

ARAPAHOE DISTRICT MERIT BADGE COLLEGE 13 OCT 2012

CLASS REQUIREMENTS

<i>Astronomy</i>	<i>Automobile Maintenance</i>
<i>Camping</i>	<i>Citizenship in the Community</i>
<i>Citizenship in the Nation</i>	<i>Citizenship in the World</i>
<i>Communications</i>	<i>Computers</i>
<i>Crime Prevention</i>	<i>Emergency Preparedness</i>
<i>Energy</i>	<i>Environmental Science</i>
<i>Finger Printing</i>	<i>First Aid</i>
<i>Genealogy</i>	<i>Orienteering</i>
<i>Personal Fitness</i>	<i>Personal Management</i>
<i>Photography</i>	<i>Space Exploration</i>
<i>Sports</i>	<i>Traffic Safety</i>
<i>Weather</i>	<i>Wood Carving</i>



Items in "Red" Should be covered by the Scout Outside of the class.

1. Do the following:
 - a. Describe the proper clothing and other precautions for safely making observations at night and in cold weather.
 - b. Tell how to safely observe the Sun, objects near the Sun, and the Moon.
 - c. Explain first aid for injuries or illnesses, such as heat and cold reactions, dehydration, bites and stings, and damage to your eyes that could occur during observation.
2. Explain what light pollution is and how it and air pollution affect astronomy.
3. With the aid of diagrams (or real telescopes if available), do each of the following:
 - a. Explain why binoculars and telescopes are important astronomical tools. Demonstrate or explain how these tools are used.
 - b. Describe the similarities and differences of several types of astronomical telescopes.
 - c. Explain the purposes of at least three instruments used with astronomical telescopes.
 - d. Describe the proper care and storage of telescopes and binoculars both at home and in the field.
4. Do the following:
 - a. **Identify in the sky at least 10 constellations, at least four of which are in the zodiac.**
 - b. **Identify at least eight conspicuous stars, five of which are of magnitude 1 or brighter.**
 - c. Make two sketches of the Big Dipper. In one sketch, show the Big Dipper's orientation in the early evening sky. In another sketch, show its position several hours later. In both sketches, show the North Star and the horizon. Record the date and time each sketch was made.
 - d. Explain what we see when we look at the Milky Way.
5. Do the following:
 - a. List the names of the five most visible planets. Explain which ones can appear in phases similar to lunar phases and which ones cannot, and explain why.
 - b. **Using the internet (with your parent's permission) and other resources, find out when each of the five most visible planets that you identified in requirement 5a will be observable in the evening sky during the next 12 months, then compile this information in the form of a chart or table.**
 - c. **Describe the motion of the planets across the sky.**
 - d. **Observe a planet and describe what you saw.**
6. Do the following:
 - a. Sketch the face of the moon and indicate at least five seas and five craters. Label these landmarks.
 - b. Sketch the phase and the daily position of the Moon at the same hour and place, for a week. Include landmarks on the horizon such as hills, trees, and buildings. Explain the changes you observe.
 - c. List the factors that keep the Moon in orbit around Earth.
 - d. With the aid of diagrams, explain the relative positions of the Sun, Earth, and the Moon at the times of lunar and solar eclipses, and at the times of new, first-quarter, full, and last-quarter phases of the Moon.
7. Do the following:
 - a. Describe the composition of the Sun, its relationship to other stars, and some effects of its radiation on Earth's weather and communications.
 - b. Define sunspots and describe some of the effects they may have on solar radiation.

- c. Identify at least one red star, one blue star, and one yellow star (other than the Sun). Explain the meaning of these colors.
8. With your counselor's approval and guidance, do ONE of the following:
 - a. Visit a planetarium or astronomical observatory. Submit a written report, a scrapbook, or a video presentation afterward to your counselor that includes the following information:
 1. Activities occurring there
 2. Exhibits and displays you saw
 3. Telescopes and instruments being used
 4. Celestial objects you observed.
 - b. Plan and participate in a three-hour observation session that includes using binoculars or a telescope. List the celestial objects you want to observe, and find each on a star chart or in a guidebook. Prepare an observing log or notebook. Show your plan, charts, and log or notebook to your counselor before making your observations. Review your log or notebook with your counselor afterward.
 - c. Plan and host a star party for your Scout troop or other group such as your class at school. Use binoculars or a telescope to show and explain celestial objects to the group.
 - d. Help an astronomy club in your community hold a star party that is open to the public.
 - e. Personally take a series of photographs or digital images of the movement of the Moon, a planet, an asteroid or meteoroid, or a comet. In your visual display, label each image and include the date and time it was taken. Show all positions on a star chart or map. Show your display at school or at a troop meeting. Explain the changes you observed.
9. List at least three different career opportunities in astronomy. Pick the one in which are most interested and explain how to prepare for such a career. Discuss with your counselor what courses might be useful for such a career.



AUTOMOBILE MAINTENANCE 2012

Items in "Red" Should be covered by the Scout Outside of the class.

Note: You will need access to a car or truck and its owner's manual to meet some requirements for this merit badge.

1. 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.
2. General Maintenance, Safety, and Registration
Do the following:
 - a. Review the maintenance chart in the owner's manual. Explain the requirements and time limits.
3. Demonstrate how to check the following:
 - a. Brake Fluid
 - b. Engine Oil
 - c. Coolant
 - d. Power steering fluid
 - e. Windshield washer fluid
 - f. Transmission fluid
 - g. Battery fluid (if possible) and condition of the battery terminals
 - h. Locate the fuse boxes; determine the size of fuses. Demonstrate the proper replacement of burned-out fuses.
 - i. Demonstrate how to check the condition and tension of belts and hoses.
 - j. Check the lighting in the vehicle, including instrument, warning, and exterior bulbs.
 - k. Locate and check the air filter.
 - l. Explain the purpose, importance, and limitations of safety belts and passive restraints.
 - m. Find out the requirements for the state inspection in your state, including how often a vehicle needs to be inspected.
 - n. Explain the importance of registering a vehicle and find out the annual registration fee for renewing your family car's registration.
4. Dashboard. Do the following:
 - a. Explain the function of the fuel gauge, speedometer, tachometer, oil pressure, and engine temperature gauge. Point out each one 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.
5. Tires. Do the following:
 - a. Explain the difference between tire manufacturer's and vehicle manufacturer's specifications and show where to find them.
 - b. Demonstrate how to check pressure and properly inflate a tire. Check the spare tire and make sure it is ready for use.
 - c. Explain why wheel alignment is important to the life of a tire. Explain camber, caster, and toe-in adjustments on wheel alignment.
 - d. Explain the purpose of the lateral-wear bar indicator.
 - e. Explain how to dispose of old tires in accordance with local laws and regulations.
6. Engine. Do the following:

- a. Explain how an internal combustion engine operates. Tell the differences between gasoline and diesel engines. Explain how a gasoline-electric hybrid vehicle is powered.
 - b. Explain the purpose of engine oil. Explain the API service code, the SAE number, and the viscosity rating.
 - c. Explain where to find the recommended oil type and the amount of oil to be used in the vehicle's engine.
7. Cooling system. Do the following:
- a. Explain the need for coolant in the cooling system.
 - b. Explain how to flush and change the engine coolant in the vehicle, and how to properly dispose of the used coolant.
8. Fuel system. Do the following:
- a. Explain how the air and fuel systems work together and why it is necessary to have an air filter and fuel filter.
 - b. Explain how a fuel injection system works and how an on-board computer works with the fuel injection system.
9. Ignition and electrical systems. Do the following:
- a. Diagram and explain the parts of the electrical system.
 - b. Explain the cylinder engine sequence.
 - c. Explain the purpose of the spark gap.
 - d. Demonstrate how to change the spark plugs in any internal combustion engine (lawn mower, dirt bike, motorcycle).
 - e. Demonstrate how to safely connect jumper cables to your car battery.
10. Drive Train. Do the following:
- a. Diagram the drive train and explain the different parts.
 - b. Explain the difference between automatic and standard transmissions.
 - c. Explain the types of automatic transmission fluid.
 - d. Explain the types of lubricants used in a standard transmission and in the differential.
 - e. Explain the difference between front-wheel, rear-wheel, and four-wheel drive.
11. Brake System. Do the following:
- a. Explain the brake system (including anti-lock systems) and how it operates.
 - b. Explain the differences between disc and drum systems.
 - c. Demonstrate how to check the condition of a vehicle's brake system. After checking make recommendations for repairs (if necessary).
12. Do two of the following:
- a. Determine the value of three different vehicles you are interested in purchasing. One must be new and one must be used; the third vehicle can be new or used. For each vehicle, find out the requirements and cost of automobile insurance to include basic liability and options for collision, comprehensive, towing, and rental car. Using the three vehicles you chose and with your merit badge counselor's assistance, complete the operation/maintenance chart provided in the merit badge pamphlet. Use this information to determine the operating cost per mile for each vehicle, and discuss what you learn with your counselor.
 - b. Choose a car cleaner and wax product for a vehicle you want to clean. Explain clear-coat paint and the precautions necessary for care. Clean the vehicle, both inside and out, and wax the exterior. Use a vinyl and rubber protectant (on vinyl tops, rubber door seals, sidewalls, etc.) and explain the importance of the protectant.
 - c. Locate the manufacturer's jack. Use the jack to demonstrate how to engage the jack correctly on the vehicle, then change a tire correctly.
 - d. **Perform an oil filter and oil change on a vehicle.** Explain how to properly dispose of the used oil and filter.
13. Find out about three career opportunities in the automotive industry. Pick one and find out about the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.



CAMPING 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Show that you know first aid for and how to prevent injuries or illnesses that could occur while camping, including hypothermia, frostbite, heat reactions, dehydration, altitude sickness, insect stings, tick bites, snakebite, blisters, and hyperventilation.
2. Learn the Leave No Trace principles and the Outdoor Code and explain what they mean. Write a personal plan for implementing these principles on your next outing.
3. Make a written plan for an overnight trek and show how to get to your camping spot using a topographical map and compass OR a topographical map and a GPS receiver.
4. Do the following:
 - a. Make a duty roster showing how your patrol is organized for an actual overnight campout. List assignments for each member.
 - b. Help a Scout patrol or a Webelos Scout unit in your area prepare for an actual campout, including creating the duty roster, menu planning, equipment needs, general planning, and setting up camp.
5. Do the following:
 - a. Prepare a list of clothing you would need for overnight campouts in both warm and cold weather. Explain the term "layering."
 - b. Discuss footwear for different kinds of weather and how the right footwear is important for protecting your feet.
 - c. Explain the proper care and storage of camping equipment (clothing, footwear, and bedding).
 - d. List the outdoor essentials necessary for any campout, and explain why each item is needed.
 - a. e. Present yourself to your Scoutmaster with your pack for inspection. Be correctly clothed and equipped for an overnight campout. . **MBC Note: Scouts should bring their pack with them ready for an inspection.**
6. Do the following:
 - a. Describe the features of four types of tents, when and where they could be used, and how to care for tents. Working with another Scout, pitch a tent.
 - b. Discuss the importance of camp sanitation and tell why water treatment is essential. Then demonstrate two ways to treat water.
 - c. Describe the factors to be considered in deciding where to pitch your tent.
 - d. Tell the difference between internal- and external-frame packs. Discuss the advantages and disadvantages of each.

- e. Discuss the types of sleeping bags and what kind would be suitable for different conditions. Explain the proper care of your sleeping bag and how to keep it dry. Make a comfortable ground bed.
7. Prepare for an overnight campout with your patrol by doing the following:
- a. Make a checklist of personal and patrol gear that will be needed.
 - b. Pack your own gear and your share of the patrol equipment and food for proper carrying. Show that your pack is right for quickly getting what is needed first, and that it has been assembled properly for comfort, weight, balance, size, and neatness.
8. Do the following:
- a. Explain the safety procedures for:
 1. Using a propane or butane/propane stove
 2. Using a liquid fuel stove
 3. Proper storage of extra fuel
 - b. Discuss the advantages and disadvantages of different types of lightweight cooking stoves.
 - c. Prepare a camp menu. Explain how the menu would differ from a menu for a backpacking or float trip. Give recipes and make a food list for your patrol. Plan two breakfasts, three lunches, and two suppers. Discuss how to protect your food against bad weather, animals, and contamination.
 - d. Cook at least one breakfast, one lunch, and one dinner for your patrol from the meals you have planned for requirement 8c. At least one of those meals must be a trail meal requiring the use of a lightweight stove.
9. Show experience in camping by doing the following:
- a. Camp a total of at least 20 days and 20 nights. Sleep each night under the sky or in a tent you have pitched. The 20 days and 20 nights must be at a designated Scouting activity or event. You may use a week of long-term camp toward this requirement. If the camp provides a tent that has already been pitched, you need not pitch your own tent.
 - b. On any of these camping experiences, you must do TWO of the following, only with proper preparation and under qualified supervision:
 1. Hike up a mountain, gaining at least 1,000 vertical feet.
 2. Backpack, snowshoe, or cross-country ski for at least 4 miles.
 3. Take a bike trip of at least 15 miles or at least four hours.
 4. Take a non-motorized trip on the water of at least four hours or 5 miles.
 5. Plan and carry out an overnight snow camping experience.
 6. Rappel down a rappel route of 30 feet or more.
 - c. Perform a conservation project approved by the landowner or land managing agency.

10. Discuss how the things you did to earn this badge have taught you about personal health and safety, survival, public health, conservation, and good citizenship. In your discussion, tell how [Scout spirit](#) and the [Scout Oath](#) and [Law](#) apply to camping and outdoor ethics.



CITIZENSHIP IN THE COMMUNITY



REQUIRED 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Discuss with your counselor what citizenship in the community means and what it takes to be a good citizen in your community. Discuss the rights, duties, and obligations of citizenship, and explain how you can demonstrate good citizenship in your community, Scouting unit, place of worship, or school.
2. Do the following:
 - a. on a map of your community, locate and point out the following:
 1. Chief government buildings such as your city hall, county courthouse, and public works/services facility
 2. Fire station, police station, and hospital nearest your home
 3. Historical or other interesting points
 - b. Chart the organization of your local or state government. Show the top offices and tell whether they are elected or appointed.
3. Do the following:
 - a. Attend a city or town council or school board meeting, or a municipal; county, or state court session.
 - b. Choose one of the issues discussed at the meeting where a difference of opinions was expressed, and explain to your counselor why you agree with one opinion more than you do another one.
4. Choose an issue that is important to the citizens of your community; then do the following:
 - a. Find out which branch of local government is responsible for this issue.
 - b. With your counselor's and a parent's approval, interview one person from the branch of government you identified in requirement 4a. Ask what is being done about this issue and how young people can help.
 - c. Share what you have learned with your counselor.
5. With the approval of your counselor and a parent, watch a movie that shows how the actions of one individual or group of individuals can have a positive effect on a community. Discuss with your counselor what you learned from the movie about what it means to be a valuable and concerned member of the community.
6. List some of the services (such as the library, recreation center, public transportation, and public safety) your community provides that are funded by taxpayers. Tell your counselor why these services are important to your community.
7. Do the following:
 - a. Choose a charitable organization outside of Scouting that interests you and brings people in your community together to work for the good of your community.
 - b. Using a variety of resources (including newspapers, fliers and other literature, the Internet, volunteers, and employees of the organization), find out more about this organization.
 - c. With your counselor's and your parent's approval, contact the organization and find out what young people can do to help. While working on this merit badge, volunteer at least eight hours of your time for the organization. After your volunteer experience is over, discuss what you have learned with your counselor.
8. Develop a public presentation (such as a video, slide show, speech, digital presentation, or photo exhibit) about important and unique aspects of your community. Include information about the history, cultures, and ethnic groups of your community; its best features and popular places where

people gather; and the challenges it faces. Stage your presentation in front of your merit badge counselor or a group, such as your patrol or a class at school.



CITIZENSHIP IN THE NATION REQUIRED 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Explain what citizenship in the nation means and what it takes to be a good citizen of this country. Discuss the rights, duties, and obligations of a responsible and active American citizen.
2. Do TWO of the following:
 - a. Visit a place that is listed as a National Historic Landmark or that is on the National Register of Historic Places. Tell your counselor what you learned about the landmark or site and what you found interesting about it.
 - b. Tour your state capitol building or the U.S. Capitol. Tell your counselor what you learned about the capitol, its function, and the history.
 - c. Tour a federal facility. Explain to your counselor what you saw there and what you learned about its function in the local community and how it serves this nation.
 - d. Choose a national monument that interests you. Using books, brochures, the Internet (with your parent's permission), and other resources, find out more about the monument. Tell your counselor what you learned, and explain why the monument is important to this country's citizens.
3. Watch the national evening news five days in a row OR read the front page of a major daily newspaper five days in a row. Discuss the national issues you learned about with your counselor. Choose one of the issues and explain how it affects you and your family.
4. Discuss each of the following documents with your counselor. Tell your counselor how you feel life in the United States might be different without each one.
 - a. Declaration of Independence **MBC Note: Must read prior to class and be familiar with to discuss in class.**
 - b. Preamble to the Constitution **MBC Note: Must read prior to class and be familiar with to discuss in class.**
 - c. The Constitution **MBC Note: Must read prior to class and be familiar with to discuss in class.**
 - d. Bill of Rights **MBC Note: Must read prior to class and be familiar with to discuss in class.**
 - e. Amendments to the Constitution **MBC Note: Must read prior to class and be familiar with to discuss in class.**
5. List the six functions of government as noted in the preamble to the Constitution. Discuss with your counselor how these functions affect your family and local community.
6. With your counselor's approval, choose a speech of national historical importance. Find out about the author, and tell your counselor about the person who gave the speech. Explain the importance of the speech at the time it was given, and tell how it applies to American citizens today. Choose a sentence or two from the speech that has significant meaning to you, and tell your counselor why.
7. Name the three branches of our federal government and explain to your counselor their functions. Explain how citizens are involved in each branch. For each branch of government, explain the importance of the system of checks and balances. **MBC Note: Must read prior to class and be familiar with to discuss in class.**
8. Name your two senators and the member of Congress from your congressional district. Write a letter about a national issue and send it to one of these elected officials, sharing your view with him or her. Show your letter and any response you receive to your counselor.



CITIZENSHIP IN THE WORLD



REQUIRED 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Explain what citizenship in the world means to you and what you think it takes to be a good world citizen.
2. Explain how one becomes a citizen in the United States, and explain the rights, duties, and obligations of U.S. citizenship. Discuss the similarities and differences between the rights, duties, and obligations of U.S. citizens and the citizens of two other countries.
3. Do the following:
 - a. Pick a current world event. In relation to this current event, discuss with your counselor how a country's national interest and its relationship with other countries might affect areas such as its security, its economy, its values, and the health of its citizens.
 - b. Select a foreign country and discuss with your counselor how its geography, natural resources, and climate influence its economy and its global partnerships with other countries.
4. Do TWO of the following:
 - a. Explain international law and how it differs from national law. Explain the role of international law and how international law can be used as a tool for conflict resolution.
 - b. Using resources such as major daily newspapers, the Internet (with your parent's permission), and news magazines, observe a current issue that involves international trade, foreign exchange, balance of payments, tariffs, and free trade. Explain what you have learned. Include in your discussion an explanation of why countries must cooperate in order for world trade and global competition to thrive.
 - c. Select TWO of the following organizations and describe their role in the world.
 1. The United Nations
 2. The World Court
 3. World Organization of the Scout Movement
 4. The World Health Organization
 5. Amnesty International
 6. The International Committee of the Red Cross
 7. CARE
5. Do the following:
 - a. Discuss the differences between constitutional and non-constitutional governments.
 - b. Name at least five different types of governments currently in power in the world.

- c. Show on a world map countries that use each of these five different forms of government.
6. Do the following:
 - a. Explain how a government is represented abroad and how the United States government is accredited to international organizations.
 - b. Describe the roles of the following in the conduct of foreign relations.
 1. Ambassador
 2. Consul
 3. Bureau of International Information Programs
 4. Agency for International Development
 5. United States and Foreign Commercial Service
 - c. Explain the purpose of a passport and visa for international travel.
7. Do TWO of the following and share with your counselor what you have learned:
 - a. Visit the Web site (With your parent/guardian's permission) of the U.S. State Department. Learn more about an issue you find interesting that is discussed on this Web site.
 - b. Visit the Web site (With your parent/guardian's permission) of an international news organization or foreign government, OR examine a foreign newspaper available at your local library, bookstore, or newsstand. Find a news story about a human right realized in the United States that is not recognized in another country.
 - c. Visit with a student or Scout from another country and discuss the typical values, holidays, ethnic foods, and traditions practiced or enjoyed there.
 - d. Attend a world Scout jamboree.
 - e. Participate in or attend an international event in your area, such as an ethnic festival, concert, or play.



COMMUNICATIONS



REQUIRED 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Do ONE of the following:
 - a. For one day, keep a log in which you describe your communication activities. Keep track of the time and different ways you spend communicating, such as talking person-to-person, listening to your teachers or the radio, watching television, reading books, and other print media, and communicating online. Discuss with your counselor what your log reveals about the importance of communication in your life. Think of ways to improve your communications skills.
 - b. For three days, keep a journal of your listening experiences. Identify one example of each of the following, and discuss with your counselor when you have listened to:
 - i. Obtain information
 - ii. A persuasive argument
 - iii. Appreciate or enjoy something
 - iv. Understand someone's feelings
 - c. In a small-group setting, meet with other scouts or with friends. Have them share personal stories about significant events in their lives that affected them in some way. Take note of how each scout participates in the group discussion and how effective each one is in telling his story. Report what you have learned to your counselor about the differences you observed in effective communication.
 - d. List as many ways as you can think of to communicate with others (face-to-face, by telephone, letter, e-mail, and fax). For each type of communication discuss with your counselor an instance when that method might not be appropriate or effective.
2. Do ONE of the following:
 - a. Think of a creative way to describe yourself, using, for example, a collage, short story or autobiography, drawing or series of photographs, or a song or skit. Using the aid you created, make a presentation to your counselor about yourself.
 - b. Choose a concept, product, or service in which you have great confidence. Build a sales plan based on its good points. Try to persuade the counselor to agree with, use, or buy your concept, product or service. After your sales talk, discuss with your counselor how persuasive you were.
3. Write a five-minute speech. Give it at a meeting of a group.
4. Interview someone you know fairly well, like, or respect because of his or her position, talent, career or life experiences. Listen actively to learn as much as you can about the person. Then prepare and deliver to your counselor an introduction of the person as though this person were to be a guest speaker, and include reasons why the audience would want to hear this person speak. Show how you would call to invite this person to speak.
5. Attend a public meeting (city council, school board, debate) approved by your counselor where several points of view are given on a single issue. Practice active listening skills and take careful notes of each point of view. Present an objective report that includes all points of view that were expressed, and share this with your counselor.
6. With your counselor's approval, develop a plan to teach a skill or inform someone about something. Prepare teaching aids for your plan. Carry out your plan. With your counselor, determine whether the person has learned what you intended.

7. Do ONE of the following:
 - a. Write to the editor of a magazine or your local newspaper to express your opinion or share information on any subject you choose. Send your message by fax, email or regular mail.
 - b. Create a web page for your scout troop, school, or other organization. Include at least one article and one photograph or illustration, and one link to some other web page that would be helpful to someone who visits the web page you have created. It is not necessary to post your web page to the internet, but if you decide to do so, you must first share it with your parents and counselor and get their permission.
 - c. Use desktop publishing to produce a newsletter, brochure, flier or other printed material for your scout troop, class at school, or other group. Include at least one article and one photograph or illustration.
8. Plan a troop court of honor, campfire program, or an interface worship service. Have the patrol leaders' council approve it, then write the script and prepare the program. Serve as master of ceremonies.
9. Find out about three career opportunities in the field of communication. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.



COMPUTERS 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Discuss with your counselor the tips for online safety.
2. Give a short history of the computer. Explain how the invention of the computer has affected society, science, and technology.
3. Do the following:
 - a. Describe four uses of computers outside the home.
 - b. Describe three ways you and your family could use a personal computer other than for games and entertainment.
4. Explain the following to your counselor:
 - a. The five major parts of a computer.
 - b. How text, sound, pictures, and video files are stored in a computer's memory
 - c. How file compression works and how compression affects the quality of the file.
 - d. Describe two computer chip-based devices, and describe how they are "smarter" because of the chip and its program.
5. Do the following:
 - a. Explain what a program or software application is and how it is developed.
 - b. Name three programming languages, and describe their uses.
 - c. Name four software packages you or your family could use, and explain how you would use them.
 - d. Discuss ways you can help protect a computer from viruses and how to protect the information stored on a computer.
 - e. Describe how computers are linked to generate and access the Internet and the World Wide Web.
6. Do **THREE** of the following:
 - a. Using a spreadsheet program, develop a food budget for a patrol weekend campout.
 - b. Using a word processor, write a letter to the parents of your troop's Scouts inviting them to a court of honor.
 - c. Using a computer graphics program, design and draw a campsite plan for your troop.
 - d. Using a computer graphics program, create a flier for an upcoming troop event, incorporating both text and some type of visual such as a photograph or illustration.
 - e. Using an Internet search engine (with your parent's permission), find ideas about how to conduct a troop court of honor or campfire program. Print out a copy of the ideas from at least three different Web sites. Share what you found with your counselor, and explain how you used the search engine to find this information.

- f. Using a presentation software program of your choice, develop a report about a topic that has been approved by your counselor. For your presentation, create at least 10 slides.
- g. Using a digital camera, take a picture of a troop activity. Transfer the picture file to a computer and use photographic software to make it small enough to send easily as an e-mail attachment. Then, using a computer connected to the Internet (with your parent's permission), send an e-mail to someone you know. In your message, include the photograph as an attachment. Verify that the person received your e-mail and was able to view the attachment.
- h. Using a database manager, create a troop roster that includes the name, rank, patrol, and telephone number of each Scout. Show your counselor that you can sort the register by each of the following categories: rank, patrol, and alphabetically by name.

7. Do ONE of the following:

- a. Using a database program of your choice, create a troop roster that includes the name, rank, patrol, and telephone number of each Scout. Create a form within the database manager to access each Scout's information individually. Show your counselor how the form works.
- b. Using a software package of your choice for computer aided design (CAD), create an engineering-style drawing of a simple object. Include the top, bottom, and at least one side view and the dimensions.
- c. Create a blog and use it as an online journal of your Scouting activities, including group discussions and meetings, campouts, and other events. Your blog should have at least five entries and two photographs or illustrations. You need not post the blog to the Internet, but you will need to share it with your counselor. If you decide to go live with your blog, you must first share it with your parents AND counselor and get their approval.
- d. Create a Web page for your troop, patrol, school, or place of worship. Include at least three articles and two photographs or illustrations. Your Web page should have at least one link to a Web site that would be of interest to your audience. You need not post the page to the Internet. However, if you decide to do so, you must first share it with your parents AND counselor and get their approval.
- e. Visit a business or an industrial plant that uses computers. Observe what tasks the computers accomplish, and be prepared to discuss what you have learned.

8. Explain the following to your counselor:

- a. Why copyright laws exist
- b. Why it is not permissible to accept a paid, copyrighted computer game or program from a friend unless the game or program is considered freeware or shareware. Explain the concepts of freeware and shareware.
- c. The restrictions and limitations of downloading music from the Internet

9. Find out about three career opportunities in the computer industry. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you. Report what you learn to your counselor.



CRIME PREVENTION 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Discuss the role and value of laws in society with regard to crime and crime prevention. Include in your discussion the definitions of "crime" and "crime prevention."
2. Prepare a notebook of newspaper and other clippings that addresses crime and crime prevention efforts in your community.
3. Discuss the following with your counselor:
 - a. The role of citizens, including youth, in crime prevention
 - b. Gangs and their impact on the community
 - c. When and how to report a crime
4. After doing EACH of the following, discuss with your counselor what you have learned.
 - a. Inspect your neighborhood for opportunities that may lead to crime. Learn how to do a crime prevention survey.
 - b. Using the checklist in this (the merit badge) pamphlet, conduct a security survey of your home and discuss the results with your family.
5. Teach your family or patrol members how to protect themselves from crime at home, at school, in your community, and while traveling.
6. Help raise awareness about one school safety issue facing students by doing ONE of the following:
 - a. Create a poster for display on a school bulletin board.
 - b. With permission from school officials, create a page long public service announcement that could be read over the public address system at school or posted on the school's Web site.
 - c. Make a presentation to a group such as a Cub Scout den that addresses the issue.
7. Do ONE of the following:
 - a. Assist in the planning and organization of a crime prevention program in your community such as Neighborhood Watch, Community Watch, or Crime Stoppers. Explain how this program can benefit your neighborhood.
 - b. With your parent's and counselor's approval, visit a jail or detention facility or a criminal court hearing. Discuss your experience with your counselor.
8. Discuss the following with your counselor:
 - a. How drug abuse awareness programs, such as "Drugs: A Deadly Game," help prevent crime
 - b. Why alcohol, tobacco, and marijuana are sometimes called "gateway drugs" and how "gateway drugs" can lead to the use of other drugs

- c. Three resources in your city where a person with a drug problem or drug-related problem can go for help
 - d. How the illegal sale and use of drugs lead to other crimes
 - e. How to recognize child abuse
 - f. The three R's of Youth Protection
9. Discuss the following with your counselor:
- a. The role of a sheriff's or police department in crime prevention.
 - b. The purpose and operation of agencies in your community that help law enforcement personnel prevent crime, and how those agencies function during emergency situations.
 - c. Explain the role private security plays in crime prevention.
 - d. Choose a career in the crime prevention or security industry that interests you. Describe the level of education required and responsibilities of a person in that position. Tell why this position interests you



EMERGENCY PREPAREDNESS REQUIRED 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Earn the First Aid Merit Badge.

2. Do the following:

A. Discuss with your counselor the aspects of emergency preparedness:

1. **Prepare** for emergency situations
2. **Respond** to emergency situations
3. **Recover** from emergency situations
4. **Mitigate and prevent** emergency situations

Include in your discussion the kinds of questions that are important to ask yourself as you consider each of these.

B. Make a chart that demonstrates your understanding of each of the three aspects of emergency preparedness in requirement 2a (prepare, respond, recover, mitigate) with regard to 10 of the situations listed below. **You must use situations 1, 2, 3, 4, and 5 below in boldface** but you may choose any other five listed here for a total of 10 situations. Discuss this chart with your counselor.

1. **Home kitchen fire**
2. **Home basement/storage room/garage fire**
3. **Explosion in the home**
4. **Automobile accident**
5. **Food-borne disease (food poisoning)**
6. Fire or explosion in a public place
7. Vehicle stalled in the desert
8. Vehicle trapped in a blizzard
9. Flash flooding in town or in the country
10. Mountain/backcountry accident
11. Boating accident
12. Gas leak in a home or a building
13. Tornado or hurricane
14. Major flood
15. Nuclear power plant emergency
16. Avalanche (snow slide or rockslide)
17. Violence in a public place

C. Meet with and teach your family how to get or build a kit, make a plan, and be informed for the situations on the chart you created for requirement 2b. Complete a family plan. Then meet with your counselor and report on your family meeting, discuss their responses, and share your family plan.

3. Show how you could safely save a person from the following:

- A. Touching a live household electric wire.
- B. A room filled with carbon monoxide
- C. Clothes on fire.
- D. Drowning using non-swimming rescues (including accidents on ice).

4. Show three ways of attracting and communicating with rescue planes/aircraft.
5. With another person, show a good way to transport an injured person out of a remote and/or rugged area, conserving the energy of rescuers while ensuring the well-being and protection of the injured person.
6. Do the following:
 - A. Tell the things a group of Scouts should be prepared to do, the training they need , and the safety precautions they should take for the following emergency services:
 1. Crowd and traffic control
 2. Messenger service and communication.
 3. Collection and distribution services.
 4. Group feeding, shelter, and sanitation.
 - B. Identify the government or community agencies that normally handle and prepare for the emergency services listed under 6a, and explain to your counselor how a group of Scouts could volunteer to help in the event of these types of emergencies.
 - C. Find out who is your community's emergency management director and learn what this person does to **prepare, respond to, recover from, and mitigate and prevent** emergency situations in your community. Discuss this information with your counselor and apply what you discover to the chart you created for requirement 2b.
7. Take part in an emergency service project, either a real one or a practice drill, with a Scouting unit or a community agency.
8. Do the following:
 - A. Prepare a written plan for mobilizing your troop when needed to do emergency service. If there is already a plan, explain it. Tell your part in making it work.
 - B. Take part in at least one troop mobilization. Before the exercise, describe your part to your counselor. Afterward, conduct an "after-action" lesson, discussing what you learned during the exercise that required changes or adjustments to the plan.
 - C. Prepare a personal emergency service pack for a mobilization call. Prepare a family kit (suitcase or waterproof box) for use by your family in case an emergency evacuation is needed. Explain the needs and uses of the contents.
9. Do ONE of the following:
 - A. Using a safety checklist approved by your counselor, inspect your home for potential hazards. Explain the hazards you find and how they can be corrected.
 - B. Review or develop a plan of escape for your family in case of fire in your home.
 - C. Develop an accident prevention program for five family activities outside the home (such as taking a picnic or seeing a movie) that includes an analysis of possible hazards, a proposed plan to correct those hazards, and the reasons for the corrections you propose.



ENERGY 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Do the following:
 - a. Find an article on the use or conservation of energy. Discuss with your counselor what in the article was interesting to you, the questions it raises, and what ideas it addresses that you do not understand.
 - b. After you have completed requirements 2 through 8, revisit the article you found for requirement 1a. Explain to your counselor what you have learned in completing the requirements that helps you better understand the article.
2. Show you understand energy forms and conversions by doing the following:
 - a. Explain how THREE of the following devices use energy, and explain their energy conversions: toaster, greenhouse, light bulb, bow drill, nuclear reactor, and sweat lodge.
 - b. Construct a system that makes at least two energy conversions and explain this to your counselor.
3. Show you understand energy efficiency by explaining to your counselor a common example of a situation where energy moves through a system to produce a useful result. Do the following:
 - a. Identify the parts of the system that are affected by the energy movement.
 - b. Name the system's primary source of energy.
 - c. Identify the useful outcomes of the system.
 - d. Identify the energy losses of the system.
4. Conduct an energy audit of your home. Keep a 14 day log that records what you and your family did to reduce energy use. Include the following in your report and, after the 14 day period, discuss what you have learned with your counselor.
 - a. List the types of energy used in your home such as electricity, wood, oil, liquid petroleum, and natural gas, and tell how each is delivered and measured, and the current cost; OR record the transportation fuel used, miles driven, miles per gallon, and trips using your family car or another vehicle.
 - b. Describe ways you and your family can use energy resources more wisely. In preparing your discussion, consider the energy required for the things you do and use on a daily basis (cooking, showering, using lights, driving, watching TV, and using the computer). Explain how you can change your energy use through reuse and recycling.
5. In a notebook, identify and describe five examples of energy waste in your school or community. Suggest in each case possible ways to reduce this waste. Describe the idea of tradeoffs in energy use. In your response, do the following:
 - a. Explain how the changes you suggest would lower costs, reduce pollution, or otherwise improve your community.
 - b. Explain what changes to routines, habits, or convenience are necessary to reduce energy waste. Tell why people might resist the changes you suggest.
6. Prepare pie charts showing the following information, and explain to your counselor the important ideas each chart reveals. Tell where you got your information. Explain how cost affects the use of a nonrenewable energy resource and makes alternatives practical.
 - a. The energy resources that supply the United States with most of its energy
 - b. The share of energy resources used by the United States that comes from other countries
 - c. The proportion of energy resources used by homes, businesses, industry, and transportation

- d. The fuels used to generate America's electricity
 - e. The world's known and estimated primary energy resource reserves
7. Tell what is being done to make FIVE of the following energy systems produce more usable energy. In your explanation, describe the technology, cost, environmental impacts, and safety concerns.
- a. Biomass digesters or waste to energy plants
 - b. Cogeneration plants
 - c. Fossil fuel power plants
 - d. Fuel cells
 - e. Geothermal power plants
 - f. Nuclear power plants
 - g. Solar power systems
 - h. Tidal energy, wave energy, or ocean thermal energy conversion devices
 - i. Wind turbines
8. Find out what opportunities are available for a career in energy. Choose one position that interests you and describe the education and training required.



Items in "Red" Should be covered by the Scout Outside of the class.

1. Make a timeline of the history of environmental science in America. Identify the contribution made by the Boy Scouts of America to environmental science. Include dates, names of people or organizations, and important events.
2. Define the following terms: population, community, ecosystem, biosphere, symbiosis, niche, habitat, conservation, threatened species, endangered species, extinction, pollution prevention, brownfield, ozone, watershed, airshed, nonpoint source, hybrid vehicle, fuel cell.
3. Do ONE activity in EACH of the following categories (using the activities in this {the merit badge} pamphlet as the basis for planning and carrying out your projects):
 - a. Ecology
 1. Conduct an experiment to find out how living things respond to changes in their environments. Discuss your observations with your counselor.
 2. Conduct an experiment illustrating the greenhouse effect. Keep a journal of your data and observations. Discuss your conclusions with your counselor.
 3. Discuss what is an ecosystem. Tell how it is maintained in nature and how it survives.
 - b. Air Pollution
 1. Perform an experiment to test for particulates that contribute to air pollution. Discuss your findings with your counselor.
 2. Record the trips taken, mileage, and fuel consumption of a family car for seven days, and calculate how many miles per gallon the car gets. Determine whether any trips could have been combined ("chained") rather than taken out and back. Using the idea of trip chaining, determine how many miles and gallons of gas could have been saved in those seven days.
 3. Explain what is acid rain. In your explanation, tell how it affects plants and the environment and the steps society can take to help reduce its effects.
 - c. Water Pollution
 1. Conduct an experiment to show how living things react to thermal pollution. Discuss your observations with your counselor.
 2. Conduct an experiment to identify the methods that could be used to mediate (reduce) the effects of an oil spill on waterfowl. Discuss your results with your counselor.

3. Describe the impact of a waterborne pollutant on an aquatic community. Write a 100-word report on how that pollutant affected aquatic life, what the effect was, and whether the effect is linked to bio-magnification.

d. Land Pollution

1. Conduct an experiment to illustrate soil erosion by water. Take photographs or make a drawing of the soil before and after your experiment, and make a poster showing your results. Present your poster to your patrol or troop.

2. Perform an experiment to determine the effect of an oil spill on land. Discuss your conclusions with your counselor.

3. Photograph an area affected by erosion. Share your photographs with your counselor and discuss why the area has eroded and what might be done to help alleviate the erosion.

e. Endangered Species

1. Do research on one endangered species found in your state. Find out what its natural habitat is, why it is endangered, what is being done to preserve it, and how many individual organisms are left in the wild. Prepare a 100-word report about the organism, including a drawing. Present your report to your patrol or troop.

2. Do research on one species that was endangered or threatened but which has now recovered. Find out how the organism recovered, and what its new status is. Write a 100-word report on the species and discuss it with your counselor.

3. With your parent's and counselor's approval, work with a natural resource professional to identify two projects that have been approved to improve the habitat for a threatened or endangered species in your area. Visit the site of one of these projects and report on what you saw.

f. Pollution Prevention, Resource Recovery, and Conservation

1. Look around your home and determine 10 ways your family can help reduce pollution. Practice at least two of these methods for seven days and discuss with your counselor what you have learned.

2. Determine 10 ways to conserve resources or use resources more efficiently in your home, at school, or at camp. Practice at least two of these methods for seven days and discuss with your counselor what you have learned.

3. Perform an experiment on packaging materials to find out which ones are biodegradable. Discuss your conclusions with your counselor.

4. Choose two outdoor study areas that are very different from one another (e.g., hilltop vs. bottom of a hill; field vs. forest; swamp vs. dry land). For BOTH study areas, do ONE of the following:

a. Mark off a plot of 4 square yards in each study area, and count the number of species found there. Estimate how much space is occupied by each plant species and the type and number of non-plant

species you find. Write a report that adequately discusses the biodiversity and population density of these study areas. Discuss your report with your counselor.

b. Make at least three visits to each of the two study areas (for a total of six visits), staying for at least 20 minutes each time, to observe the living and nonliving parts of the ecosystem. Space each visit far enough apart that there are readily apparent differences in the observations. Keep a journal that includes the differences you observe. Then, write a short report that adequately addresses your observations, including how the differences of the study areas might relate to the differences noted, and discuss this with your counselor.

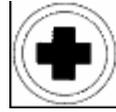
5. Using the construction project provided or a plan you create on your own, identify the items that would need to be included in an environmental impact statement for the project planned.
6. Find out about three career opportunities in environmental science. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.



FINGERPRINTING 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Give a short history of fingerprinting. Tell the difference between civil and criminal identification.
2. Explain the difference between the automated fingerprint identification systems (AFIA) now used by some law enforcement agencies and the biometric fingerprint systems used to control access to places like buildings, airports, and computer rooms.
3. Do the following:
 - a. Name the surfaces of the body where friction or papillary ridges are found.
 - b. Name the two basic principles supporting the science of fingerprints and give a brief explanation of each principle.
 - c. Explain what it takes to positively identify a person using fingerprints.
4. Take a clear set of prints using ONE of the following methods:
 - a. Make both rolled and plain impressions. Make these on an 8-by-8-inch fingerprint identification card available from your local police department or counselor.
 - b. Using clear adhesive tape, a pencil, and plain paper, record your own fingerprints or those of another person.
5. Show your merit badge counselor you can identify the three basic types of fingerprint patterns and their subcategories. Using your own hand, identify the types of patterns you see.



FIRST AID



REQUIRED 2012

Items in “Red” Should be covered by the Scout Outside of the class.

1. Satisfy your counselor that you have current knowledge of all first-aid requirements for Tenderfoot, Second Class, and First Class ranks.
2. Do the following:
 - a. Explain how you would obtain emergency medical assistance from your home, on a wilderness camping trip, and during an activity on open water.
 - b. Explain the term *triage*.
 - c. Explain the standard precautions as applied to blood borne pathogens.
 - d. Prepare a first aid kit for your home. Display and discuss its contents with your counselor.
3. Do the following:
 - a. Explain what action you should take for someone who shows signals of shock, for someone who shows signals of a heart attack, and for someone who shows signals of stroke.
 - b. Identify the conditions that must exist before performing CPR on a person. Then demonstrate proper technique in performing CPR using a training device approved by your counselor.
 - c. Explain the use of an automated external defibrillator (AED).
 - d. Show the steps that need to be taken for someone suffering from a severe cut on the leg and on the wrist. Tell the dangers in the use of a tourniquet and the conditions under which its use is justified.
 - e. Explain when a bee sting could be life threatening and what action should be taken for prevention and for first aid.
 - f. Explain the symptoms of heatstroke and what action needs to be taken for first aid and for prevention.
4. Do the following:
 - a. Describe the signs of a broken bone. Show first-aid procedures for handling fractures, including open (compound) fractures of the forearm, wrist, upper leg, and lower leg using improvised materials.
 - b. Describe the symptoms and possible complications and demonstrate proper procedures for treating suspected injuries to the head, neck, and back. Explain what measures should be taken to reduce the possibility of further complicating these injuries.
5. Describe the symptoms, proper first-aid procedures, and possible prevention measures for the following conditions:
 - a. Hypothermia
 - b. Convulsions / seizures
 - c. Frostbite
 - d. Dehydration
 - e. Bruises, strains, sprains
 - f. Burns

- g. Abdominal pain
 - h. Broken, chipped, or loosened tooth
 - i. Knocked-out tooth
 - j. Muscle cramps
6. Do TWO of the following:
- a. If a sick or injured person must be moved, tell how you would determine the best method. Demonstrate this method.
 - b. With helpers under your supervision, improvise a stretcher and move a presumably unconscious person.
 - c. With your counselor's approval, arrange a visit with your patrol or troop to an emergency medical facility or through an American Red Cross chapter for a demonstration of how an AED is used.
7. Teach another Scout a first-aid skill selected by your counselor



GENEALOGY 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Explain to your counselor what the words genealogy, ancestor, and descendant mean.
2. Do ONE of the following:
 - a. Do a time line for yourself or for a relative. Then write a short biography based on that time line.
 - b. Keep a journal for 6 weeks. You must write in it at least once a week.
3. With your parent's help, choose a relative or a family acquaintance you can interview in person, by telephone, or by e-mail or letter. Record the information you collect so you do not forget it.
4. Do the following:
 - a. Name three types of genealogical resources and explain how these resources can help you chart your family tree.
 - b. Obtain at least one genealogical document that supports an event that is or can be recorded on your pedigree chart or family group record. The document could be found at home or at a government office, religious organization, archive, or library.
 - c. Tell how you would evaluate the genealogical information you found for requirement 4b.
5. Contact ONE of the following individuals or institutions. Ask what genealogical services, records, or activities this individual or institution provides, and report the results:
 - a. A genealogical or lineage society
 - b. A professional genealogist (someone who gets paid for doing genealogical research)
 - c. A surname organization, such as your family's organization
 - d. A genealogical education facility or institution.
 - e. A genealogical record repository of any type (courthouse, genealogical library, state or national archive, state library, etc.)
6. Begin your family tree by listing yourself and include at least two additional generations. You may complete this requirement by using the chart provided in the Genealogy merit badge pamphlet or the genealogy software program of your choice.
7. Complete a family group record form, listing yourself and your brothers and sisters as the children. On another family group record form, show one of your parents and his or her brothers and sisters as the children. This requirement may be completed using the chart provided or the genealogy software program of your choice.
8. Do the following:
 - a. Explain the effect computers and the Internet are having on the world of genealogy.
 - b. Explain how photography (including microfilming) has influenced genealogy.

9. Discuss what you have learned about your family and your family members through your genealogical research.



OREINTEERING 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Show that you know first aid for the types of injuries that could occur while orienteering, including cuts, scratches, blisters, snakebite, insect stings, tick bites, heat and cold reactions (sunburn, heatstroke, heat exhaustion, hypothermia), and dehydration. Explain to your counselor why you should be able to identify poisonous plants and poisonous animals that are found in your area.
2. Explain what orienteering is.
3. Do the following:
 - a. Explain how a compass works. Describe the features of an orienteering compass.
 - b. In the field, show how to take a compass bearing and follow it.
4. Do the following:
 - a. Explain how a topographic map shows terrain features. Point out and name five terrain features on a map and in the field.
 - b. Point out and name 10 symbols on a topographic map.
 - c. Explain the meaning of declination. Tell why you must consider declination when using map and compass together.
 - d. Show a topographic map with magnetic north-south lines.
 - e. Show how to measure distances using an orienteering compass.
 - f. Show how to orient a map using a compass.
5. Set up a 100-meter pace course. Determine your walking and running pace for 100 meters. Tell why it is important to pace-count.
6. Do the following:
 - a. Identify 20 international control description symbols. Tell the meaning of each symbol.
 - b. Show a control description sheet and explain the information provided.
 - c. Explain the following terms and tell when you would use them: attack point, collecting feature, aiming off, contouring, reading ahead, handrail, relocation, rough versus fine orienteering.
7. Do the following:
 - a. Take part in three orienteering events. One of these must be a cross-country course.*
 - b. After each event, write a report with (1) a copy of the master map and control description sheet, (2) a copy of the route you took on the course, (3) a discussion of how you could improve your time between control points, and (4) a list of your major weaknesses on this course. Describe what you could do to improve.

8. Do ONE of the following:
 - a. Set up a cross-country course of at least 2,000 meters long with at least five control markers. Prepare the master map and control description sheet.
 - b. Set up a score-orienteeing course with 12 control points and a time limit of at least 60 minutes. Prepare the master map and control description sheet.
9. Act as an official during an orienteeing event. This may be during the running of the course you set up for requirement 8.
10. Teach orienteeing techniques to your patrol, troop or crew.

Note to the Counselor: While orienteeing is primarily an individual sport, BSA Youth Protection procedures call for using the buddy system. Requirement 7a can be completed by pairs or groups of Scouts.



PERSONAL FITNESS



REQUIRED 2012

Items in "Red" Should be covered by the Scout Outside of the class.

Complete a medical and dental physical prior to class.

1. Do the following:
 - a. **Before completing requirements 2 through 9, have your health-care practitioner give you a physical examination, using the Scout medical examination form.** Describe the examination. Tell what questions the doctor asked about your health. Tell what health or medical recommendations the doctor made and report what you have done in response to the recommendations. Explain the following:
 1. Why physical exams are important
 2. Why preventative habits (such as exercising regularly) are important in maintaining good health, and how the use of tobacco products, alcohol, and other harmful substances can negatively affect our personal fitness.
 3. Diseases that can be prevented and how.
 4. The seven warning signs of cancer.
 5. The youth risk factors that affect cardiovascular fitness in adulthood.
 - b. **Have a dental examination. Get a statement saying that your teeth have been checked and cared for.** Tell how to care for your teeth.
2. Explain to your merit badge counselor verbally or in writing what personal fitness means to you, including:
 - a. Components of personal fitness
 - b. Reasons for being fit in all components.
 - c. What it means to be mentally healthy
 - d. What it means to be physically healthy and fit.
 - e. What it means to be socially healthy. Discuss your activity in the areas of healthy social fitness.
 - f. What you can do to prevent social, emotional, or mental problems.
3. With your counselor answer and discuss the following questions:
 - a. Are you free from all curable diseases? Are you living in such a way that your risk of preventable diseases is minimized?
 - b. Are you immunized and vaccinated according to the advice of your health-care provider?

- c. Do you understand the meaning of a nutritious diet and know why it is important for you? Does your diet include foods from all food groups?
 - d. Are your body weight and composition what you would like them to be, and do you know how to modify them safely through exercise, diet, and behavior modification?
 - e. Do you carry out daily activities without noticeable effort? Do you have extra energy for other activities?
 - f. Are you free from habits relating to poor nutrition and the use of alcohol, tobacco, drugs, and other practices that could be harmful to your health?
 - g. Do you participate in a regular exercise program or recreational activities?
 - h. Do you sleep well at night and wake up feeling refreshed and energized for the new day?
 - i. Are you actively involved in the religious organization of your choice, and do you participate in its youth activities?
 - j. Do you spend quality time with your family and friends in social and recreational activities?
 - k. Do you support family activities and efforts to maintain a good home life?
4. Explain the following about physical fitness:
- a. The components of physical fitness
 - b. Your weakest and strongest component of physical fitness
 - c. The need to have a balance in all four components of physical fitness.
 - d. How the components of personal fitness relate to the Scout Law and Scout Oath.
5. Explain the following about nutrition:
- a. The importance of good nutrition
 - b. What good nutrition means to you
 - c. How good nutrition is related to the other components of personal fitness
 - d. The three components of a sound weight (fat) control program.
6. Before doing requirements 7 and 8, complete the aerobic fitness, flexibility, muscular strength, and body composition tests as described in the *Personal Fitness* merit badge pamphlet. Record your results and identify those areas where you feel you need to improve.

AEROBIC FITNESS TEST

Record your performance on one of the following tests:

- a. Run/walk as far as you can in nine minutes.
- b. Run/walk one mile as fast as you can.

FLEXIBILITY TEST

Using a sit-and-reach box constructed according to specifications in the *Personal Fitness* merit badge pamphlet, make four repetitions and record the fourth reach. This last reach must be held steady for 15 seconds to qualify. (Remember to keep your knees down.)

STRENGTH TESTS

Record your performance on all three tests.

- a. **Sit-ups.** Record the number of sit-ups done correctly in 60 seconds. The sit-ups must be done in the form explained and illustrated in the *Personal Fitness* merit badge pamphlet.
- b. **Pull-ups.** Record the total number of pull-ups completed correctly in 60 seconds. Be consistent with the procedures presented in the *Personal Fitness* merit badge pamphlet.
- c. **Push-ups.** Record the total number of push-ups completed correctly in 60 seconds. Be consistent with the procedures presented in the *Personal Fitness* merit badge pamphlet.

BODY COMPOSITION TEST

Have your parent, counselor, or other adult take and record the following measurements:

- a. Circumference of the right upper arm, midway between the shoulder and the elbow, with the arm hanging naturally and not flexed.
- b. Shoulders, with arms hanging by placing the tape two inches below the top of the shoulders around the arms, chest, and back after breath expiration.
- c. Chest, by placing the tape under the arms and around the chest and back at the nipple line after breath expiration.
- d. Abdomen circumference at the navel level (relaxed).
- e. Circumference of the right thigh, midway between the hip and knee, and not flexed.

If possible, have the same person take the measurements whenever you are ready to be re-measured to chart your progress.

7. Outline a comprehensive 12-week physical fitness program using the results of your fitness tests. Be sure your program incorporates the endurance, intensity, and warm-up guidelines discussed in the *Personal Fitness* merit badge pamphlet. Before beginning your exercises, have the program approved by your counselor and parents.
8. Complete the physical fitness program you outlined in requirement 7. Keep a log of your fitness program activity (how long you exercised; how far you ran, swam, or biked; how many exercise repetitions you completed; your exercise heart rate; etc.). Repeat the aerobic fitness, muscular strength, and flexibility tests every two weeks and record your results. After the 12th week, repeat all four tests, record your results, and show improvement in each one. Compare and analyze your preprogram and post program body composition measurements. Discuss the meaning and benefit of your experience, and describe your long-term plans regarding your personal fitness.
9. Find out about three career opportunities in personal fitness. Pick one and find out the education, training, and experience required for these professions. Discuss what you learned with your counselor, and explain why this profession might interest you.



Items in "Red" Should be covered by the Scout Outside of the class.

This class recommended for scouts 14 and older.

1. Do the following:
 - a. Choose an item that your family might want to purchase that is considered a major expense.
 - b. Write a plan that tells how your family would save money for the purchase identified in requirement 1a.
 1. Discuss the plan with your merit badge counselor
 2. Discuss the plan with your family
 3. Discuss how other family needs must be considered in this plan.
 - c. Develop a written shopping strategy for the purchase identified in requirement 1a.
 1. Determine the quality of the item or service (using consumer publications or rating systems).
 2. Comparison shop for the item. Find out where you can buy the item for the best price. (Provide prices from at least two different price sources.) Call around; study ads. Look for a sale or discount coupon. Consider alternatives. Can you buy the item used? Should you wait for a sale?
2. Do the following:
 - a. Prepare a budget reflecting your expected income (allowance, gifts, wages), expenses, and savings. Track your actual income, expenses, and savings for 13 consecutive weeks. (You may use the forms provided in this pamphlet, devise your own, or use a computer generated version.) When complete, present the results to your merit badge counselor.
 - b. Compare expected income with expected expenses.
 1. If expenses exceed income, determine steps to balance your budget.
 2. If income exceeds expenses, state how you would use the excess money (new goal, savings).
3. Discuss with your merit badge counselor FIVE of the following concepts:
 - a. The emotions you feel when you receive money.
 - b. Your understanding of how the amount of money you have with you affects your spending habits.
 - c. Your thoughts when you buy something new and your thoughts about the same item three months later. Explain the concept of buyer's remorse.
 - d. How hunger affects you when shopping for food items (snacks, groceries).
 - e. Your experience of an item you have purchased after seeing or hearing advertisements for it. Did the item work as well as advertised?
 - f. Your understanding of what happens when you put money into a savings account.
 - g. Charitable giving. Explain its purpose and your thoughts about it.
 - h. What you can do to better manage your money.
4. Explain the following to your merit badge counselor:
 - a. The differences between saving and investing, including reasons for using one over the other.
 - b. The concepts of return on investment and risk.
 - c. The concepts of simple interest and compound interest and how these affected the results of your investment exercise.

5. Select five publicly traded stocks from the business section of the newspaper. Explain to your merit badge counselor the importance of the following information for each stock:
 - a. Current price
 - b. How much the price changed from the previous day
 - c. The 52-week high and the 52-week low prices
6. Pretend you have \$1,000 to save, invest, and help prepare yourself for the future. Explain to your merit badge counselor the advantages or disadvantages of saving or investing in each of the following:
 - a. Common stocks
 - b. Mutual funds
 - c. Life insurance
 - d. A certificate of deposit (CD)
 - e. A savings account or U.S. savings bond
7. Explain to your merit badge counselor the following:
 - a. What a loan is, what interest is, and how the annual percentage rate (APR) measures the true cost of a loan.
 - b. The different ways to borrow money.
 - c. The differences between a charge card, debit card, and credit card. What are the costs and pitfalls of using these financial tools? Explain why it is unwise to make only the minimum payment on your credit card.
 - d. Credit reports and how personal responsibility can affect your credit report.
 - e. Ways to eliminate debt.
8. Demonstrate to your merit badge counselor your understanding of time management by doing the following:
 - a. Write a "to do" list of tasks or activities, such as homework assignments, chores, and personal projects, that must be done in the coming week. List these in order of importance to you.
 - b. Make a seven-day calendar or schedule. Put in your set activities, such as school classes, sports practices or games, jobs or chores, and/or Scout or church or club meetings, then plan when you will do all the tasks from your "to do" list between your set activities.
 - c. Follow the one-week schedule you planned. Keep a daily diary or journal during each of the seven days of this week's activities, writing down when you completed each of the tasks on your "to do" list compared to when you scheduled them.
 - d. Review your "to do" list, one-week schedule, and diary/journal to understand when your schedule worked and when it did not work. With your merit badge counselor, discuss and understand what you learned from this requirement and what you might do differently the next time.
9. Prepare a written project plan demonstrating the steps below, including the desired outcome. This is a project on paper, not a real-life project. Examples could include planning a camping trip, developing a community service project or a school or religious event, or creating an annual patrol plan with additional activities not already included in the troop annual plan. Discuss your completed project plan with your merit badge counselor.
 - a. Define the project. What is your goal?
 - b. Develop a timeline for your project that shows the steps you must take from beginning to completion.
 - c. Describe your project.
 - d. Develop a list of resources. Identify how these resources will help you achieve your goal.
 - e. If necessary, develop a budget for your project.
10. Do the following:
 - a. Choose a career you might want to enter after high school or college graduation.

- b. **Research the limitations of your anticipated career** and discuss with your merit badge counselor what you have learned about qualifications such as education, skills, and experience.



PHOTOGRAPHY 2012

Items in "Red" Should be covered by the Scout Outside of the class.

Bring your merit badge book to class. *Each scout needs to bring a camera with them - digital or not, even an instant camera would be fine. (Relative to Requirement 2 and to be used for Requirements 1 and 3.)*

For the morning and afternoon classes, the counselor would prefer if you brought a digital camera. We'll be taking photos and loading them onto a laptop to view and print. Having the ability to take digital images that morning may allow us to complete Requirement 4 onsite. Please bring a white poster board and a glue stick, if you are completing Req. 4 onsite.

- 1) Explain how the following elements and terms affect the quality of a picture:
 - A) Light-natural light/ambient, flash
 - B) Exposure-aperture (f-stops), shutter speed, depth of field
 - C) Composition-rule of thirds, leading lines, framing, depth
 - D) Angle of view
 - E) Stopping Action
- 2) Explain the basic parts and operation of a film camera or digital camera. Explain how an exposure is made when you take a picture.
- 3) Discuss with your counselor the differences between a film camera and a digital camera. List at least five advantages and five disadvantages of using a digital camera versus using a film camera.

4) Do ONE of the following:

- A) Produce a picture story using the photojournalistic technique of documenting an event. Share your plan with your counselor and get your counselor's input and approval before you proceed. Then, using either a film camera or a digital camera, produce your approved picture story. Process your images in order, then mount the prints on a poster board. If you are using digital images, you may create a slide show on your computer or produce printouts for your poster board. **Share your picture story with your counselor.**
- B) Choose a topic that interests you to photograph for an exhibit or display. Get your counselor's approval, then photograph (digital or film) your topic. Process your images. Choose 20 of your favorite images and mount them on poster board. **Share your display with your counselor.** If you are using digital images, you may create a slide show on your computer or produce printouts for your poster board.

- 5) Discuss with your counselor the **career opportunities in photography. Pick one that interests you and explain how to prepare for such a career.** Discuss with your counselor the **education and training such a career would require.**



SPACE EXPLORATION 2012

Items in "Red" Should be covered by the Scout Outside of the class.

MBC Note: Each scout will need to purchase two rocket motors at class for approximately \$2.25 each. You should buy a rocket kit, but do not install the motor, since you will be required to use a motor selected by your counselor. You should be personally contacted by your merit badge counselor concerning the buying of a kit and motor.

1. Tell the purpose of space exploration and include the following:
 - a. Historical reasons,
 - b. Immediate goals in terms of specific knowledge,
 - c. Benefits related to Earth resources, technology, and new products.
2. **Design a collector's card, with a picture on the front and information on the back, about your favorite space pioneer. Share your card and discuss four other space pioneers with your counselor.**
3. **Build**, launch, and recover a model rocket. Make a second launch to accomplish a specific objective. (Rocket must be built to meet the safety code of the National Association of Rocketry. See the "Model Rocketry" chapter.) Identify and explain the following rocket parts:
 - a. Body tube
 - b. Engine mount
 - c. Fins
 - d. Igniter
 - e. Launch lug
 - f. Nose cone
 - g. Payload
 - h. Recovery system
 - i. Rocket engine
 - ◆ **If local laws prohibit the launching of model rockets, do the following activity: Make a model of a model rocket. Explain the functions of the parts. Give the history of the rocket.**
4. Discuss and demonstrate each of the following:
 - a. The law of action-reaction
 - b. How rocket engines work
 - c. How satellites stay in orbit
 - d. How satellite pictures of Earth and pictures of other planets are made and transmitted
5. Do TWO of the following:
 - a. Discuss with your counselor an unmanned space exploration mission and an early manned mission. Tell about each mission's major discoveries, its importance, and what we learned from it about the planets, moons, or regions of space explored.
 - b. Using magazine photographs, news clippings, and electronic articles (such as from the Internet), make a scrapbook about a current planetary mission.**
 - c. Design an unmanned mission to another planet or moon that will return samples of its surface to Earth. Name the planet or moon your spacecraft will visit. Show how your design will cope with the conditions of the planet's or moon's environment.**
6. Describe the purpose and operation of ONE of the following:

- a. Space shuttle
 - b. International Space Station
7. Design an inhabited base on the Moon or Mars. Make drawings or a model of your base. In your design, consider and plan for the following:
 - a. Source of energy
 - b. How it will be constructed
 - c. Life-support system
 - d. Purpose and function.
8. Discuss with your counselor two possible careers in space exploration that interest you. Find out the qualifications, education, and preparation required and discuss the major responsibilities of those positions.



SPORTS 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Show that you know first aid for and how to prevent injuries or illnesses that could occur while playing sports, including sprains, strains, contusions, abrasions, fractures, blisters, muscle cramps, dehydration, heat and cold reactions, injured teeth, nausea, and suspected injuries to the head, neck, and back.
2. Explain the importance of the following:
 - a. The physical exam
 - b. Maintaining good health habits, especially during training
 - c. Maintaining a healthy diet
3. Discuss the following:
 - a. The importance of warming up and cooling down
 - b. The importance of weight training
 - c. What an amateur athlete is and the differences between an amateur and a professional athlete
 - d. The attributes (qualities) of a good sport, the importance of sportsmanship, and the traits of a good team leader and player who exhibits Scout spirit on and off the playing field
4. Take part for one season (or four months) as a competitive individual or as a member of an organized team in TWO of the following sports: baseball, basketball, bowling, cross-country, field hockey, football, ice hockey, lacrosse, soccer, softball, table tennis, tennis, volleyball, water polo. Your counselor may approve in advance other recognized sports, but not any sport that is restricted and not authorized by the Boy Scouts of America. Then with your chosen sports do the following:
 - a. Give the rules and etiquette for the two sports you picked.
 - b. List the equipment needed for the two sports you chose. Describe the protective equipment and appropriate clothing (if any) and explain why it is needed.
 - c. Draw diagrams of the playing areas for your two sports.
5. With guidance from your counselor, establish a personal training program suited to the activities you chose for requirement 4. Then do the following:
 - a. Organize a chart to track your training, practice, and development in these sports for one season (or four months).
 - b. Demonstrate proper technique for your two chosen sports.
 - c. At the end of the season, share your completed chart with your counselor and discuss how your participation in the sports you chose has affected you mentally and physically.



TRAFFIC SAFETY 2012

Items in "Red" Should be covered by the Scout Outside of the class.

MBC Note: Scouts should go to www.meritbadge.com/home.htm and print-off the worksheet for Traffic Safety. Fill out this worksheet and bring it to class.

1. Do the following:
 - a. Describe the top 10 mistakes new drivers frequently make. Name the two items you are required by law to carry with you whenever you operate a motor vehicle.
 - b. Describe how alcohol and other drugs affect the human body and why a person should never drink and drive, or drive while under the influence of any mind-altering substances, including prescription drugs, cold medications, and illicit drugs. For the state where you live, find out what is the legal blood alcohol concentration and the consequences for driving while intoxicated or driving under the influence. Find out what the open-container law is in your state.
 - c. Describe at least four factors to be considered in the design of a road or highway. Explain how roadside hazards and road conditions contribute to the occurrence and seriousness of traffic crashes.
 - d. Explain why a driver who is fatigued or distracted should not operate a motor vehicle. List five common distractions, explain how driver distractions contribute to traffic accidents, and tell how drivers can minimize distractions. Describe how volunteer drivers can plan to be alert when transporting Scouting participants.
2. Do the following:
 - a. Demonstrate how to properly wear a lap or shoulder belt. Explain why it is important for drivers and passengers to wear safety belts at all times.
 - b. List five safety features found in motor vehicles besides occupant restraint systems. Describe each safety feature, how each works, and how each contributes to safety.
3. Do the following:
 - a. Using your family car or another vehicle, demonstrate that all lights and lighting systems in the vehicle are working. Describe the function and explain why each type of light is important to safe driving.
 - b. Using your family car or another vehicle, demonstrate how to check tire pressure and identify the correct tire pressure for the vehicle. Explain why proper tire pressure is important to safe driving.
 - c. Demonstrate a method to check for adequate tire tread. Explain why proper tire tread is important to safe driving.
 - d. Demonstrate with a smear-and-clear test if the windshield wiper blades will clear the windshield completely or need to be replaced. Describe instances in good and bad weather when windshield washers are important to safe driving.

4. Do the following:

- a. In a location away from traffic hazards, measure with a tape measure - not in a car - and mark off with stakes the distance that a car will travel during the time needed for decision and reaction, and the braking distances necessary to stop a car traveling 30, 50, and 70 miles per hour on dry, level pavement. Discuss how environmental factors such as bad weather and road conditions will affect the distance.
- b. Demonstrate the difference in nighttime visibility between a properly lit bicycle and rider (or a pedestrian) wearing reflective material and a bicycle and rider with no lights (or a pedestrian) dressed in dark clothing, without reflective material.
- c. Explain how color and shape are used to help road users recognize and understand the information presented on traffic and roadway signs. Explain the purpose of different types of signs, signals, and pavement markings.
- d. Describe at least three examples of traffic laws that apply to drivers of motor vehicles and that bicyclists must also obey.

5. Do ONE of the following:

- a. Interview a traffic law enforcement officer in your community to identify what three traffic safety problems the officer is most concerned about. Discuss with your merit badge counselor possible ways to solve one of those problems.
- b. Using the Internet (with your parent's permission), visit five Web sites that cover safe driving for teenagers. As a group, discuss what you learn with your counselor and at least three other teenagers.
- c. Initiate and organize an activity or event to demonstrate the importance of traffic safety.
- d. Accompanied by an adult and a buddy, pick a safe place to observe traffic at a controlled intersection (traffic signal or stop sign) on three separate days and at three different times of the day, for 30 minutes on each visit. At this intersection, survey (1) such violations as running a red light or stop sign; or (2) seat belt usage. Count the number of violations or number of drivers not wearing a seat belt. Record in general terms if the driver was young or old, male or female. Keep track of the total number of vehicles observed so that you can determine the percentage of compliance vs. violations. Discuss the findings with your merit badge counselor.



WEATHER 2012

Items in "Red" Should be covered by the Scout Outside of the class.

1. Define meteorology. Explain what weather is and what climate is. Discuss how the weather affects farmers, sailors, aviators, and the outdoor construction industry. Tell why weather forecasts are important to each of these groups.
2. Name five dangerous weather-related conditions. Give the safety rules for each when outdoors and explain the difference between a severe weather watch and a warning. Discuss the safety rules with your family.
3. Explain the difference between high and low pressure systems in the atmosphere. Tell which is related to good and to poor weather. Draw cross sections of a cold front and a warm front, showing the location and movements of the cold and warm air, the frontal slope, the location and types of clouds associated with each type of front, and the location of precipitation.
4. Tell what causes wind, why it rains, and how lightning and hail are formed.
5. Identify and describe clouds in the low, middle, and upper levels of the atmosphere. Relate these to specific types of weather.
6. Draw a diagram of the water cycle and label its major processes. Explain the water cycle to your counselor.
7. Define acid rain. Identify which human activities pollute the atmosphere and the effects such pollution can have on people.
8. Do ONE of the following:
 - A. Make one of the following instruments: wind vane, anemometer, rain gauge, hygrometer. Keep a daily weather log for one week using information from this instrument as well as from other sources such as local radio and television stations or NOAA Weather Radio , and Internet sources (with your parent's permission). Record the following information at the same time every day: wind direction and speed, temperature, precipitation, and types of clouds. Be sure to make a note of any morning dew or frost. In the log, also list the weather forecasts from radio or television at the same time each day and show how the weather really turned out.
 - B. Visit a National Weather Service office or talk with a local radio or television weathercaster, private meteorologist, local agricultural extension service officer, or university meteorology instructor. Find out what type of weather is most dangerous or damaging to your community. Determine how severe weather and flood warnings reach the homes in your community.
9. Do ONE of the following:
 - A. Give a talk of at least five minutes to a group (such as your unit or a Cub Scout pack) explaining the outdoor safety rules in the event of lightning, flash floods, and tornadoes. Before your talk, share your outline with your counselor for approval.
 - B. Read several articles about acid rain and give a prepared talk of at least five minutes about the articles to a group (such as your unit or a Cub Scout pack). Before your talk, share your outline with your counselor for approval.
10. Find out about a weather-related career opportunity that interests you. Discuss with and explain to your counselor what training and education are required for such a position, and the responsibilities required of such a position.