

Pioneer District Merit Badge Midway

Pre-Work by Merit Badge

Impress the following upon your Scouts:

1. **READ** the merit badge book
2. **Know and understand** the merit badge requirements
3. Answer **ALL** pre-work questions **COMPLETELY**
4. **ALL** pre-work answers should be **TYPE-WRITTEN**
5. Include your name, troop number, and requirement number **ON EACH PAGE**
6. Complete the pre-work **PRIOR** to attending the session
7. Hand the pre-work in to your counselor at the beginning of the session
8. Be prepared to **DISCUSS ALL** of the requirements in class

To receive the merit badge, the Scout MUST:

1. **READ** the merit badge book,
2. **COMPLETE ALL** Pre-Work,
3. **ATTEND** the Merit Badge Session, **AND**
4. **PARTICIPATE** in the Merit Badge Class Discussion
 - a. **Counselors will keep track of who participates**

Updated: Dec. 16, 2022

American Business:

Read the American Business merit badge book and be prepared to describe terms and information from the book.

#3 - Do the following:

- a) Explain the place of profit in business.
- b) Describe to your counselor green marketing and sustainable business practices.
- c) Explain how ethics plays a role in business decision making.
- d) Discuss the differences between operating a brick-and-mortar business versus an online business.

#5 - Choose a business and research how it applies each of the primary areas of business (accounting, finance, economics, marketing, and management). Share what you have learned with your counselor.

#6 - Do ONE of the following:

- a) Choose one of the primary areas of business and identify three career opportunities. Select one and research the education, training, and experience required for this career. Discuss this with your counselor and explain why this interests you.
- b) Select a business leader and interview this individual to learn more about his or her company and career path. Discuss the role ethics plays in making business decisions. Share what you have learned with your counselor.

Architecture:

Read the Architecture merit badge book and be prepared to describe terms and information from the book.

#1 – Do the following:

- a. Tour your community and list the different types of buildings you see. Try to identify buildings that can be associated with a specific period of history or style of architecture. Make a sketch of the building you most admire.
- b. Select an architectural achievement that has had a major impact on society. Using resources such as the Internet (with your parent's permission), books, and magazines, find out how this achievement has influenced the world today. Tell your counselor what you learned.

Automotive Maintenance:

Read the Automotive Maintenance merit badge book and be prepared to describe terms and information from the book.

#1 – Work up the following to discuss in class:

- a. Explain to your counselor the hazards you are most likely to encounter during automotive maintenance activities, and what you should do to anticipate, help prevent, mitigate, or lessen these hazards.
- b. Discuss with your counselor the safety equipment, tools, and clothing used while checking or repairing a motor vehicle. Use this equipment, tools, and/or clothing (when needed or called for) in meeting the requirements for this merit badge.

#9 Drive Train. Do the following:

- a. Diagram the drive train and explain the different parts.

#12. 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.

Chemistry:

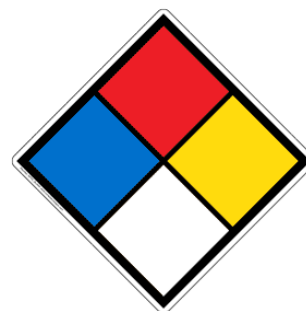
Read the Chemistry merit badge book and be prepared to describe terms and information from the book.

#7 - Do ONE of the following activities:

- a. Visit a laboratory and talk to a practicing chemist. Ask what the chemist does, and what training and education are needed to work as a chemist.
- b. Using resources found at the library and in periodicals, books, and the Internet (with your parent's permission), learn about two different kinds of work done by chemists, chemical engineers, chemical technicians, or industrial chemists. For each of the four jobs, find out the education and training requirements.
- c. Visit an industrial plant that makes chemical products or uses chemical processes and describe the processes used. What, if any, pollutants are produced and how they are handled.
- d. Visit a county farm agency or similar governmental agency and learn how chemistry is used to meet the needs of agriculture in your county.

Be prepared to discuss the following in class:

1. What is the difference between a chemical and physical change? Please give two examples of each.
2. List and define the 5 main branches of chemistry. In addition, name one job in each branch.
3. What are the 3 components that make up an atom? What is the charge of each component?
4. The diamond to the right is used for the National Fire Protection Association Hazard Identification System. Explain what each color represents. Do higher numbers in the diamond indicate a more or less severe hazard?
5. What does pH measure? Would the following household items have a pH higher or lower than 7?
 - a. Coke-a-Cola
 - b. Shampoo
 - c. Milk
 - d. Bleach
 - e. Vinegar
 - f. Dish soap



Citizenship in Society:

Read the Citizenship in Society merit badge booklet and be prepared to describe terms and information from the book.

Come prepared to discuss all terms and requirements.

#2 - Document and discuss with your counselor what leadership means to you. Share what it means to make ethical decisions.

- a) Research and share with your counselor an individual you feel has demonstrated positive leadership while having to make an ethical decision. (It could be someone in history, a family member, a teacher, a coach, a counselor, a clergy member, a Scoutmaster, etc.)
- b) Explain what decision and/or options that leader had, why you believe they chose their final course of action, and the outcome of that action.

#3 Consider ethical decision-making.

- a) Think about a time you faced an ethical decision.
 - Discuss the situation, what you did, and how it made you feel.
 - Share if you would do anything differently in the future and if so, what that would be.

#7 - Identify and interview an individual in your community, school, and/or Scouting who has had a significant positive impact in promoting diversity, equity, and inclusion. If you feel your community, school, or local Scouting group does not have such an individual, then research a historical figure who meets these criteria, and discuss that person with your counselor.

- a) Discover what inspired the individual, learn about the challenges they faced, and share what you feel attributed to their success.

#8 - With the help of your parent or guardian, study an event that had a positive outcome on how society viewed a group of people and made them feel more welcome. Describe to your counselor the event and what you learned.

#9 - Document and discuss with your counselor three or more areas in your life outside of Scouting where you feel you can actively provide stronger leadership in.

- a) Making others feel included.

- b) Practicing active listening.
- c) Creating an environment where others feel comfortable to share their ideas and perspectives.
- d) Helping others feel valued for their input and suggestions.
- e) Standing up for others.

Citizenship in the Community:

Read the Citizenship in the Community merit badge book and be prepared to describe terms and information from the book.

#3 - Do the following:

- a. Attend a meeting of your city, town, or county council or school board; OR attend 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.

#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.

Citizenship in the Nation:

Read the Citizenship in the Nation merit badge book and be prepared to describe terms and information from the book.

#5 - Watch the national evening news for five days in a row or read the main stories in a national media organization (e.g., a newspaper or news website) for five days in a row. Discuss the national issues that you learned about with your counselor. Choose one issue and explain how it affects you, your family, and community.

#7 - 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.

#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:

Read the Citizenship in the World merit badge book and be prepared to describe terms and information from the book.

#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, history, 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.

#7 - Do TWO of the following (with your parent's permission) and share with your counselor what you have learned:

- a.** Visit the Web site of the U.S. State Department. Learn more about an issue you find interesting that is discussed on this website.
- b.** Visit the website 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.

Communication:

Read the Communication merit badge book and be prepared to describe terms and information from the book.

#1d - List as many ways you can think of to communicate with others (face-to-face, by telephone, letter, e-mail, text messages, social media, and so on). For each type of communication, discuss with your counselor an instance when that method might not be appropriate or effective.

Be prepared to discuss these in class...as to when it may not be appropriate or effective to use each communication type.

#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. Prepare an objective report that includes all points of view that were expressed, and share this with your counselor.

#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 or blog of special interest to you (for instance, your troop or crew, a hobby, or a sport). Include at least three articles or entries and one photograph or illustration, and one link to some other webpage or blog that would be helpful to someone who visits the webpage or blog you have created. ***It is not necessary to post your webpage or blog 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 or crew court of honor, campfire program, or an interfaith 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.

Digital Technology:

Read the Digital Technology merit badge book and be prepared to describe terms and information from the book.

- #1** - Show your counselor your current, up-to-date Cyber Chip.
- #2b** - Describe what kinds of computers or devices you imagine might be available when you are an adult.
- #3c** - Describe two digital devices and how they are made more useful by their programming.
- #4b** - Name four software programs or mobile apps you or your family use, and explain how each one helps you.
- #5b** - Using an internet search engine (with a parent or guardian's permission), find ideas from at least three different websites about how to conduct a troop court of honor or campfire program. Present the ideas to your counselor and explain how you used a search engine to find this information.
- #9** - Do ONE of the following:
 - a.** Investigate three career opportunities that involve digital technology. 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.
 - b.** Visit a business or an industrial facility that uses digital technology. Describe four ways digital technology is being used there. Share what you learned with your counselor.

Note: If you take both digital technology and programming, earning the cyber chip and doing the career research will count for **both** badges.

Disabilities Awareness:

Read the Disabilities Awareness merit badge book and be prepared to describe terms and information from the book.

#2 - Visit an agency that works with people with physical, mental, emotional, or educational disabilities. Collect and read information about the agency's activities. Learn about opportunities its members have for training, employment, and education. Discuss what you have learned with your counselor.

#4 - Do EITHER option A or option B:

Option A. Visit TWO of the following locations and take notes about the accessibility to people with disabilities. In your notes, give examples of five things that could be done to improve upon the site and five things about the site that make it friendly to people with disabilities. Discuss your observations with your counselor.

- Your school
- Your place of worship
- A Scouting event or campsite
- A public exhibit or attraction (such as a theater, museum, or park)

Option B. Visit TWO of the following locations and take notes while observing features and methods that are used to accommodate people with invisible disabilities. While there, ask staff members to explain any accommodation features that may not be obvious. Note anything you think could be done to better accommodate people who have invisible disabilities. Discuss your observations with your counselor.

- Your school
- Your place of worship
- A Scouting event or campsite
- A public exhibit or attraction (such as a theater, museum, or park)

#5 - Explain what advocacy is. Do ONE of the following advocacy activities:

- a.** Present a counselor-approved disabilities awareness program to a Cub Scout pack or other group. During your presentation, explain and use person-first language.
- b.** Find out about disabilities awareness education programs in your school or school system, or contact a disability advocacy agency. Volunteer with a program or agency for eight hours.

c. Using resources such as disability advocacy agencies, government agencies, the internet (with your parent's permission), and news magazines, learn about myths and misconceptions that influence the general public's understanding of people with disabilities. List 10 myths and misconceptions about people with disabilities and learn the facts about each myth. Share your list with your counselor, then use it to make a presentation to a Cub Scout pack or other group.

#7 - Name five professions that provide services to people with disabilities. Pick one that interests you and find out the education, training, and experience required for this profession. Discuss what you learn with your counselor, and tell why this profession interests you.

Dog Care:

Read the Dog Care merit badge book and be prepared to describe terms and information from the book.

#4 - For two months, keep and care for your dog.* Maintain a log of your activities during this period that includes these items: feeding schedule, types of food used, amount fed, exercise periods, training schedule, a weekly body weight record, grooming and bathing schedules, veterinary care, if necessary, and costs. Also include a brief description of the type of housing/shelter arrangements you have for your dog.

* The activities used to fulfill the requirements for the Dog Care merit badge may not be used to help fulfill the requirements for other merit badges.

#8 - Visit a veterinary hospital or an animal shelter and give a report about your visit to your counselor.

Electronics:

Read the Electronics merit badge book and be prepared to describe terms and information from the book.

#4 - Do the following:

c. Choose ONE of the following three projects. For your project, find or create a schematic diagram. To the best of your ability, explain to your counselor how the circuit you built operates.

- i. A control device
- ii. A digital circuit
- iii. An audio circuit

#6 - Find out about three career opportunities in electronics that interest you. Discuss with and explain to your counselor what training and education are needed for each position.

Energy:

Read the Energy merit badge book and be prepared to describe terms and information from the book.

- #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, using the computer). Explain what is meant by sustainable energy sources. Explain how you can change your energy use through reuse and recycling.

Entrepreneurship:

Read the Entrepreneurship merit badge book and be prepared to describe terms and information from the book.

- #3** – Identify and interview an individual who has started a business. Learn about this person's educational background, early work experiences, where the idea for the business came from, and what was involved in starting the business. Find out how the entrepreneur raised the capital (money) to start the business, examples of successes and challenges faced, and how the business is currently doing (if applicable). Discuss with your counselor what you have learned.

- #4** – Think of as many ideas for a business as you can, and write them down. From your list, select three ideas you believe represent the best opportunities. Choose one of these and explain to your counselor why you selected it and why you feel it can be successful.

Family Life:

Read the Family Life merit badge book and be prepared to describe terms and information from the book.

#3 - Prepare a list of your regular home duties or chores (at least five) and do them for 90 days. Keep a record of how often you do each of them. Discuss with your counselor the effect your chores had on your family.

#4 - With the approval of your parents or guardians and your merit badge counselor, decide on and carry out a project that you would do around the home that would benefit your family. Submit a report to your merit badge counselor outlining how the project benefited your family.

#5 - Plan and carry out a project that involves the participation of your family. After completing the project, discuss the following with your merit badge counselor:

- a. The objective or goal of the project
- b. How individual members of your family participated
- c. The results of the project

#6 - Do the following:

- a. Discuss with your merit badge counselor how to plan and carry out a family meeting.
- b. Prepare a meeting agenda that includes the following topics, review it with your parents or guardians, and then carry out one or more family meetings:
 1. How living the principles of the Scout Oath and Scout Law contributes to your family life
 2. The greatest dangers and addictions facing youth in today's society (examples include use of tobacco products, alcohol, or drugs and other items such as debts, social media, etc.)
 3. Understanding the growing-up process and how the body changes, and making responsible decisions dealing with sex
 4. Personal and family finances
 5. A crisis situation within your family
 6. The effect of technology on your family
 7. Good etiquette and manners

Discussion of each of these subjects will very likely carry over to more than one family meeting.

Note: This conversation may take place with only one or both of your parents or guardians.

First Aid:

Read the First Aid merit badge book and be prepared to describe terms and information from the book.

#1 - Demonstrate to your counselor that you have current knowledge of all first-aid requirements for Tenderfoot, Second Class, and First Class ranks.

#5 - Do the following:

- a. Prepare a first-aid kit for your home. Display and discuss its contents with your counselor.
- b. With an adult leader, inspect your troop's first-aid kit. Evaluate it for completeness. Report your findings to your counselor and Scout leader.

#7b (location) - Identify the location of the AED at your school, place of worship, and troop meeting place, if one is present.

Genealogy:

Read the Genealogy merit badge book and be prepared to describe terms and information from the book.

#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.

#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.

You will be doing research on your relatives at the Karrmann Library, so bring the name of at least one relative (more if possible) who was born PRIOR to 1940.

For each name, know as much of the following information as possible:

- Full name
- Date of Birth
- City, County, and State of birth
- City, County, and State they resided at in 1940

The names of spouses, siblings. and parents are also helpful.

Geology:

Read the Geology merit badge book and be prepared to describe terms and information from the book.

#4,b - Find out about three career opportunities available in geology. Pick one and find out the education, training, and experience required for the profession. Discuss this with your counselor, and explain why this profession might interest you.

#5.c.5.b - With your counselor, choose two examples of rocks and two examples of minerals. Discuss the mining of these materials and describe how each is used by society.

Know and be prepared to discuss the many terms used in geology.

Health Care Professions:

Read the Health Care Professions merit badge book and be prepared to describe terms and information from the book.

COMPLETE ONE OF #1, 2, 3, OR 4

#1 - Select three of the professions from Group 1 listed below which interest you, then complete the following:

- a. Briefly describe to your counselor the roles these professionals play in the delivery of health care.
- b. Describe to your counselor the educational and licensing requirements for the professionals you selected.

Group 1:

- (1) Allopathic physician (MD) — all specialties
- (2) Osteopathic physician (DO) — all specialties
- (3) Podiatrist (DPM)
- (4) Chiropractor (DC)
- (5) Nurse Practitioner (NP)
- (6) Psychologist (PhD or PsyD)
- (7) Optometrist (OD)
- (8) Audiologist (AudD)

#2 - Select three of the professions from Group 2 listed below which interest you, then complete the following:

- a. Briefly describe to your counselor the roles these professionals play in the delivery of health care.
- b. Describe to your counselor the educational and licensing requirements for the professionals you selected.

Group 2:

- (1) Physician Assistant (PA)
- (2) Registered Nurse (RN)
- (3) Certified Nurse Midwife (CNM)
- (4) Certified Nurse Assistant (CNA)
- (5) Licensed Practical Nurse (LPN/LVN)
- (6) Nurse Anesthetist (CRNA)
- (7) Pharmacist (PharmD)

(8) Pharmacy Technician

(9) Emergency Medical Technician (EMT)/Paramedic

#3 - Select three of the professions from Group 3 listed below which interest you, then complete the following:

- a. Briefly describe to your counselor the roles these professionals play in the delivery of health care.
- b. Describe to your counselor the educational and licensing requirements for the professionals you selected.

Group 3:

(1) Physical Therapist (DPT)

(2) Occupational Therapist (OT)

(3) Orthotist/Prosthetist

(4) Medical Appliance Technician

(5) Respiratory Therapist (RT)

(6) Medical Assistant

(7) Dietitian (RD)

(8) Speech-Language Pathologist (Speech Therapist) (SLP)

#4 - Select three of the professions from Group 4 listed below which interest you, then complete the following:

- a. Briefly describe to your counselor the roles these professionals play in the delivery of health care.
- b. Describe to your counselor the educational and licensing requirements for the professionals you selected.

Group 4:

(1) Biomedical Engineer (BME)

(2) Medical Technologist

(3) Phlebotomist

(4) Radiology Technologist

(5) Sonographer

(6) Medical Records Specialist

(7) Cytopathologist

(8) Histotechnologist

#5 - Select one career from any of the lists in Requirements 1, 2, 3, or 4 and arrange to visit that professional at their workplace. Discuss with your counselor the following:

- a. Why did they choose their particular career?
 - b. What do they most like about their job?
 - c. What are their biggest challenges in doing their job?
 - d. Identify the tools/instruments that may be used in their jobs.
 - e. What has been the most surprising aspect of their career?
 - f. What continuing education requirements are required to maintain certification
- #8** - Identify a medical advancement or discovery that has been in the news recently. Discuss with your counselor how this can affect patient care.
- #9** - With approval of your counselor and parents/guardian, serve as a volunteer at a health-related event or facility in your community (e.g. blood drive, health fair, blood pressure screening event). Report to your counselor what you did and learned from the experience.

Indian Lore:

Read the Indian Lore merit badge book and be prepared to describe terms and information from the book.

#2 - Give the history of one American Indian tribe, group or nation that lives or has lived near you. Visit it, if possible. Tell about traditional dwellings, way of life, tribal government, religious beliefs, family and clan relationships, language, clothing styles, arts and crafts, food preparation, means of getting around, games, customs in warfare, where members of the group now live, and how they live.

Law:

Read the Law merit badge book and be prepared to describe terms and information from the book.

#2c - Look up two famous court trials in history. For each of the trials, come prepared with the following information:

- When the trial was held?
- Where the trial was held?
- Who were the parties to the trial?
- What was the result of the trial?
- Why is the trial famous?

#4 - Ask five people (not more than one from your immediate family) about the role of law enforcement officers in our society. Discuss their answers with them. Go to a law enforcement officer in your neighborhood and ask about his or her responsibilities and duties. Report your findings.

#9 - Make a list of 15 jobs that deal with some aspect of law or legal processes. Tell which you prefer. Why?

Mining in Society:

Read the Mining in Society merit badge book and be prepared to describe terms and information from the book.

Nuclear Science:

Read the Nuclear Science merit badge book and be prepared to describe terms and information from the book.

#7 - Give an example of each of the following in relation to how energy from an atom can be used: nuclear medicine, environmental applications, industrial applications, space exploration, and radiation therapy. For each example, explain the application and its significance to nuclear science.

#8 - Find out about three career opportunities in nuclear science that interest you. Pick one and find out the education, training, and experience required for this profession and discuss this with your counselor. Tell why this profession interests you.

Pets:

Read the Pets merit badge book and be prepared to describe terms and information from the book.

#1 - Present evidence that you have cared for a pet for 4 months. Get approval before you start.*

* Work done for other merit badges cannot be used for this requirement.

Programming:

Read the Programming merit badge book and be prepared to describe terms and information from the book.

#1a - Show your counselor your current, up-to-date Cyber Chip.

#2 – History. Do the following:

- a. Give a brief history of programming, including at least three milestones related to the advancement or development of programming.
- b. Discuss with your counselor the history of programming and the evolution of programming languages.

#3 – General Knowledge. Do the following:

- a. Create a list of five popular programming languages in use today and describe which industry or industries they are primarily used in and why.
- b. Describe three different programmed devices you rely on every day.

#6 - Careers. Find out about three career opportunities that require knowledge in programming. Pick one and find out the education, training, and experience required. Discuss this with your counselor and explain why this career might be of interest to you.

Know, understand, and be ready to discuss the following terms:
program, variable, operand, bit, byte, word, integer, character, float, string, loop, syntax, comment, function, parameter, source code, library, object.

Have some algebra knowledge, namely writing equations with variables.

Note: If you take both digital technology and programming, earning the cyber chip and doing the career research will count for both badges.

Railroading:

Read the Railroading merit badge book and be prepared to describe terms and information from the book.

#2 - Do the following:

- a.** Explain the purpose and formation of Amtrak. Explain, by the use of a timetable, a plan for making a trip by rail between two cities at least 500 miles apart. List the times of departure and arrival at your destination, the train number and name, and the type of service you want.
- b.** List and explain the various forms of public/mass transit using rail.

#3 - Do ONE of the following:

- a.** Name four departments of a railroad company. Describe what each department does.
- b.** Tell about the opportunities in railroading that interest you most and why.
- c.** Name four rail support industries, Describe the function of each one.
- d.** With your parent's and counselor's approval, interview someone employed in the rail industry. Learn what that person does and how this person became interested in railroading. Find out what type of schooling and training are required for this position.

Scholarship:

Read the Scholarship merit badge book and be prepared to describe terms and information from the book.

#1 - Do ONE of the following:

- a. Show that you have had an average grade of B or higher (80 percent or higher) for one term or semester.
- b. Show that for one term or semester you have improved your school grades over the previous period.

#3 - Get a note from the principal* of your school (or another school official named by the principal) that states that during the past year your behavior, leadership, and service have been satisfactory.

**If you are home-schooled or your school environment does not include a principal, you may obtain a note from a counterpart such as your parent.*

#5 - Do ONE of the following:

- a. Write a report of 250 to 300 words about how the education you receive in school will be of value to you in the future and how you will continue to educate yourself in the future.
- b. Write a report of 250 to 300 words about two careers that interest you and how specific classes and good scholarship in general will help you achieve your career goals.

Signs, Signals, and Codes:

Read the Signs, Signals, and Codes merit badge book and be prepared to describe terms and information from the book.

#4b - Using illustrations or photographs, identify 10 examples of nautical flags and discuss their importance.

#7 - On a Scout outing, lay out a trail for your patrol or troop to follow. Cover at least one mile in distance and use at least six different trail signs and markers. After the Scouts have completed the trail, follow no-trace principles by replacing or returning trail markers to their original locations.

Space Exploration:

Read the Space Exploration merit badge book and be prepared to describe terms and information from the book.

#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.

5 - Do TWO of the following:

- a.** Discuss with your counselor a robotic space exploration mission and a historic crewed mission. Tell about each mission's major discoveries, its importance, and what was 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 a robotic mission to another planet, moon, comet, or asteroid that will return samples of its surface to Earth. Name the planet, moon, comet, or asteroid your spacecraft will visit. Show how your design will cope with the conditions of the environments of the planet, moon, comet, or asteroid.

#6 - Describe the purpose and operation of ONE of the following:

- a.** Space shuttle or any other crewed orbital vehicle, whether government owned (U.S. or foreign) or commercial
- b.** International Space Station

#7 - Design an inhabited base located within our solar system, such as Titan, asteroids, or other locations that humans might want to explore in person. 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

*** We will be discussing the scout's drawings/models of their bases.**

#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.

Theater:

Read the Theater merit badge book and be prepared to describe terms and information from the book.

#1 - See or read three full-length plays. Write a review of each. Discuss with your counselor the plot or story. If you chose to watch the plays, comment on the acting and the staging.

#2 - Write a one-act play that will take at least 10 minutes to perform. The play must have a main character, conflict, and a climax.

Veterinary Medicine:

Read the Veterinary Medicine merit badge book and be prepared to describe terms and information from the book.

#6a - Visit a veterinary clinic, hospital, or veterinary referral teaching hospital that does work in one of the practices listed in requirement 1.

- **Spend as much time as you can** observing the veterinarians and their staff.
- **Write a report** on what you observed and learned at the facility.
- **Share your report** with your counselor.

Weather:

Read the Weather merit badge book and be prepared to describe terms and information from the book.

#8 - Describe how the tilt of Earth's axis helps determine the climate of a region near the equator, near the poles, and across the area in between.

#9 - 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, NOAA Weather Radio All Hazards, 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.

#10 - 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.

#11 - 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.