Muscle cramps l. Heat exhaustion m. Heat stroke n. Abdominal pain o. Broken, chipped, or loosened tooth 	<p>13. Do the following:</p> <ul style="list-style-type: none"> a. Describe the conditions under which an injured person should be moved. b. If a sick or an injured person must be moved, tell how you would determine the best method. Demonstrate this method. c. With helpers under your supervision, improvise a stretcher and move a presumably unconscious person.
First Aid	<p>14. Do the following:</p> <ul style="list-style-type: none"> a. Describe the conditions under which an injured person should be moved. b. If a sick or an injured person must be moved, tell how you would determine the best method. Demonstrate this method. c. With helpers under your supervision, improvise a stretcher and move a presumably unconscious person. 	<p>14. Teach another Scout a first-aid skill selected by your counselor.</p>
First Aid	<p>15. Describe the following:</p> <ul style="list-style-type: none"> a. The indications that someone might be a danger to themselves or others. b. What action you should take if you suspect that someone might be a danger to themselves or others. 	N/A
First Aid	<p>16. Teach another Scout a first-aid skill selected by your counselor.</p>	N/A
Fly Fishing	<p>3. Demonstrate how to tie proper knots to prepare a fly rod for fishing:</p> <ul style="list-style-type: none"> a. Tie backing to the arbor of a fly reel spool using an arbor knot. b. Tie backing to the fly line using a nail (tube) knot. c. Attach a leader to the fly line using a nail (tube) knot or a loop-to-loop connection. d. Add a tippet to a leader using a surgeon's knot or a loop-to-loop connection. e. Tie a fly onto the terminal end of the leader using an improved clinch knot. 	<p>3. Demonstrate how to tie proper knots to prepare a fly rod for fishing:</p> <ul style="list-style-type: none"> a. Tie backing to the arbor of a fly reel spool using an arbor knot. b. Tie backing to the fly line using a nail knot. c. Attach a leader to the fly line using a nail knot or a loop-to-loop connection. d. Add a tippet to a leader using a surgeon's knot or a loop-to-loop connection. e. Tie a fly onto the terminal end of the leader using an improved clinch knot.
Fly Fishing	<p>10. Catch at least one fish on a fly and identify it.</p>	<p>10. Catch at least one fish and identify it.</p>
Golf	<p>1. Discuss safety on the golf course. Show that you know first aid for injuries or illnesses that could occur while golfing, including lightning, heat reactions, sunburn, dehydration, blisters, animal or bug bites, poison ivy exposure, sprains, and strains.</p>	<p>1. Discuss safety on the golf course. Show that you know first aid for injuries or illnesses that could occur while golfing, including lightning, heat reactions, dehydration, blisters, sprains, and strains.</p>

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Golf	<p>2. Complete ONE of the following options:</p> <p>Option 1—Traditional Golf</p> <p>(a) Study the USGA “Rules of Golf” now in use. (1) Tell about the three categories of golf etiquette. (2) Demonstrate that you understand the definitions of golf terms. (3) Show that you understand the “Rules of Amateur Status.”</p> <p>(b) Tell about your understanding of the World Handicap System.</p> <p>(c) Do the following: (1) Tell about the early history of golf. (2) Describe golf’s early years in the United States. (3) Tell about the accomplishments of a top golfer of your choice.</p> <p>(d) Do the following: (1) Tell how golf can contribute to a healthy lifestyle, mentally and physically. (2) Tell how a golf exercise plan can help you play better. Show two exercises that would help improve your game.</p> <p>(e) Show the following: (1) The proper grip, stance, posture, and key fundamentals of a good swing (2) Driver played from a tee (3) The fairway wood shot (4) The long iron shot</p>	<p>2. Study the USGA “Rules of Golf” now in use. (a) Tell about the three categories of golf etiquette. (b) Demonstrate that you understand the definitions of golf terms. (c) Show that you understand the “Rules of Amateur Status.”</p>
Golf	Delete existing requirement 3	3. Tell about your understanding of the USGA system of handicapping.
Golf	Delete existing requirement 4	4. Do the following: (a) Tell about the early history of golf. (b) Describe golf’s early years in the United States. (c) Tell about the accomplishments of a top golfer of your choice.
Golf	Delete existing requirement 5	5. Discuss with your counselor vocational opportunities related to golf.
Golf	Delete existing requirement 6	6. Do the following: (a) Tell how golf can contribute to a healthy lifestyle, mentally and physically. (b) Tell how a golf exercise plan can help you play better. Show two exercises that would help improve your game.
Golf	Delete existing requirement 7	7. Show the following: (a) The proper grip, stance, posture, and key fundamentals of a good swing (b) Driver played from a tee (c) The fairway wood shot (d) The long iron shot (e) The short iron shot (f) The approach, chip-and-run, and pitch shots (g) The sand iron shot, bunker, or heavy rough recovery shots (h) A sound putting stroke
Golf	Delete existing requirement 8	8. Play a minimum of two nine-hole rounds or one 18-hole round of golf with another golfer about your age and with your counselor, or an adult approved by your counselor. Do the following: (a) Follow the “Rules of Golf.” (b) Practice good golf etiquette. (c) Show respect to fellow golfers, committee, sponsor, and gallery.
Indian Lore	2. Research an American Indian tribe, group, or nation. Tell your counselor about traditional dwellings, way of life, tribal government, religious beliefs, family and clan relationships, language, clothing styles, arts and crafts, food cultivation, foraging and preparation, means of getting around, games, customs in warfare, and where and how they live today.	2. Give the history of one American Indian tribe, group, or nation that lives or has lived near you. Visit it, if possible. Tell about traditional dwellings, way of life, tribal government, religious beliefs, family and clan relationships, language, clothing styles, arts and crafts, food preparation, means of getting around, games, customs in warfare, where members of the group now live, and how they live.

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Indian Lore	<p>3. Do the following:</p> <p>a. Learn 10 common terms in an American Indian language and their meanings.</p> <p>b. Identify the meaning of 10 place names of American Indian origin in the United States.</p> <p>c. Name five well-known American Indian leaders, either from the past or people of today. Give their tribes or nations. Describe what they did or do now that makes them notable.</p>	<p>3. Do TWO of the following. Focus on a specific group or tribe.</p> <p>a. Make an item of clothing worn by members of the tribe.</p> <p>b. Make and decorate three items used by the tribe, as approved by your counselor.</p> <p>c. Make an authentic model of a dwelling used by an Indian tribe, group, or nation.</p> <p>d. Visit a museum to see Indian artifacts. Discuss them with your counselor. Identify at least 10 artifacts by tribe or nation, their shape, size, and use.</p>
Indian Lore	<p>4. Do the following:</p> <p>a. Describe how life might have been different for the European settlers if there had been no Native Americans to meet them when they came to this continent.</p> <p>b. Describe eight things adopted by others from American Indians.</p> <p>c. Learn a game played by a group or tribe. Teach and lead it with a Scout group.</p>	<p>4. Do ONE of the following:</p> <p>a. Learn three games played by a group or tribe. Teach and lead one game with a Scout group.</p> <p>b. Learn and show how a tribe traditionally cooked or prepared food. Make three food items.</p> <p>c. Give a demonstration showing how a specific Indian group traditionally hunted, fished, or trapped.</p>
Indian Lore	<p>5. Do ONE of the following:</p> <p>a. Visit a museum either in-person or virtually to see American Indian exhibitions and collections. Discuss with your counselor what you observed or learned from two exhibitions and identify 10 artifacts by tribe or nation, their shape, size, and use.</p> <p>b. Attend a contemporary American Indian gathering. Discuss with your counselor proper etiquette for attending as well as what you learned and observed during your visit.</p>	<p>5. Do ONE of the following:</p> <p>a. Write or briefly describe how life might have been different for the European settlers if there had been no native Americans to meet them when they came to this continent.</p> <p>b. Sing two songs in an Indian language. Explain their meanings.</p> <p>c. Learn in an Indian language at least 25 common terms and their meanings.</p> <p>d. Show 25 signs in Indian sign language. Include those that will help you ask for water, for food, and where the path or road leads.</p> <p>e. Learn an Indian story of up to 300 words (or several shorter stories adding up to no more than 300 words). Tell the story or stories at a Scout gathering or campfire.</p> <p>f. Write or tell about eight things adopted by others from American Indians.</p> <p>g. Learn 25 Indian place names. Tell their origins and meanings.</p> <p>h. Name five well-known American Indian leaders, either from the past or people of today. Give their tribes or nations. Describe what they did or do now that makes them notable.</p> <p>i. Attend a contemporary American Indian gathering. Discuss with your counselor what you learned and observed. Include in your discussion any singing, dancing, drumming, and the various men's and women's dance styles you saw</p>
Insect Study	2. Tell how insects are different from other animals. Show how insects are different from millipedes and spiders.	2. Tell how insects are different from all other animals. Show how insects are different from centipedes and spiders.
Insect Study	4. Describe the characteristics that distinguish the major orders of insects.	4. Describe the characteristics that distinguish the principal families and orders of insects.
Insect Study	6a. From your scrapbook collection, select eight species of insects and identify what role they play in the ecosystem.	6a. From your scrapbook collection, identify three species of insects helpful to humans and five species of insects harmful to humans.
Insect Study	6b. Describe three alternatives to insecticides as a way of preventing crop injury and subsequent yield loss. Explain the advantages and disadvantages of these alternatives.	6b. Discuss the use of integrated pest management vs. chemical methods of insect control. What are the advantages and disadvantages of each?
Insect Study	12. Tell how insects fit in the food web of other insects, fish, birds, and mammals.	12. Tell how insects fit in the food chains of other insects, fish, birds, and mammals.
Journalism	2a1. Newspaper, magazine, and online journalism (with your parent's permission). 1. On the same day, read a local news source or newspaper, a national news source or newspaper, a news magazine (online or printed) and a social media news feed. From each source, clip, read, and compare a story about the same event. Tell your counselor how long each story is and how fair and accurate the stories are in presenting different points of view. Tell how each source handled the story	2a1. Newspaper, magazine, and online journalism. All on the same day, read a local newspaper, a national newspaper, a newsmagazine, and (with your parent's permission) an online news source. From each source, clip, read, and compare a story about the same event. Tell your counselor how long each story is and how fair and accurate the stories are in presenting different points of view. Tell how each source handled the story
Law	1. Define "law." Tell some of its sources. Describe what The 'Rule of Law' is. Outline the functions the law serves.	1. Define "law." Tell some of its sources. Describe functions it serves.
Law	5. Discuss with your counselor several laws that were passed to protect the consumer and the seller. Describe several organizations that provide help to consumers and sellers.	5. Tell about several laws that were passed to protect the consumer and the seller. Tell about several organizations that provide help to consumers and sellers.
Law	11. Discuss with your counselor the importance in our society of TWO of the following areas of the law: a. Administrative b. Bankruptcy c. Environmental d. Family e. Immigration f. Information Technology g. Intellectual Property h. International i. Privacy	11. Discuss with your counselor the importance in our society of TWO of the following areas of the law: a. Environmental law b. Computers and the internet c. Copyright and the internet d. Immigration e. Patents f. Biotechnology g. Privacy law h. International law

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Mining in Society	8c. With your parent's permission and counselor's approval, visit a college, university, or trade school to learn about educational and training requirements for a position in the mining industry that interests you. Find out why this position is critical to the mining industry, and discuss what you learned with your counselor.	8c. With your parent's permission and counselor's approval, visit a career academy or community college to learn about educational and training requirements for a position in the mining industry that interests you. Find out why this position is critical to the mining industry, and discuss what you learned with your counselor.
Nuclear Science	1a. Explain radiation and the difference between ionizing and non-ionizing radiation.	1a. Tell what radiation is.
Nuclear Science	1b. Explain the ALARA principle and the measures required by law to minimize these risks. Describe what safety requirements you will need to consider while performing the requirements in this merit badge.	1b. Describe the hazards of radiation to humans, the environment, and wildlife. Explain the difference between radiation exposure and contamination. In your explanation, discuss the nature and magnitude of radiation risks to humans from nuclear power, medical radiation (e.g., chest or dental X-ray), and background radiation including radon. Explain the ALARA principle and measures required by law to minimize these risks.
Nuclear Science	1c. Describe the radiation hazard symbol and explain where it should be used.	1c. Describe the radiation hazard symbol and explain where it should be used. Tell why and how people must use radiation or radioactive materials carefully.
Nuclear Science	1d. Explain how we are exposed to ionizing radiation from outside the earth as well as on earth every day. List four examples of Naturally Occurring Radioactive Materials, NORM, that are in your house or grocery store and explain why they are radioactive.	New requirement. Old requirement 1d updated and now 1e.
Nuclear Science	1e. Explain the difference between radiation exposure and contamination. Describe the hazards of radiation to humans, the environment, and wildlife. Calculate your approximate annual radiation dose and compare to that of someone who works in a nuclear power plant.	1d. Compare the amount of radiation exposure of a nuclear power plant worker to that of someone receiving a chest and dental X-ray.
Nuclear Science	2b. Choose an element from the periodic table. Construct 3-D models for the atoms of three isotopes of this element, showing neutrons, protons, and electrons. Write down the isotope notation for each model including the atomic and mass numbers. In a separate model or diagram, explain or show how quarks make up protons and neutrons.	2b. Choose an element from the periodic table. Construct 3-D models for the atoms of three isotopes of this element, showing neutrons, protons, and electrons. Use the three models to explain the difference between atomic number and mass number and the difference between the atom, nuclear, and quark structures of isotopes.
Nuclear Science	3a. Visit an accelerator, research lab, or university where scientists study the properties of the nucleus or nucleons.	3a. Visit an accelerator (research lab) or university where people study the properties of the nucleus or nucleons.
Nuclear Science	3b. List three particle accelerators and describe several experiments that each accelerator performs, including basic science and practical applications.	3b. Name three particle accelerators and describe several experiments that each accelerator performs.
Nuclear Science	4. Do TWO of the following; then discuss with your counselor:	4. Do TWO of the following; then discuss with your counselor the different kinds of radiation and how they can be used:
Nuclear Science	4c. Perform an experiment demonstrating half-life. Discuss decay chains.	4c. Obtain a sample of irradiated and non-irradiated foods. Prepare the two foods and compare their taste and texture. Store the leftovers in separate containers and under the same conditions. For a period of 14 days, observe their rate of decomposition or spoilage, and describe the differences you see on days 5, 10, and 14.
Nuclear Science	Delete requirement 4d	4d. Visit a place where radioisotopes are being used. Using a drawing, explain how and why they are used.
Nuclear Science	6a. Make a drawing showing how nuclear fission happens. Observe a mousetrap reactor (setup by an adult) and use it to explain how a chain reaction could be started. Explain how a chain reaction could be stopped or controlled in a nuclear reactor. Explain what is meant by a "critical mass."	6a. Make a drawing showing how nuclear fission happens, labeling all details. Draw another picture showing how a chain reaction could be started and how it could be stopped. Explain what is meant by a "critical mass."
Nuclear Science	6b. Visit a local nuclear power plant or nuclear reactor either in person or online (with your parent's permission). Learn how a reactor works and how the plant generates electricity. Find out what percentage of electricity in the United States is generated by nuclear power plants, by coal, and by gas.	6b. Build a model of a nuclear reactor. Show the fuel, control rods, shielding, moderator, and cooling material. Explain how a reactor could be used to change nuclear energy into electrical energy or make things radioactive.
Nuclear Science	Delete requirement 6c	6c. Find out how many nuclear power plants exist in the United States. Locate the one nearest your home. Find out what percentage of electricity in the United States is generated by nuclear power plants, by coal, and by gas.
Plant Science	8.Option1.5c. Explain why a hard frost can be dangerous to soybeans just after emergence.	8.Option1.5c. Explain why a killing frost just after emergence is critical for soybeans.
Radio	9a(5). Explain the differences between handheld, mobile, and base station transceivers and their uses. Explain the use of amateur radio repeaters.	9a(5). Explain the differences between handheld transceivers and home "base" transceivers. Explain the uses of mobile amateur radio transceivers and amateur radio repeaters
Safety	1c. A paragraph or more, written by you, explaining how a serious fire, accident, crime, or a natural disaster could change your family life.	1c. A paragraph or more, written by you, explaining how a serious fire, accident, or crime could change your family life.
Safety	(new) 2c. Develop a family emergency action plan for a natural disaster.	
Safety	(new) 2d. Explain what risk assessment is and its purpose.	
Safety	(new) 2e. Explain the BSA's Commitment to Safety.	
Scouting Heritage	2b(3). Scouts BSA Handbook	2b(3). Boy Scout Handbook
Scouting Heritage	2b(4). Scouts' Life magazine (formerly Boys' Life)	2b(4). Boys' Life magazine
Scouting Heritage	3. Discuss with your counselor how Scouting's programs have developed over time and been adapted to fit different age groups and interests (Cub Scouting, Scouts BSA, Exploring, Venturing).	3. Discuss with your counselor how Scouting's programs have developed over time and been adapted to fit different age groups and interests (Cub Scouting, Boy Scouting, Exploring, Venturing).

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Scouting Heritage	4c. Visit an exhibit of Scouting memorabilia or a local museum with a Scouting history gallery, or (with your parent's permission and counselor's approval) visit with someone in your council who is recognized as a dedicated Scouting historian or memorabilia collector. Learn what you can about the history of the BSA. Give a short report to your counselor on what you saw and learned.	4. Visit an exhibit of Scouting memorabilia or a local museum with a Scouting history gallery, or (with your parent's permission and counselor's approval) visit with someone in your council who is recognized as a dedicated Scouting historian or memorabilia collector. Learn what you can about the history of Boy Scouting. Give a short report to your counselor on what you saw and learned.
Skating	<p>NEW "Skateboarding Option"</p> <p>1. Explain the following to your counselor:</p> <ul style="list-style-type: none"> a. History and evolution of skateboarding b. Benefits of skateboarding (physical fitness, balance, coordination, perseverance, and creativity) c. Purpose of skateboarding safety and protective gear (helmets, knee pads, elbow pads, wrist guards) <p>2. Explain the following to your counselor:</p> <ul style="list-style-type: none"> a. Rules and regulations of skateparks b. Understanding skatepark zones (street, bowl, and ramp) c. Right-of-way and respect for others d. Communication signals and warnings <p>3. Do the following:</p> <ul style="list-style-type: none"> a. Explain skateboard anatomy (deck, trucks, wheels, bearings) b. Build a board by assembling all pieces (deck, wheels, trucks, bearing, and grip tape) in the proper order c. Explain skateboard maintenance (cleaning, tightening bolts, and replacing parts) <p>4. Demonstrate the following skateboarding skills:</p> <ul style="list-style-type: none"> a. Stance and foot placement (regular and goofy) b. Pushing and balance c. Turning and carving d. Braking and stopping techniques e. Ollies (basic and variations) <p>5. Demonstrate a total of three skateboarding tricks from the following types:</p> <ul style="list-style-type: none"> a. Flatland tricks 	NEW "Skateboarding Option" for Skating MB
Surveying	2. Do the following:	2. Find and mark the corners of a five-sided lot that has been laid out by your counselor to fit the land available. Set an instrument over each of the corners and record the angle turned between each line and the distance measured between each corner. With the assistance of the counselor, compute the error of closure from the recorded notes. The error of closure must not be more than 5 feet. From the corners, take compass readings or turn angles to trees, shrubs, and rocks, and measure to them. All measurements should be made using instruments, methods, and accuracies consistent with current technology.
Surveying	a. Set an instrument over one of the corners of a five-sided lot laid out by your counselor and sighting one of the other corners for reference and, using radial measurement methods, record the angle turned and the distance measured to each of the remaining corners, as directed by your counselor. Record the angle and distance to five topographic features (trees, shrubs, rocks, etc.) near your work area.	
Surveying	b. Measure to three of the same points with GPS measurement and compare the distances between the points measured.	
Surveying	3. From the field notes gathered for requirement 2, and using a protractor and scale, plot the points you measured and draw to scale a map of your survey which includes a north arrow, scale bar, title, date and a diagram of the lot you measured. Submit a neatly drawn copy.	3. From the field notes gathered for requirement 2, draw to scale a map of your survey. Submit a neatly drawn copy.
Surveying	Delete requirement 4	4. Write a metes and bounds description for the five-sided lot in requirement 2.
Surveying	4. Use one of the corner markers from requirement 2 as a benchmark with an assumed elevation of 100 feet. Using a level and rod, collect and record measurements, and determine the elevation of the other four corner markers.	5. Use one of the corner markers from requirement 2 as a benchmark with an assumed elevation of 100 feet. Using a level and rod, determine the elevation of the other four corner markers.
Surveying	5. Get a copy of the deed to a piece of property approved by your counselor, from the local courthouse or title agency. Discuss with your counselor the different parts of the deed and their importance.	6. Get a copy of the deed to your property, or a piece of property assigned by your counselor, from the local courthouse or title agency.
Surveying	(new) 6. Discuss emerging surveying technology such as drones and laser scanning and the strengths and weaknesses of each.	
Sustainability	1. Describe the meaning of sustainability in your own words. Explain the importance of sustainability to society and how you can contribute to fulfilling the needs of current generations without compromising the needs of future generations.	1. Before starting work on any other requirements for this merit badge, write in your own words the meaning of sustainability. Explain how you think conservation and stewardship of our natural resources relate to sustainability. Have a family meeting, and ask family members to write down what they think sustainability means. Be sure to take notes. You will need this information again for requirement 5.

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MERIT BADGE	CHANGED REQUIREMENT (Including Requirement Number)	EXISTING REQUIREMENT (Including Requirement Number)
Sustainability	<p>(new) 2. Water. Do ONE of the following and discuss with your counselor:</p> <p>a. Evaluate your household water usage. If available, review water bills from the past year and evaluate the seasonal changes in water use. Identify three ways to help reduce water consumption.</p> <p>b. Explain why water is necessary in our lives. Create a diagram to show how your household gets its clean water from a natural source and what happens with the water after you use it. Tell two ways to preserve your community's access to clean water in the future.</p> <p>c. Different areas of the world are affected by either too much (flooding) or too little (drought) water. Explore whether either or both affect where you live. Identify three water conservation or flood mitigation practices (successful or unsuccessful) that have been tried where you live or in an area of the world that interests you.</p>	<p>2. Do the following:</p> <p>Water. Do A AND either B OR C.</p> <p>a. Develop and implement a plan that attempts to reduce your family's water usage. As a family, discuss water usage. To aid in your discussion, if past water bills are available, you may choose to examine a few. As a family, choose three ways to help reduce water consumption. Implement those ideas for one month. Share what you learned with your counselor, and tell how you think your plan affected your family's water usage.</p> <p>b. Using a diagram you have created, explain to your counselor how your household gets its clean water from a natural source and what happens with the water after you use it. Include water that goes down the kitchen, bathroom, and laundry drains, and any runoff from watering the yard or washing the car. Tell two ways to preserve your family's access to clean water in the future.</p> <p>c. Discuss with your counselor two areas in the world that have been affected by drought over the last three years. For each area, identify a water conservation practice (successful or unsuccessful) that has been used. Tell whether the practice was effective and why. Discuss what water conservation practice you would have tried and why.</p>
Sustainability	<p>(new) 3. Food. Do ONE of the following and discuss with your counselor:</p> <p>a. Explore the sustainability of different types of plant-based, animal-based and aquaculture food. Identify where four different foods (such as milk, eggs, tuna fish, avocados, or ketchup) come from and how they are processed and transported from the source to you.</p> <p>b. Identify four factors that limit the availability of food in different regions of the world. Discuss how each factor influences the sustainability of worldwide food supplies. Share three ways individuals, families, or your community can create their own food sources.</p> <p>c. Develop a plan to reduce your household food waste in a sustainable manner. Establish a baseline and then track and record your results for two weeks.</p>	<p>Food. Do A AND either B OR C.</p> <p>a. Develop and implement a plan that attempts to reduce your household food waste. Establish a baseline and then track and record your results for two weeks. Report your results to your family and counselor.</p> <p>b. Discuss with your counselor the ways individuals, families, and communities can create their own food sources (potted plants, family garden, rooftop garden, neighborhood or community garden). Tell how this plan might contribute to a more sustainable way of life if practiced globally.</p> <p>c. Discuss with your counselor factors that limit the availability of food and food production in different regions of the world. Tell three ways these factors influence the sustainability of worldwide food supplies.</p>
Sustainability	<p>(new) 4. Community. Do ONE of the following and discuss with your counselor:</p> <p>a. Evaluate the community where you live using your sustainability knowledge. Identify four factors that affect sustainability (such as housing, work locations, shops, schools, agriculture, green space, and transportation systems) and explain how each affects energy, pollution, natural resources, and the economy of the community.</p> <p>b. Identify one unsustainable practice in your community and develop a written plan to fix it.</p> <p>c. Identify five sustainability factors in housing and rate your own home's sustainability against these factors.</p>	<p>Community. Do A AND either B OR C.</p> <p>a. Draw a rough sketch depicting how you would design a sustainable community. Share your sketch with your counselor, and explain how the housing, work locations, shops, schools, and transportation systems affect energy, pollution, natural resources, and the economy of the community.</p> <p>b. With your parent's permission and your counselor's approval, interview a local architect, engineer, contractor, or building materials supplier. Find out the factors that are considered when using sustainable materials in renovating or building a home. Share what you learn with your counselor.</p> <p>c. Review a current housing needs assessment for your town, city, county, or state. Discuss with your counselor how birth and death rates affect sufficient housing, and how a lack of housing or too much housing can influence the sustainability of a local or global area.</p>
Sustainability	<p>(new) 5. Energy. Do ONE of the following and discuss with your counselor:</p> <p>a. Learn about the sustainability of different energy sources, including coal, gas, geothermal, hydropower, nuclear, petroleum, solar, and wind. Identify three common energy sources in the United States and describe how the production and consumption of each of these energy sources affects sustainability.</p> <p>b. List eight ways your family consumes energy, such as gas appliances, electricity, heating systems or cooling systems, and transportation. For one home- and one transportation-related energy use, list three ways to help reduce consumption, reduce your carbon footprint, and be a better steward of this resource.</p> <p>c. List five ways you and your family could reduce energy consumption in your home, such as adjusting your thermostat, window shades, opening windows, reducing hot-water temperature, and minimizing water consumption. Identify the benefits and risks of each idea and implement if possible.</p>	<p>Energy. Do A AND either B OR C.</p> <p>a. Learn about the sustainability of different energy sources, including fossil fuels, solar, wind, nuclear, hydropower, and geothermal. Find out how the production and consumption of each of these energy sources affects the environment and what the term "carbon footprint" means. Discuss what you learn with your counselor, and explain how you think your family can reduce its carbon footprint.</p> <p>b. Develop and implement a plan to reduce the consumption of one of your family's household utilities that consume energy, such as gas appliances, electricity, heating systems, or cooling systems. Examine your family's bills for that utility reflecting usage for three months (past or current). As a family, choose three ways to help reduce consumption and be a better steward of this resource. Implement those ideas for one month. Share what you learn with your counselor, and tell how your plan affected your family's usage.</p> <p>c. Evaluate your family's fuel and transportation usage. Review your family's transportation-related bills (gasoline, diesel, electric, public transportation, etc.) reflecting usage for three months (past or current). As a family, choose three ways to help reduce consumption and be a better steward of this resource. Implement those ideas for one month. Share what you learn with your counselor, and tell how your plan affected your family's transportation habits.</p>

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Sustainability	<p>(new) 6. Stuff. Do ONE of the following and discuss with your counselor:</p> <p>a. Create a list of 15 items of your personal "stuff". Classify each item as an essential need (such as soap) or a desirable want (such as a video game). Identify any excess "stuff" you no longer need, working with your family, if possible. Donate, repurpose, or recycle those items you can.</p> <p>b. List five ways having too much "stuff" affects you, your family, your community, AND the world. For each of the five ways, consider the following aspects: the financial impact, time spent, maintenance, health, storage, and waste generation. Identify practices that can be used to avoid accumulating too much "stuff."</p> <p>c. Research the impact waste has on the environment (land, water, air). Find out what the trash vortex is and how it was formed. Explain the number system for plastic recyclables and which plastics are more commonly recycled. Identify the average lifespan of one electronic device in your household, and whether it can be recycled in whole or part.</p>	<p>Stuff. Do A AND either B OR C.</p> <p>a. Keep a log of the "stuff" your family purchases (excluding food items) for two weeks. In your log, categorize each purchase as an essential need (such as soap) or a desirable want (such as a DVD). Share what you learn with your counselor.</p> <p>b. Plan a project that involves the participation of your family to identify the "stuff" your family no longer needs. Complete your project by donating, repurposing, or recycling these items.</p> <p>c. Discuss with your counselor how having too much "stuff" affects you, your family, and your community. Include the following: the financial impact, time spent, maintenance, health, storage, and waste. Include in your discussion the practices that can be used to avoid accumulating too much "stuff."</p>
Sustainability	<p>(new) 7. Do TWO of the following and discuss with your counselor:</p> <p>a. List five sustainability practices. Identify how you, your family, community, AND the world can improve sustainability. This is a systems issue, so any action can affect other practices.</p> <p>b. The United Nations lists seventeen Sustainable Development Goals. These include Clean Water and Sanitation; Affordable and Clean Energy; Industry, Innovation, and Infrastructure; Life Below Water; and Life on Land. Pick one of these five and summarize the goal and its current and future impact on you, your family, community, AND the world.</p> <p>c. Identify how the planetary life-support systems (soil, climate, freshwater, atmospheric, nutrient, oceanic, ecosystems, and species) support life on Earth and interact with one another. Share what happens to the planet's sustainability when these systems are disrupted by natural events or human activity.</p> <p>d. Identify how product life cycles (the cycle of design, sourcing, production, use, and disposal or reuse) influence current and future sustainability. Choose one specific common product type to demonstrate how the full product life cycle would apply.</p> <p>e. Learn how the world's population affects the sustainability of Earth. Discuss three human activities that may contribute to putting Earth at risk, now and in the future.</p>	<p>3. Do the following:</p> <p>a. Explain to your counselor how the planetary life-support systems (soil, climate, freshwater, atmospheric, nutrient, oceanic, ecosystems, and species) support life on Earth and interact with one another.</p> <p>b. Tell how the harvesting or production of raw materials (by extraction or recycling), along with distribution of the resulting products, consumption, and disposal/repurposing, influences current and future sustainability thinking and planning.</p>
Sustainability	<p>8. Do the following:</p> <p>a. On a campout or other outdoor Scouting activity that you attend, make notes on the sustainability practices you and your fellow Scouts practice. Observe transportation, forestry, soil conservation, water resources, habitat, buildings, campsites, and sanitation. Share what you observed and learned with your counselor.</p> <p>b. Discuss with your counselor how living by the Scout Oath, Scout Law, and Outdoor Code in your daily life helps promote sustainability.</p>	<p>4. Explore TWO of the following categories. Have a discussion with your family about the two you select. In your discussion, include your observations, and best and worst practices. Share what you learn with your counselor.</p> <p>a. Plastic waste. Discuss the impact plastic waste has on the environment (land, water, air). Learn about the number system for plastic recyclables, and determine which plastics are more commonly recycled. Find out what the trash vortex is and how it was formed.</p> <p>b. Electronic waste. Choose three electronic devices in your household. Find out the average lifespan of each, what happens to these devices once they pass their useful life, and whether they can be recycled in whole or part. Discuss the impact of electronic waste on the environment.</p> <p>c. Food waste. Learn about the value of composting and how to start a compost pile. Start a compost pile appropriate for your living situation. Tell what can be done with the compost when it is ready for use.</p> <p>d. Species decline. Explain the term species (plant or animal) decline. Discuss the human activities that contribute to species decline, what can be done to help reverse the decline, and its impact on a sustainable environment.</p> <p>e. World population. Learn how the world's population affects the sustainability of Earth. Discuss three human activities that may contribute to putting Earth at risk, now and in the future.</p> <p>f. Climate change. Find a world map that shows the pattern of temperature change for a period of at least 100 years. Share this map with your counselor, and discuss three factors that scientists believe affect the global weather and temperature. Discuss with your counselor three impacts of climate change and how these changes could impact sustainability of food, water, or other resources.</p>
Sustainability	<p>9. Learn about career opportunities in the sustainability field. Pick one and find out the education, training, and experience required. Discuss what you have learned with your counselor and explain why this career might interest you.</p>	<p>5. Do the following:</p> <p>a. After completing requirements 1 through 4, have a family meeting. Discuss what your family has learned about what it means to be a sustainable citizen. Talk about the behavioral changes and life choices your family can make to live more sustainably. Share what you learn with your counselor.</p> <p>b. Discuss with your counselor how living by the Scout Oath and Scout Law in your daily life helps promote sustainability and good stewardship.</p>

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Swimming	(new) 3. Correctly perform the following strokes: a. Demonstrate the front crawl or the trudgen using good form. b. Demonstrate the back crawl using good form. c. Demonstrate the sidestroke using good form. d. Demonstrate the breaststroke using good form. e. Demonstrate the elementary backstroke using good form.	New requirement.
Swimming	4. Swim continuously for 150 yards in a strong manner using each of the following strokes in any order; front crawl or trudgen (25 yards); back crawl (25 yards); sidestroke (25 yards); breaststroke (25 yards); and elementary backstroke (50 yards).	3. Swim continuously for 150 yards using the following strokes in good form and in a strong manner: front crawl or trudgen for 25 yards, back crawl for 25 yards, sidestroke for 25 yards, breaststroke for 25 yards, and elementary backstroke for 50 yards.
Swimming	NOTE: All remaining requirements are shifted upward in number; i.e. old requirement 4 becomes requirement 5, etc.	

If you have any update suggestions for merit badges please submit them to merit.badge@scouting.org