Event Requirements

STEM in Scouting 2026

2026 STEM in Scouting @ APG

Architecture (2015 version): Architecture 2015-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Do the following:

- [X] [ ] **#1a** 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.
- [X] [ ] **#1b** Select a historical architectural achievement that has had a major impact on society. Using resources such as the internet (with your parent or guardian's permission), books, and magazines, find out how this achievement has influenced the world today. Tell your counselor what you learned.

#2. In following the Leave No Trace Seven Principles and the Outdoor Code, Scouts pledge to "Travel and camp on durable surfaces" and to "Leave what you find" and to "Be conservation-minded." Discuss the following with your counselor:

- [X] [ ] **#2a** The term sustainable architecture. Identify three features typical of green buildings.
- [X] [ ] **#2b** The difference between renewable building materials and recycled building materials, and how each can be used in construction.
- [X] [ ] **#2c** The relationship of architecture with its surrounding environment and the community.
- [X] [ ] **#2d** How entire buildings can be reused rather than torn down when they no longer serve their original purpose.

#3. Do ONE of the following:

- [X] [ ] **#3a** With your parent or guardian's and counselor's permission and approval, arrange to meet with an architect. Ask to see the scale model of a building and the drawings that a builder would use to construct this building. Discuss why the different building materials were selected. Look at the details in the drawings and the model to see how the materials and components are attached to each other during construction.
- [X] [ ] **#3b** With your parent or guardian's and counselor's permission and approval, arrange to meet with an architect at a construction site. Ask the architect to bring drawings that the builder uses to construct the building. While at the site, discuss why the different building materials being used were selected. Discuss how the different building materials and components are attached to each other during construction. Note: To visit a construction site will require advance planning. You will need permission from a parent or guardian, counselor, the architect, and the construction site manager. A construction site is a very dangerous place. While there, you will need to closely follow the site manager's directions and comply with all the safety procedures, including wearing a hard hat, protective eyewear, and proper footwear. Be aware of the changing conditions at the site, and stay with the architect or site manager.
- [X] [ ] **#3c** Interview someone who might be your client (such as a prospective homeowner or business owner) if you were an architect. Find out what your client's requirements would be for designing a new home or business building. Write a short program including a list of requirements for the project, the functions of the building and site, how the functions relate to one another, and the goals of the project.

Event Requirements

STEM in Scouting 2026

Architecture (2015 version): Architecture **2015-01-01**

U	PR	
X		**#4** Measure a room such as one where you live or where your troop meets. Make an accurately scaled drawing of the room's floor plan showing walls, doors, closets, windows, and any built-in furniture or cabinets. Neatly label your drawing with the following: your name, the date, what room you drew, and the scale of the drawing. (Drawing scale: ¼ inch = 1 foot)
X		**#5** Find out about three career opportunities in architecture. 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.

Event Requirements

STEM in Scouting 2026

Artificial Intelligence (AI) (2025 version): Artificial Intelligence (AI) 2025-01-01

U PR

null NOTE: The Artificial Intelligence (AI) merit badge has no merit badge pamphlet. Instead, it has been designed for you to interact with the Scoutly chatbot on your learning journey as you work through the requirements. Scoutly can be found on the bottom right of your browser at https://scouting.org. If you have a question about a requirement, ask Scoutly! Hint: try asking Scoutly to Explain the "xxx" activity for requirement "yy" of the AI merit badge. This does not replace the requirement to identify and work with a counselor to complete the badge. Additional educational resources are available on our Counselor Information Page.

- [X] [ ] **#1.** Key Concepts. Define the following terms and share the meaning of each with your counselor: artificial intelligence (AI), artificial intelligence agents, automation, basic programming, bots, data, databases, digital workers, general AI, machine learning (ML), narrow AI, superintelligent AI, tasks, triggers, workflows, and variables.

#2. Artificial Intelligence (AI) Basics. Do the following and share what you learned with your counselor:

- [X] [ ] **#2(a).** Identify 10 examples of how AI is currently used in everyday life.
- [X] [ ] **#2(b).** Identify five examples of how AI is currently used in the workplace.
- [X] [ ] **#2(c).** Identify five examples of how AI can be used at school or in support of your education.
- [X] [ ] **#2(d).** Meet with your counselor and play 10 rounds of the "AI or Not?" game to determine if the presented scenario utilizes AI. Discuss your answers.
- [X] [ ] **#2(e).** Create a timeline with five key milestones in the development of artificial intelligence.

#3. Automation Basics. Do the following and share what you learned with your counselor:

- [X] [ ] **#3(a).** Identify 10 examples of how automation is currently used in everyday life.
- [X] [ ] **#3(b).** Identify five examples of how automation is currently used in the workplace.
- [X] [ ] **#3(c).** Identify five examples of how automation can be used at school or in support of your education.
- [X] [ ] **#3(d).** Explain how automation performs repetitive tasks without human intervention and how it reduces human error and optimizes resources.
- [X] [ ] **#3(e).** Create a timeline with five significant milestones in automation development.

#4. Ethics in AI. Do the following and share what you learned with your counselor:

- [X] [ ] **#4(a).** Research ethical concerns and responsible use in AI, including bias, privacy, and AI decision-making.

Event Requirements

STEM in Scouting 2026

Artificial Intelligence (AI) (2025 version): Artificial Intelligence (AI) 2025-01-01

U	PR	
X		**#4(b).** Meet with your counselor, play, and discuss five rounds of the "What Would You Do?" ethical decision-making scenarios.
X		**#4(c).** Develop your own ethical guidelines for the use of AI.
X		**#4(d).** What is the Turing test?
		#5. Deepfakes. Do the following and share what you learned with your counselor:
X		**#5(a).** Explain what a deepfake is and how it can affect an individual.
X		**#5(b).** Describe what actions to take if you or someone you know is impacted by a deepfake.
		#6. Developing AI Skills. Do the following and share what you learned with your counselor:
X		**#6(a).** Discuss the learning process for AI and its limitations.
X		**#6(b).** Identify five methods of how to effectively communicate with AI.
X		**#6(c).** Explain the importance of prompt engineering when using AI to create better output.
X		**#6(d).** Demonstrate three examples of writing clear instructions for a school-related task.
		#7. Practical Application. Do ONE of the following:
X		**#7(a).** With your counselor's approval, choose an artificial intelligence project based on your personal interest or a community need. Develop a plan outlining the project's objectives, data requirements, and potential ethical considerations. Implement the project utilizing appropriate artificial intelligence tools, languages, or platforms. Share your project with your counselor. Discuss the steps you followed to create the project and your experience during the process.
X		**#7(b).** With your counselor's approval, design a short lesson plan on AI and teach it to your patrol or a group of Scouts. The lesson should include an AI-generated age-appropriate explanation of AI, examples of how AI is used in both everyday life as well as in the workplace, and an interactive demonstration of how Scouts could utilize AI to assist them with a school assignment, Scouting activity, or rank advancement. Share information on the development process and teaching experience with your counselor.
		#8. Career Exploration. Do ONE of the following:
X		**#8(a).** Identify three career opportunities that would use skills and knowledge in artificial intelligence or automation. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities, and career goals associated with this career. Discuss what you learned with your counselor and whether you might be

Event Requirements

STEM in Scouting 2026

Artificial Intelligence (AI) (2025 version): Artificial Intelligence (AI) **2025-01-01**

U PR

interested in this career.

[X] [ ] **#8(b).** Interview an artificial intelligence or automation professional. Learn about their day-to-day work, the challenges they face, and their vision for the future of artificial intelligence or automation. Inquire about training, education, certification requirements, experience, and expenses associated with entering the field. Share what you learned with your counselor.

Event Requirements

STEM in Scouting 2026

Aviation (2025 version): Aviation 2025-01-01

U PR

null NOTE: Check out the Digital Resource Guide for the Aviation merit badge HERE for detailed information and helpful resources to engage your learning and assist you along on your merit badge journey! The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop! Additional educational resources are available on our Counselor Information Page.

#1. Aviation Basics and Mechanics of Flight. Do the following:

- [X] [ ] **#1a** Define "aircraft." Describe three kinds of aircraft today, and their typical uses.
- [X] [ ] **#1b** Provide a brief overview of the evolution of flight, and discuss three notable times in history important to aviation.
- [X] [ ] **#1c** Explain the difference between a fixed wing and a rotary wing aircraft, and the benefits of each.
- [X] [ ] **#1d** Explain the operation of piston, turbine, and jet engines.
- [X] [ ] **#1e** Using a model aircraft, describe the four forces that act on an aircraft in flight.
- [X] [ ] **#1f** Explain how an airfoil generates lift, specifically noting Bernoulli's principle.
- [X] [ ] **#1g** Identify and describe the aerodynamic control surfaces on the aircraft of your choice, and explain how they operate to control its attitude and direction of flight.
- [X] [ ] **#1h** Explain the purposes and functions of the various instruments found in a typical single-engine aircraft: attitude indicator, heading indicator, altimeter, airspeed indicator, turn and bank indicator, vertical speed indicator, compass, navigation, communication, and engine performance indicators.

#2. Principles of Flight. Do ONE of the following:

- [X] [ ] **#2a** Build a model FPG-9. Get others in your troop or patrol to make their own model, then organize a competition to test the precision of flight and landing of the models.
- [X] [ ] **#2b** Build a rubber-band driven balsa wood airplane. Fly the plane for 25 feet in a straight line, with a smooth landing.
- [X] [ ] **#2c** Build (or obtain) a fuel-driven or battery-powered electric model aircraft or drone. Obtain The Recreational UAS Safety Test (TRUST) certification, and fly the aircraft with a successful take-off and landing.

#3. Flight Operations. Do TWO of the following:

- [X] [ ] **#3a** Using a flight simulator software package, set a course and fly the headings you have established with a successful take-off and landing.

Event Requirements

STEM in Scouting 2026

Aviation (2025 version): Aviation 2025-01-01

U	PR	
X		**#3b** Under supervision, perform a preflight inspection of an aircraft.
X		**#3c** Observe and/or participate in an aircraft maintenance activity. Describe the maintenance schedule and requirements for an aircraft of your choice.
X		**#3d** Obtain and learn how to read an aeronautical chart. Measure a true course on the chart; correct it for magnetic variation, compass deviation, and wind drift to determine a navigational heading for an aircraft.
X		**#3e** With your parent or guardian's permission, take a discovery flight in an aircraft. Record the date, place, type of aircraft, and duration of flight. Report on your impressions of the flight.
		#4. Airport Operations. Do ONE of the following:
X		**#4a** Visit an airport. After the visit, report on how the facilities are used, how runways are numbered, and how runways are determined to be "active."
X		**#4b** Visit a Federal Aviation Administration facility: Airport Traffic Control Tower (ATCT), Terminal Radar Approach Control (TRACON), Air Route Traffic Control Center (ARTCC), or Flight Standards District Office (FSDO). Report on the operation and your impressions of the facility.
X		**#4c** Visit a military aviation facility. Learn how that facility supports defense and/or civilian activities. Report on the operation and your impressions of the facility.
X		**#4d** Visit an aviation museum or attend an air show. Report on your impressions of the museum or show, and what you learned from the experience.
		#5. Personal & Professional Aviation Opportunities. Do the following:
X		**#5a** Explain the following: the student pilot, the recreational pilot, the remote pilot, and the private pilot certificates.
X		**#5b** Describe the benefits of the instrument rating.
X		**#5c** Explain the following: the commercial pilot certificate, the airline transport pilot certificate, and certified flight instructor (CFI).
X		**#5d** Identify an Aviation Exploring Post and/or Civil Air Patrol facility in your area. Learn about their activities and membership requirements.
X		**#5e** Identify three career opportunities that would use skills and knowledge in aviation. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

STEM in Scouting 2026

Chemistry (2025 version): Chemistry 2025-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Chemistry and Safety. Do the following and discuss with your counselor:

- [X] [ ] **#1a.** Obtain safety data sheets (SDS) for sucrose (sugar), isopropyl alcohol (rubbing alcohol), and a waterproofing spray. Compare their properties and potential hazard(s), including handling and disposal guidelines and toxicity information.
- [X] [ ] **#1b.** What types of personal protective equipment (PPE) are recommended for each, and why? How does the recommended PPE change with toxicity and route of exposure?
- [X] [ ] **#1c.** Review the pictograms in Section 2 of each SDS. What do they mean, and how do you see them used in your community?
- [X] [ ] **#1d.** Discuss the safe storage of chemicals. How does the safe storage of chemicals apply to your home, school, community, and the environment?

#2. Chemistry and First Aid. After successfully completing requirement 1, do the following:

- [X] [ ] **#2a.** Discuss with your counselor why you think soap and alcohol are used to clean cuts and scrapes. Discuss how you could test your hypotheses with your counselor.
- [X] [ ] **#2b.** Coat your hands with a mixture of cooking oil and a nontoxic powder, such as sand or cocoa. Wash your hands with water and observe what happens. Coat your hands again, then wash with soap and water. Discuss the differences with your counselor.
- [X] [ ] **#2c.** Perform an experiment to demonstrate how rubbing alcohol affects microbial growth using baker's yeast. Discuss the results with your counselor.

#3. Chemistry and Cooking. After successfully completing requirement 1, do EACH of the following:

- [X] [ ] **#3a.** Perform a Maillard, or browning, reaction. Discuss with your counselor whether a physical or chemical change has occurred, and what happened to molecules in the food during the cooking process.
- [X] [ ] **#3b.** Prepare and use red cabbage indicator to measure the pH of five common household liquids, including water. Discuss your observations with your counselor.

#4. Chemistry and Camping. After successfully completing requirement 1, do TWO of the following:

- [X] [ ] **#4a.** Design and conduct an experiment to compare at least two different types of waterproofing. Discuss with your counselor which one you would prefer to use on your tent and which one you would prefer to use on your boots, and why.
- [X] [ ] **#4b.** Describe the four classes of fires, and the four classes of fire extinguishers. Discuss with your counselor how sand, baking soda, and the four classes

Event Requirements

STEM in Scouting 2026

Chemistry (2025 version): Chemistry 2025-01-01

U	PR	
		of extinguishers work to put out fires.
X	☐	**#4c.** Under your counselor's supervision and/or the supervision of a knowledgeable adult approved in advance by your counselor, conduct flame tests of at least five elements using a kitchen or propane torch.
X	☐	**#4d.** Under your counselor's supervision and/or the supervision of a knowledgeable adult approved in advance by your counselor, synthesize nylon (may be from a kit).
X	X	**#5.** Describe how chemistry can be used to reduce the environmental impacts of single-use items, such as water bottles, bags, straws, or batteries.
X	X	**#6.** Identify five fields of chemistry. Briefly describe each, tell how each applies to your life and how they interact.
X	X	**#7.** Identify three government agencies that oversee or provide guidance on the use of chemicals for personal, pharmaceutical, commercial, or industrial use, and discuss the agencies' history and responsibilities with your counselor.
		#8. Do ONE of the following:
X	☐	**#8a.** Visit a research laboratory, and discuss the research performed there with a chemist or chemical technician. Learn what education and training they received.
X	☐	**#8b.** Visit a company or plant that makes chemical products or uses chemical processes. Learn about their products or processes, and talk with someone who works there. Learn what they do, and what education and training they received.
X	☐	**#8c.** Identify three career opportunities that would use skills and knowledge in chemistry. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

STEM in Scouting 2026

Cybersecurity (2025 version): Cybersecurity 2025-01-01

U PR

#1. Safety. Do the following:

[X] [ ] **#1(a)** View the Personal Safety Awareness "Digital Safety" video (with your parent or guardian's permission).

[X] [ ] **#1(b)** Explain to your counselor how to protect your digital footprint, such as while using social media, mobile device apps, and online gaming. Show how to set privacy settings to protect your personal information, including photos of yourself or your location.

[X] [ ] **#1(c)** Discuss first aid and prevention for potential injuries, such as eye strain, repetitive injuries, and handling electronics devices, that could occur during repeated use. Discuss how to keep yourself physically safe while using a mobile device (for example while walking or biking).

#2. Ethics. Do the following:

[X] [ ] **#2(a)** Relate three points of the Scout law to things people do on the internet or with computers, phones, and other connected electronic devices.

[X] [ ] **#2(b)** Discuss with your counselor examples of ethical and unethical behavior in cyberspace. Include how to act responsibly when you encounter situations such as: coming across an unattended or unlocked computer or mobile device; observing someone type their password or seeing it written down near a computer; or discovering a website that is not properly secured. Explain why these situations require good judgement, and how the Scout Law and personal values should guide your actions.

#3. Fundamentals. Do the following and discuss each with your counselor:

[X] [ ] **#3(a)** Describe three types of computer systems that need protecting and explain why.

[X] [ ] **#3(b)** Explain the "C.I.A. Triad"—Confidentiality, Integrity, and Availability—and why these three principles are fundamental to cybersecurity.

#4. Cyber Threats, Vulnerabilities, and Attacks. Do the following and discuss each with your counselor:

[X] [ ] **#4(a)** Define the terms vulnerability, threat, and exploit, and give an example of each that might apply to a website or software product you use.

[X] [ ] **#4(b)** Pick one type of malware (such as virus, worm, Trojan, backdoor, spyware, or ransomware) and find out how it works. Explain what it does and the harm it can cause.

[X] [ ] **#4(c)** Identify two risks of using public Wi-Fi and describe how to reduce or avoid those risks.

[X] [ ] **#4(d)** Describe what spoofing and phishing are, and how to recognize a message or website that might be trying to trick you. Explain what steps you should take to protect yourself and others if you come across one.

#(e) Current Events. Do ONE of the following:

Event Requirements

STEM in Scouting 2026

Cybersecurity (2025 version): Cybersecurity 2025-01-01

U	PR	
X		**#4(e)(1)** Read an article or a news report about a recent cybersecurity incident, such as a data breach or malware infection. Explain how the incident happened (to the best of your ability based on the information available) and what the consequences are or might be to the victim.
X		**#4(e)(2)** With your parent or guardian's permission, watch a movie or read a book in which cybersecurity plays a significant role. Discuss how cybersecurity topics were depicted and how realistic you think it was.
X		**#4(f)** Create a list of what is part of your cyber attack surface including all the ways someone could try to access your personal information or devices—such as online accounts, apps, or home networks.
		#5. Cyber Defenses. Do the following:
X		**#5(a)** Describe three technologies that are used to defend a computer or network, such as access controls, antivirus software, firewall, intrusion detection/prevention systems, and Virtual Private Network.
		#(b) Installing updates. Do the following:
X		**#5(b)(1)** Explain to your counselor the importance of installing the latest updates on your computer, why they are needed, and what kinds of problems they can prevent.
X		**#5(b)(2)** Demonstrate to your counselor how to check for, download, and install the latest updates for your computer or mobile device, or another computer you have permission to use. (If you are unable to do this on your computer, you may use an online guide with screenshots to demonstrate this.) Show your counselor how to verify that your computer or mobile device is up-to-date.
		#(c) System security. With your parent or guardian's permission, do THREE of the following using a computer or mobile device, and discuss with your counselor:
X		**#5(c)(1)** Describe what makes a good password and why. Set or change an account password to one that is "strong."
X		**#5(c)(2)** Describe multi-factor authentication (MFA) and how it can be used to improve security. Demonstrate how to use an authenticator app or other MFA function.
X		**#5(c)(3)** Install and set up a password manager. Demonstrate how it works to your counselor.
X		**#5(c)(4)** Run a virus scan. Show the results to your counselor.
X		**#5(c)(5)** Using a command line or other built-in tool, see what programs or processes are running on your computer. Discuss with your counselor what you see and what surprises you.

Event Requirements

STEM in Scouting 2026

Cybersecurity (2025 version): Cybersecurity 2025-01-01

U	PR	
X		**#5(c)(6)** Use a command line interface to view your computer's open network connections. Discuss the results with your counselor.
X		**#5(c)(7)** Demonstrate how to back up your data from a mobile device to a local computer or the cloud.
X		**#5(c)(8)** Research best practices for protecting a home computer or network, and make a checklist of FIVE things you and your family can do to stay secure.
X		**#5(c)(9)** Identify one or more other vulnerabilities on your home computer or network or another computer or network you have permission to use and discuss with your counselor. With permission from the system owner, take the necessary actions to fix it.
		#6. Cryptography. Do the following:
X		**#6(a)** Research and explain to your counselor three situations where encryption is used in cybersecurity. For each situation, describe what kind of encryption is used and why it is important.
X		**#6(b)** Show how you can know if your connection to a website is encrypted.
		#(c) Do ONE of the following:
X		**#6(c)(1)** Create your own encryption code, such as a substitution cipher or code book, and demonstrate using it to encrypt and decrypt a message. Describe the strengths and weaknesses of your code.
X		**#6(c)(2)** Download and set up an app (from an official app store) that uses end-to-end encryption. Explain to your counselor what this means, how it works, and why it is more secure than other forms of communication (e.g. SMS).
X		**#6(c)(3)** Use a hashing tool (for example, using SHA or MD5) to create a checksum for a file, document, or piece of text. Have a fellow Scout or your counselor make a change to it, then recreate the checksum and compare the new checksum to the original as a demonstration of file integrity checking.
X		**#6(c)(4)** Create your own PGP (pretty good privacy) email key. Share your public key with others (and your counselor). Also, get their public keys and add them to your computer's key ring. Send a message that has been digitally encrypted.
X		**#7.** Connected Devices and Internet of Things (IoT). Describe to your counselor four electronic devices you encounter that could be connected to the internet, why this connectivity can be useful, what risks are posed by the connectivity, and how they could be protected.
		#8. Cybersecurity Activities. Do ONE of the following:
X		**#8(a)** Learn about a cybersecurity competition, camp, or other activity you could participate in (either now or in the future). Share what you learned with your counselor, including the type of activity, time commitment, and age of participants.

Event Requirements

STEM in Scouting 2026

Cybersecurity (2025 version): Cybersecurity 2025-01-01

U	PR	
X		**#8(b)** Participate in a cybersecurity competition with members of your troop, school, or some other group approved by your counselor. Either design your own competition or use an existing platform.
X		**#8(c)** Give a presentation to your patrol, troop, or another group approved by your counselor, on a cybersecurity topic of your choice. Your presentation must include at least one demonstration and/or hands-on activity.
		#9. Careers. Do ONE of the following:
X		**#9(a)** Identify three career opportunities that would use skills and knowledge in cybersecurity. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#9(b)** Visit a business or organization that does work in cybersecurity. Find out about different work roles, what they do, and how they acquired their knowledge through college degrees or certifications. Share what you learned with your counselor.

Event Requirements

STEM in Scouting 2026

Drafting (2025 version): Drafting 2025-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Format TWO sheets of drawing paper with proper borders and title blocks—one for your manual project (see requirement 2) and one for your lettering project (see requirement 5).

- [X] [ ] **#1a** Make a rough sketch for each of your project drawings to determine the correct size of paper to format.
- [X] [ ] **#1b** Using either single-stroke vertical or slant Gothic lettering, fill in all important information in the title block sections of the formatted paper.

#2. Using the formatted sheet of paper you prepared for your manual project, produce a pencil drawing as it would be used for manufacturing. Fill in all title block information. The manual drawing may be any one of the following drawing types:

- [X] [ ] **#2a** Architectural: Make a scale drawing of an architectural project. The architectural drawing may be a floor plan; electrical, plumbing, or mechanical service plan; elevation plan; or landscaping plan. Use an architect's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and considerations necessary for construction. Properly print a bill of materials for at least three of the raw materials or components in the project.
- [X] [ ] **#2b** Mechanical: Make a scale drawing of some mechanical device or interesting object. The mechanical drawing may be of the orthographic (third-angle) or isometric style. Use an engineer's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and manufacturing considerations. Properly print a bill of materials for at least three of the raw materials or components in the assembly.
- [X] [ ] **#2c** Electrical: Draw a simple schematic of a radio or electronic circuit. Properly print a bill of materials including all of the major electrical components used in the circuit. Use standard drawing symbols to represent the electronic components.

#3. Produce a computer-aided design (CAD) drawing as it would be used in manufacturing. Fill in all title block information. The CAD drawing may be any one of the following drawing types:

- [X] [ ] **#3a** Architectural: Make a scale drawing of an architectural project. The architectural drawing may be a floor plan; electrical, plumbing, or mechanical service plan; elevation plan; or landscaping plan. Use an architect's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and considerations necessary for construction.
- [X] [ ] **#3b** Mechanical: Make a scale drawing of some mechanical device or interesting object. The mechanical drawing may be of the orthographic (third-angle) or isometric style. Use an engineer's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and manufacturing considerations.
- [X] [ ] **#3c** Electrical: Draw a simple schematic of a radio or electronic circuit. Properly print a bill of materials including all of the major electrical components used in the circuit. Use standard drawing symbols to represent the electronic components.

Event Requirements

STEM in Scouting 2026

Drafting (2025 version): Drafting 2025-01-01

U PR

#4. Do the following:

- [X] [ ] **#4a** Present a copy of your drawings from requirements 2 and 3, either in paper or digital format to your counselor. Your counselor will return a redlined version of your drawings indicating to add/remove/change a feature, material, BOM QTY, etc.
- [X] [ ] **#4b** Make the correction from the redline, identify it on the drawings with a revision marker, and add a revision block.
- [X] [ ] **#5** Discuss with your counselor how fulfilling requirements 2, 3, and 4 differed from each other. Tell about the benefits derived from using CAD for requirements 3 and 4. Include in your discussion the software you used as well as other software options that are available.
- [X] [ ] **#6** Using single-stroke slant or vertical Gothic lettering (without the aid of a template or lettering guide), write a brief explanation of what you consider to be the most important benefit in using CAD in a particular industry (aerospace, electronics, manufacturing, architectural, or other). Use the experience gained in fulfilling requirements 2 through 5 to support your opinion. Use the formatted sheet of paper you prepared in requirement 1 for your lettering project.

#7. Do ONE of the following:

#(a) Visit a facility or industry workplace where drafting is part of the business. Ask to see an example of the work that is done there, the different drafting facilities, and the tools used.

- [X] [X] **#7a[1]** Find out how much of the drafting done there is manual and how much is done using CAD. If CAD is used, find out what software is used and how and why it was chosen.
- [X] [X] **#7a[2]** Ask about the drafting services provided. Ask who uses the designs produced in the drafting area and how those designs are used. Discuss how the professionals who perform drafting cooperate with other individuals in the drafting area and other areas of the business.
- [X] [X] **#7a[3]** Ask how important the role of drafting is to producing the end product or service that this business supplies. Find out how drafting contributes to the company's end product or service.

#(b) Using resources you find on your own such as at the library and on the internet (with your parent or guardian's permission), learn more about the drafting trade and discuss the following with your counselor.

- [X] [X] **#7b[1]** The drafting tools used in the past—why and how they were used. Explain which tools are still used today and how their use has changed with the advent of new tools. Discuss which tools are being made obsolete by newer tools in the industry.
- [X] [X] **#7b[2]** Tell what media types were used in the past and how drawings were used, stored, and reproduced. Tell how the advent of CAD has changed the media used, and discuss how these changes affect the storage or reproduction of drawings.

Event Requirements

STEM in Scouting 2026

Drafting (2025 version): Drafting 2025-01-01

U	PR	
X	X	**#7b[3]** Discuss whether the types of media have changed such that there are new uses the drawings, or other outputs, produced by designers. Briefly discuss how new media types are used in the industry today.
X	X	**#8** Identify three career opportunities that would use skills and knowledge in Drafting. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

STEM in Scouting 2026

Electricity (2025 version): Electricity 2025-01-01

U	PR	
		null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.
		#1. Demonstrate that you know how to respond to electrical emergencies by doing the following:
X		**#1a** Explain how to turn off power for a particular circuit and the whole house in the event of an emergency.
X		**#1b** Demonstrate how to rescue a person touching a live wire in the home.
X		**#1c** Describe how to safely get out of a car in an accident if you suspect a utility wire is on the car.
X		**#1d** Show how to render first aid to a person who is unconscious from an apparent electrical shock.
X		**#1e** Show how to treat an electrical burn.
X		**#1f** Explain what to do in the event of an electrical fire.
X		**#1g** Explain what to do if caught out in the open during an electrical storm.
X	X	**#2** Complete an electrical home safety inspection of your home, using the checklist found in the Electricity merit badge pamphlet or one approved by your counselor. Discuss what you find with your counselor.
X		**#3** Make a simple electromagnet and use it to show magnetic attraction and repulsion.
		#4. Do the following:
X		**#4a** Explain the difference between direct current and alternating current, the advantages and disadvantages of each, and give a practical example of the use of each type.
X		**#4b** Explain three ways that electricity is produced.
X		**#5** Make a simple drawing to show how a battery and an electric bell work. Describe the purpose of each of the components.
		#6. Do the following:
X		**#6a** Define what overloading an electric circuit means. Tell what you have done to make sure your home circuits are not overloaded.
X		**#6b** Determine if there is an overload on a branch circuit by either getting the current draw from all the equipment plugged into the circuit or use the power equation to calculate the current draws.

Event Requirements

STEM in Scouting 2026

Electricity (2025 version): Electricity 2025-01-01

U	PR	
X		**#6c** Explain why a fuse blows and a circuit breaker trips.
X		**#6d** Tell how to find a blown fuse and a tripped circuit breaker in your home. Show how to safely reset the circuit breaker.
X	X	**#7** Make a floor plan wiring diagram of the lights, switches, and outlets for a room in your home. Show which fuse or circuit breaker protects each one.
		#8. Do the following:
X		**#8a** Read a meter associated with an electric bill. Determine the total power used since the bill, and the cost of that power.
X		**#8b** Explain other charges on the bill that were taxes or fees.
X		**#8c** Discuss with your counselor five ways your family can conserve energy.
		#9. Explain the following:
X		**#9a** Electrical terms: current, energy, power, resistance, and voltage
X		**#9b** Units of measure: ampere (amps), ohms, volts, watts, and watt-hours
X		**#9c** Electrical conditions: generating source with example, ground, open circuit, overvoltage, potential difference, and short circuit Resources: Open Circuits, Closed Circuits & Short Circuits - Basic Introduction (video) What Is Electric Potential Difference? (video)
X		**#9d** Equipment and their use: circuit, conductor, Ground Fault Circuit Interrupter (GFCI), insulator, inverter, rectifier, rheostat, substation, surge protection, solar panel, transformer, transmission and distribution systems, and wind turbine.
		#10. Do TWO of the following:
X		**#10a** Connect a buzzer, bell, or light with a battery. Have a key or switch in the line.
X		**#10b** Make and run a simple electric motor (from a kit is acceptable, if approved by your counselor ahead of time).
X		**#10c** Build a simple rheostat. Show that it works.
X		**#10d** Build a single-pole, double-throw switch. Show that it works.
X		**#10e** Explain how 3-way switch wiring works in a lighting circuit.

Event Requirements

STEM in Scouting 2026

Electricity (2025 version): Electricity 2025-01-01

U	PR	
X		**#10f** Connect two lights together in a series circuit along with a battery and a switch. Then connect the same circuit in parallel. Discuss the differences in the two circuits.
X		**#11** Identify three career opportunities that would use skills and knowledge in electricity. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

STEM in Scouting 2026

Energy (2025 version): Energy 2025-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Do the following:

[X] [X] **#1a** With your parent or guardian's permission, use the internet to find a blog, podcast, website, or an article on the use or conservation of energy. Discuss with your counselor what details in the article were interesting to you, the questions it raises, and what ideas it addresses that you do not understand.

[X] [ ] **#1b** After you have completed requirements 2 through 8, revisit your source for requirement 1(a). 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:

[X] [ ] **#2a** Explain how THREE of the following devices use energy, and explain their energy conversions: toaster, greenhouse, lightbulb, bow drill, cell phone, nuclear reactor, sauna, or electric vehicles.

[X] [ ] **#2b** 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:

[X] [ ] **#3a** Identify the parts of the system that are affected by the energy movement.

[X] [ ] **#3b** Name the system's primary source of energy.

[X] [ ] **#3c** Identify the useful outcomes of the system.

[X] [ ] **#3d** 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.

[X] [ ] **#4a** 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.

[X] [ ] **#4b** 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.

Event Requirements

STEM in Scouting 2026

Energy (2025 version): Energy 2025-01-01

U PR

#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 trade-offs in energy use. In your response, do the following:

- [X] [X] **#5a** Explain how the changes you suggest would lower costs, reduce pollution, or otherwise improve your community.
- [X] [X] **#5b** 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.

- [X] [X] **#6a** The energy resources that supply the United States with most of its energy
- [X] [X] **#6b** The share of energy resources used by the United States that comes from other countries
- [X] [X] **#6c** The proportion of energy resources used by homes, businesses, industry, and transportation
- [X] [X] **#6d** The fuels used to generate America's electricity
- [X] [X] **#6e** 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.

- [X] [ ] **#7a** Biomass digesters or waste-to-energy plants
- [X] [ ] **#7b** Cogeneration plants
- [X] [ ] **#7c** Fossil fuel power plants
- [X] [ ] **#7d** Fuel cells
- [X] [ ] **#7e** Geothermal power plants
- [X] [ ] **#7f** Nuclear power plants
- [X] [ ] **#7g** Solar power systems

Event Requirements

STEM in Scouting 2026

Energy (2025 version): Energy 2025-01-01

U	PR	
X		**#7h** Tidal energy, wave energy, or ocean thermal energy conversion devices
X		**#7i** Wind turbines
X		**#8** Identify three career opportunities that would use skills and knowledge in energy. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities, and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

STEM in Scouting 2026

Engineering (2024 version): Engineering 2024-01-01

U	PR	
		null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.
X	X	**#1.** Select a manufactured item in your home (such as a toy or an appliance) and, under adult supervision and with the approval of your counselor, investigate how and why it works as it does. Find out what sort of engineering activities were needed to create it. Discuss with your counselor what you learned and how you got the information.
X	X	**#2.** Select an engineering achievement that has had a major impact on society. Using resources such as the internet (with your parent or guardian's permission), books, and magazines, find out about the engineers who made this engineering feat possible, the special obstacles they had to overcome, and how this achievement has influenced the world today. Tell your counselor what you learned.
X		**#3.** Explain the work of six types of engineers. Pick two of the six types and explain how their work is related to engineering.
		#4. Visit with an engineer (who may be your counselor, parent or guardian) and do the following:
X		**#4a.** Discuss the work this engineer does and the tools the engineer uses.
X		**#4b.** Discuss with the engineer a current project and the engineer's particular role in it.
X		**#4c.** Find out how the engineer's work is done and how results are achieved.
X		**#4d.** Ask to see the reports that the engineer writes concerning the project.
X		**#4e.** Discuss with your counselor what you learned about engineering from this visit.
X	X	**#5.** Use the systems engineering approach to design an original piece of patrol equipment, a toy or a useful device for the home, office or garage.
		#6. Do TWO of the following:
X		**#6a.** Transforming Motion. Using common materials or a construction set, make a simple model that will demonstrate motion. Explain how the model uses basic mechanical elements like levers and inclined planes to demonstrate motion. Describe an example where this mechanism is used in a real product.
X		**#6b.** Using Electricity. Make a list of 10 electrical appliances in your home. Find out approximately how much electricity each uses in one month. Learn how to find out the amount and cost of electricity used in your home during periods of light and heavy use. List five ways to conserve electricity.
X		**#6c.** Understanding Electronics. Using an electronic device such as a smartphone or tablet computer, find out how sound, video, text or images travel from one location to another. Explain how the device was designed for ease of use, function, and durability.
X		**#6d.** Using Materials. Do experiments to show the differences in strength and heat conductivity in wood, metal, and plastic. Discuss with your counselor what you have learned.

Event Requirements

STEM in Scouting 2026

Engineering (2024 version): Engineering 2024-01-01

U	PR	
X		**#6e.** Converting Energy. Do an experiment to show how mechanical, heat, chemical, solar, and/or electrical energy may be converted from one or more types of energy to another. Explain your results. Describe to your counselor what energy is and how energy is converted and used in your surroundings.
X		**#6f.** Moving People. Find out the different ways people in your community get to work. Make a study of traffic flow (number of vehicles and relative speed) in both heavy and light traffic periods. Discuss with your counselor what might be improved to make it easier for people in your community to get where they need to go.
X		**#6g.** Building an Engineering Project. Enter a project in a science or engineering fair or similar competition. (This requirement may be met by participation on an engineering competition project team.) Discuss with your counselor what your project demonstrates, the kinds of questions visitors to the fair asked you, and how well you were able to answer their questions.
X		**#7.** Explain what it means to be a registered Professional Engineer (P.E.). Name the types of engineering work for which registration is most important.
X		**#8.** Study the Engineer's Code of Ethics. Explain how it is like the Scout Oath and Law.
X	X	**#9.** Explore careers related to this merit badge. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.

Event Requirements

STEM in Scouting 2026

Inventing (2023 version): Inventing 2023-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. In your own words, define inventing. Then do the following:

- [X] [ ] **#1(a)** Explain to your counselor the role of inventors and their inventions in the economic development of the United States.
- [X] [ ] **#1(b)** List three inventions and state how they have helped humankind.

#2. Do ONE of the following:

- [ ] [ ] **#2(a)** With your parent or guardian's permission and counselor's approval, interview an adult who has invented a useful item or process. Report what you learned to your counselor.
- [X] [X] **#2(b)** Read about three inventors. Select the one you find most interesting and tell your counselor what you learned.

#3. Do the following:

- [X] [ ] **#3(a)** Define the term intellectual property. Explain which government agencies oversee the protection of intellectual property, the types of intellectual property that can be protected, how such property is protected, and why protection is necessary. Resources: What Is Intellectual Property & Why Do I Care (video) Intellectual Propert Law: The Basics of Patent Law (video) Tips for Protecting Your Business's Intellectual Property (video)
- [X] [ ] **#3(b)** Explain the components of a patent and the different types of patents available.
- [X] [X] **#3(c)** Examine your Scouting gear and find a patent number on a camping item you have used. With your parent or guardian's permission, use the internet to find out more about that patent. Compare the finished item with the claims and drawings in the patent. Report what you learned to your counselor.
- [X] [ ] **#3(d)** Explain to your counselor the term patent infringement.
- [X] [ ] **#4** Discuss with your counselor the types of inventions that are appropriate to share with others, and explain why. Tell your counselor about one unpatented invention and its impact on society.
- [X] [X] **#5** Choose a commercially available product that you have used on an overnight camping trip with your troop. Make recommendations for improving the product, and make a sketch that shows your recommendations. Discuss your recommendations with your counselor.

#6. Think of an item you would like to invent that would solve a problem for your family, troop, chartered organization, community, or a special-interest group. Then do the following, while keeping a notebook to record your progress.

- [X] [X] **#6(a)** Talk to potential users of your invention and determine their needs. Then, based on what you have learned, write a statement describing the

Event Requirements

STEM in Scouting 2026

Inventing (2023 version): Inventing 2023-01-01

U	PR	
		invention and how it would help solve a problem. This statement should include a detailed sketch of the invention.
X	X	**#6(b)** Create a model of the invention using clay, cardboard, or any other readily available material. List the materials necessary to build a working prototype of the invention.
X	X	**#6(c)** Share the idea and the model with your counselor and potential users of your invention. Record their feedback in your notebook.
X	X	**#7** Build a working prototype of the item you invented for requirement 6. Test and evaluate the invention. Among the aspects to consider in your evaluation are cost, usefulness, marketability, appearance, and function. Describe how your original vision and expectations for your invention are similar or dissimilar to the prototype you built. Have your counselor evaluate and critique your prototype.Note: Before you begin building the prototype, you must have your counselor's approval, based on the design and building plans you have already shared.
		#8. Do ONE of the following:
X		**#8(a)** Participate with a club or team (robotics team, science club, or engineering club) that builds a useful item. Share your experience with your counselor.
X		**#8(b)** Visit a museum or exhibit dedicated to an inventor or invention, and create a presentation of your visit to share with a group such as your troop or patrol.
X		**#9** Discuss with your counselor the diverse skills, education, training, and experience it takes to be an inventor. Discuss how you can prepare yourself to be creative and inventive to solve problems at home, in school, and in your community. Discuss three career fields that might utilize the skills of an inventor.

Event Requirements

STEM in Scouting 2026

Nuclear Science (2026 version): Nuclear Science 2026-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Radiation. Do the following:

- [X] [ ] **#1(a)** Explain radiation and the difference between ionizing and nonionizing radiation.
- [X] [ ] **#1(b)** Explain the ALARA principle. Explain what process you would go through to ensure your dose is kept ALARA when performing the requirements in this merit badge.
- [X] [ ] **#1(c)** Describe the radiation hazard symbol and explain where it should be used.
- [X] [ ] **#1(d)** Explain how we are exposed to ionizing radiation from outside the earth as well as on earth every day. List four examples of Naturally Occurring Radioactive Materials (NORM) that are in your house or grocery store and explain why they are radioactive.
- [X] [ ] **#1(e)** Explain the difference between radiation exposure and contamination. Describe the hazards of radiation to humans, the environment, and wildlife. Calculate your approximate annual radiation dose and compare it to a typical expected dose of someone who works in a nuclear power plant.

#2. Basic Nuclear Science. Do the following:

- [X] [ ] **#2(a)** Explain the following terms: atom, nucleus, proton, neutron, electron, quark, isotope; alpha particle, beta particle, gamma ray, X-ray; ionization, radioactivity, radioisotope, and stability.
- [X] [ ] **#2(b)** Choose an element from the periodic table. Construct 3-D models for the atoms of three isotopes of this element, showing neutrons, protons, and electrons. Write down the isotope notation for each model including the atomic and mass numbers. In a separate model or diagram, explain or show how quarks make up protons and neutrons.

#3. Modern Particle Physics. Do the following:

- [X] [ ] **#3(a)** Explain how a particle accelerator works.

#(b) Do ONE of the following:

- [X] [ ] **#3(b)(1)** Visit an accelerator, research lab, or university and discuss with a scientist how they study the properties of the nucleus or nucleons.
- [X] [ ] **#3(b)(2)** List three particle accelerators and describe several experiments conducted and their associated basic science and practical applications.

#4. Classic Experiments. Do TWO of the following:

Event Requirements

STEM in Scouting 2026

Nuclear Science (2026 version): Nuclear Science 2026-01-01

U	PR	
X		**#4(a)** Build an electroscope. Show how it works. Place a radiation source near the electroscope ball and explain the effect it causes. Adults must handle radioactive materials.
X		**#4(b)** Make a cloud chamber. Show how it can be used to see the tracks caused by radiation. Adults must handle radioactive materials and dry ice. Explain what is happening.
X		**#4(c)** Perform an experiment demonstrating half-life using nonradioactive materials such as candy, coins, or other small items. Discuss decay chains.
		#5. Radiation Safety. Do ONE of the following:
X		**#5(a)** Using a radiation survey meter and a radioactive source, show how the counts per minute change as the source gets closer to or farther from the radiation detector. Adults must handle radioactive materials. Place three different materials between the source and the detector, then explain any differences in the measurements per minute. Explain how time, distance, and shielding can reduce an individual's radiation dose.
X		**#5(b)** Describe how radon is detected in homes. Discuss the steps taken for the long-term and short-term test methods, tell how to interpret the results, and explain when each type of test should be used. Explain the health concerns related to radon gas and tell what steps can be taken to reduce radon in buildings.
X		**#5(c)** Visit a place where X-rays are used. Draw a floor plan of this room. Show where the unit, the unit operator, and the patient would be when the X-ray unit is operated. Explain the precautions taken and the importance of those precautions for the safety of the operator.
		#6. Nuclear Energy. Do ONE of the following; then discuss with your counselor how nuclear energy is used to produce electricity:
X		**#6(a)** Make a drawing showing how nuclear fission happens. Observe a mousetrap reactor (setup by an adult) and use it to explain how a chain reaction could be started. Explain how a chain reaction could be stopped or controlled in a nuclear reactor. Explain what is meant by a "critical mass."
X		**#6(b)** Visit a local nuclear power plant or nuclear reactor either in person or online (with your parent or guardian's permission). Learn how a reactor works and how the plant generates electricity. Find out what percentage of electricity in the United States and in your state is generated by nuclear power plants and by other methods. Make a graph of the information you find.
X		**#7.** Beneficial Applications of Nuclear Science. Give an example of each of the following and explain how nuclear science is used in these applications: nuclear medicine, environmental applications, industrial applications, space exploration, and radiation therapy. For each example, explain the application and its significance to nuclear science.
X		**#8.** Careers. Explore careers related to nuclear science. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.

Event Requirements

STEM in Scouting 2026

Programming (2026 version): Programming 2026-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Safety. Do the following:

[X] [X] **#1a** View the Personal Safety Awareness "Digital Safety" video (with your parent or guardian's permission.)

[X] [ ] **#1b** Discuss first aid and prevention for the types of injuries that could occur during programming activities, including repetitive stress injuries and eyestrain.

[X] [ ] **#2** History. Discuss with your counselor the history of programming and the evolution of programming languages, including at least three milestones related to the advancement or development of programming over time.

#3. General Knowledge. Do the following:

[X] [ ] **#3a** Create a list of five popular programming languages in use today and describe which industry or industries they are primarily used in and why.

[X] [ ] **#3b** Describe three different programmed devices you rely on every day.

#4. Intellectual Property. Do the following:

[X] [ ] **#4a** Explain the four types of intellectual property used to protect computer programs.

[X] [ ] **#4b** Describe the difference between licensing and owning software.

[X] [ ] **#4c** Describe the differences between freeware, open source, and commercial software, and why it is important to respect the terms of use of each.

#5. Project. With your counselor's guidance, select three different programming languages and development environments. For each subrequirement below, do the following: Write or modify a program using the indicated programming language and development environment. The program must take input and produce output based on computations and decisions made on the input. Debug and demonstrate the program to your counselor. Explain how each program processes inputs, makes decisions based on those inputs, and provides outputs based on computations and decision making.

[X] [X] **#5a** In the first language and environment, write or modify a program, debug and demonstrate, and explain as above.

[X] [X] **#5b** In the second language and environment, write or modify a program, debug and demonstrate, and explain as above.

[X] [X] **#5c** In the third language and environment, write or modify a program, debug and demonstrate, and explain as above.

#6. Careers. Do ONE of the following:

Event Requirements

STEM in Scouting 2026

Programming (2026 version): Programming 2026-01-01

U	PR	
X		**#6(a)** Explore careers related to this merit badge. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.
X		**#6(b)** Explore how you could use knowledge and skills from this merit badge to pursue a hobby or healthy lifestyle. Research any training needed, expenses, and organizations that promote or support it. Discuss with your counselor what short-term and long-term goals you might have if you pursued this.

Event Requirements

STEM in Scouting 2026

Radio (2026 version): Radio 2026-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Radio Safety. Explain the safety precautions for working with radio gear, including:

- [X] [ ] **#1(a)** Grounding for direct and alternating current circuits, power outlets, antennas, and lightning.
- [X] [ ] **#1(b)** Preventing and treating electrical burns
- [X] [ ] **#1(c)** Preventing lithium-ion battery fires in cell phones and other devices.

#2. Radio Fundamentals. Do the following:

#(a) Do the following:

- [X] [ ] **#2(a)(1)** Draw a chart of the electromagnetic spectrum covering 300 kilohertz (kHz) to 3,000 megahertz (MHz).
- [X] [ ] **#2(a)(2)** Label the MF, HF, VHF, UHF, and microwave portions of the spectrum on your diagram.
- [X] [ ] **#2(a)(3)** Locate on your chart at least eight radio services, such as AM and FM commercial broadcast, citizens band (CB), television, amateur radio (at least four amateur radio bands), public service (police and fire), cellular, Wi-Fi, and Bluetooth.

#(b) Discuss the following topics with your counselor:

- [X] [ ] **#2(b)(1)** The definition of radio
- [X] [ ] **#2(b)(2)** The differences between broadcast radio and two-way radio
- [X] [ ] **#2(b)(3)** The differences between commercial broadcast radio and hobby radio

#3. How Radio Waves Travel. Do the following:

- [X] [ ] **#3a** Sketch a diagram showing how different radio wavelengths can travel locally or around the world.
- [X] [ ] **#3b** Explain how the radio stations WWV and WWVH can be used to help determine what you can expect to hear when you listen to a shortwave radio.
- [X] [ ] **#3c** Explain the difference between a distant (DX) and a local station.

#4. Information by Radio. Discuss the following with your counselor:

Event Requirements

STEM in Scouting 2026

Radio (2026 version): Radio 2026-01-01

U	PR	
X		**#4(a)** How radio waves carry information using continuous wave (CW) Morse Code transmission, amplitude modulation (AM), frequency modulation (FM), single sideband (SSB) transmission, and frequency hopping.
X		**#4(b)** How digitized radio standards including Bluetooth, Wi-Fi, and 5G can offer more reliable data transmission and reception than analog standards.
X		**#4(c)** How the effective range varies for different methods of information encoding.
X		**#4(d)** How the maximum data rate from a Wi-Fi radio system compares to a hard-wired or fiber-optic system.
		#5. Radio Hardware and Services. Do the following:
X		**#5(a)** Explain the differences between a block diagram and a schematic diagram.
X		**#5(b)** Draw a block diagram for a radio station that shows a microphone, speaker, transceiver, transmitter, receiver, amplifier, feedline, and antenna and discuss the function of these components.
X		**#5(c)** List consumer devices and services that use analog or digital radio communications.
X		**#5(d)** Explain how NOAA Weather Radio (NWR) can alert you to danger.
X		**#5(e)** Explain how RFID works and what are some of its uses in everyday life.
		#6. Radio Regulation. Discuss the following with your counselor:
X		**#6(a)** What the Federal Communications Commission (FCC) does and how it is different from the International Telecommunication Union (ITU).
X		**#6(b)** How radio station call signs are used in broadcast radio and amateur radio.
X		**#6(c)** How the phonetic alphabet is used to communicate clearly.
		#7. Cell Phones. Do the following:
X		**#7(a)** Explain how cellular systems differ from broadcast and hobby radio.
X		**#7(b)** Explain what Airplane Mode is and why it is important.
X		**#7(c)** Explain how cell phones keep the correct time and show locations and elevations.

Event Requirements

STEM in Scouting 2026

Radio (2026 version): Radio 2026-01-01

U	PR	
X		**#7(d)** Explain the benefits and limitations of cell phones in emergencies.
X		**#7(e)** Explain wireless charging for cell phones and other devices.
		#8. Amateur and Professional Radio. Do ONE of the following options:
		null Option A—Amateur Radio. Do ALL of the following:
X		**#8 Option A (1)** Tell why the FCC has an amateur radio service. Describe activities that amateur radio operators can do on the air, once they have earned an amateur radio license.
X		**#8 Option A (2)** Explain differences between the Technician, General, and Extra Class license requirements and privileges. Explain who administers amateur radio exams.
X		**#8 Option A (3)** Explain at least five Q signals or amateur radio terms.
X		**#8 Option A (4)** Explain how you would make an emergency call on voice or Morse code.
X		**#8 Option A (5)** Explain the differences between handheld, mobile, and base station transceivers and their uses. Explain the use of amateur radio repeaters.
X		**#8 Option A (6)** Using proper call signs, Q signals, and abbreviations, carry on a 10-minute real or simulated amateur radio contact using voice, Morse code, or digital mode. Properly log the real or simulated amateur radio contact, and record the signal report. Note: Licensed amateur radio operators may substitute five QSL cards as evidence of contacts with five amateur radio operators.
		null Option B—Radio Broadcasting. Do ALL of the following:
X		**#8 Option B (1)** Discuss with your counselor FCC broadcast regulations. Include power levels, frequencies, and the regulations for low-power stations.
X		**#8 Option B (2)** Prepare a program schedule for radio station "KBSA" of exactly one-half hour, including music, news, commercials, and proper station identification. Record your program on audiotape or in a digital audio format, using proper techniques.
X		**#8 Option B (3)** Listen to and properly log 15 broadcast stations. Determine the program format and target audience for five of these stations.
X		**#8 Option B (4)** Explain to your counselor at least eight terms used in commercial broadcasting, such as segue, cut, fade, continuity, remote, Emergency Alert System, network, cue, dead air, PSA, and playlist.
X		**#8 Option B (5)** Discuss with your counselor alternative radio platforms such as internet streaming, satellite radio, and podcasts.

Event Requirements

STEM in Scouting 2026

Radio (2026 version): Radio 2026-01-01

U PR

null Option C—Shortwave and Medium-Wave Listening. Do ALL of the following:

- [X] [ ] **#8 Option C (1)** Listen across several shortwave bands for four one-hour periods-at least one period during daylight hours and at least one period at night. Log the stations properly and locate them geographically on a map, globe, or web-based mapping service.
- [X] [ ] **#8 Option C (2)** Listen to several medium-wave stations for two one-hour periods, one period during daylight hours and one period at night. Log the stations properly and locate them on a map, globe, or web-based mapping service.
- [X] [ ] **#8 Option C (3)** Compare your daytime and nighttime logs; note the frequencies on which your selected stations were loudest during each session. Explain differences in the signal strength from one period to the next.
- [X] [ ] **#8 Option C (4)** Compare your medium-wave broadcast station logs and explain why some distant stations are heard at your location only during the night.
- [X] [ ] **#8 Option C (5)** Demonstrate listening to a radio broadcast using a smartphone/cell phone. Include international broadcasts in your demonstration.

null Option D—Amateur Radio Direction Finding. Do ALL of the following:

- [X] [ ] **#8 Option D (1)** Describe amateur radio direction finding and explain why direction finding is important as both an activity and in competition.
- [X] [ ] **#8 Option D (2)** Describe what frequencies and equipment are used for ARDF or fox hunting.
- [X] [ ] **#8 Option D (3)** Build a simple directional antenna for either of the two frequencies used in ARDF.
- [X] [ ] **#8 Option D (4)** Participate in a simple fox hunt using your antenna along with a provided receiver.
- [X] [ ] **#8 Option D (5)** Show, on a map, how you located the "fox" using your receiver.

null Option E—Family Radio Service (FRS) and General Mobile Radio Service (GMRS) Walkie Talkies. Do ALL of the following:

- [X] [ ] **#8 Option E(1)** Explain what the Family Radio Service (FRS) and General Mobile Radio Service (GMRS) are and how they are different from each other, from other commercial two-way radios, and from Citizens Band (CB) and amateur radio (ham).

#(2) Explain each of the following for using a FRS radio or GMRS walkie talkie:

- [X] [ ] **#8 Option E(2)(a)** Is any type of license needed to use these radios? If so: what kind?
- [X] [ ] **#8 Option E(2)(b)** What radio frequencies are used and how is information encoded?

Event Requirements

STEM in Scouting 2026

Radio (2026 version): Radio 2026-01-01

U	PR	
X		**#8 Option E(2)(c)** How much power can be used when transmitting?
X		**#8 Option E(2)(d)** What type of antenna can be used?
X		**#8 Option E(2)(e)** What is the effective range and what limits it?
X		**#8 Option E(2)(f)** What are common everyday uses for these radios?
X		**#8 Option E(2)(g)** How can these radios be useful in an emergency?
X		**#8 Option E(3)** Use the FRS radios or GMRS walkie talkies with family, friends, or Scouts on a hike, at an event, or in a team game. Discuss what you learned with your counselor.

#9. Careers. Do ONE of the following:

X		**#9(a)** Explore careers related to radio. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and advancement. With permission of your parent or guardian, your research methods may include an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work or train. Discuss your findings and career interest with your counselor.
X		**#9(b)** Explore how you could use radio knowledge and skills to develop a hobby or to serve as a volunteer. If possible, with permission of your parent or guardian, interview a radio hobbyist or volunteer. Research training and licensing needed, expenses, and organizations that promote or support your objectives. Discuss with your counselor what short-term and long-term goals you might have if you pursue this.

Event Requirements

STEM in Scouting 2026

Robotics (2026 version): Robotics 2026-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Safety. Do the following:

- [X] [ ] **#1(a)** Explain to your counselor the most likely hazards you may encounter while working with robots and what you should do to anticipate, mitigate and prevent, and respond to these hazards. Describe the appropriate safety gear and clothing that should be used when working with robotics.
- [X] [ ] **#1(b)** Discuss first aid and prevention for the types of injuries that could occur while participating in robotics activities and competitions, including cuts, eye injuries, and burns (chemical or heat).

#2. Robotics Industry. Discuss the following with your counselor:

- [X] [ ] **#2(a)** The kinds of things robots can do and how robots are best used today.
- [X] [ ] **#2(b)** The similarities and differences between remote-control vehicles, telerobots, and autonomous robots.
- [X] [ ] **#2(c)** Three different methods robots can use to move themselves other than wheels or tracks. Describe when it would be appropriate to use each method.
- [X] [ ] **#3** General Knowledge. Discuss with your counselor three of the five major fields of robotics (human-robot interface, mobility, manipulation, programming, sensors) and their importance to robotics development. Discuss either the three fields as they relate to a single robot system OR talk about each field in general. Find pictures or at least one video to aid your discussion.

#4. Design, Build, Program, Test. Do the following:

- [X] [ ] **#4(a)** With your counselor's approval, choose a task for the robot or robotic subsystem that you plan to build. Include sensor feedback and programming in the task. Document this information in your robot engineering notebook.
- [X] [ ] **#4(b)** Design your robot. The robot design should use sensors and programming and have at least 2 degrees of freedom. Document the design in your robot engineering notebook using drawings and a written description.
- [X] [ ] **#4(c)** Build a robot or robotic subsystem of your original design to accomplish the task you chose for requirement 4(a).

#(d) Discuss with your counselor the programming options available for your robot. Then do ONE of the following:

- [X] [ ] **#4d(1)** Program your robot to perform the task you chose for your robot in 4(a). Include a sample of your program's source code in your robot engineering notebook. "
- [X] [ ] **#4d(2)** Prepare a flowchart of the desired steps to program your robot for accomplishing the task in 4(a). Include procedures that show activities based on

Event Requirements

STEM in Scouting 2026

Robotics (2026 version): Robotics 2026-01-01

U	PR	
		sensor inputs. Place this in your robot engineering notebook.
X		**#4(e)** Test your robot and record the results in your robot engineering notebook. Include suggestions on how you could improve your robot, as well as pictures or sketches of your finished robot.
		#5. Demonstrate. Do the following:
X		**#5(a)** Demonstrate for your counselor the robot you built in requirement 4.
X		**#5(b)** Share your robot engineering notebook with your counselor. Talk about how well your robot accomplished the task, the improvements you would make in your next design, and what you learned about the design process.
		#6. Competitions. Do ONE of the following.
X		**#6(a)** Attend a robotics competition and report to your counselor what you saw and learned about the competition and how teams are organized and managed.
X	X	**#6(b)** Learn about three youth robotics competitions. Tell your counselor about these, including the type of competition, time commitment, age of the participants, and how many teams are involved.
		#7. Do ONE of the following:
X	X	**#7(a)** Identify three career opportunities that would use skills and knowledge in robotics. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.
X	X	**#7(b)** Identify how you might use the skills and knowledge in robotics to pursue a personal hobby. Research the additional training required, expenses, and affiliation with organizations that would help you maximize the enjoyment and benefit you might gain from it. Discuss what you learned with your counselor and share what short-term and long-term goals you might have if you pursued this.

Event Requirements

STEM in Scouting 2026

Signs, Signals, and Codes (2026 version): Signs, Signals, and Codes 2026-01-01

U	PR	
		null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.
X		**#1** Discuss with your counselor the importance of signs, signals, and codes, and why people need these different methods of communication. Briefly discuss the history and development of signs, signals, and codes.
X		**#2** Explain the importance of signaling in emergency communications. Discuss with your counselor the types of emergency or distress signals one might use to attract airborne search-and-rescue personnel if lost in the outdoors or trying to summon assistance during a disaster. Illustrate these signaling examples by the use of photos or drawings.
		#3. Do the following:
X		**#3(a)** Describe what Morse code is and the various means by which it can be sent. Spell your first name using Morse code. Send or receive a message of six to 10 words using Morse code.
X		**#3(b)** Describe what American Sign Language (ASL) is and how it is used today. Spell your first name using American Sign Language. Send or receive a message of six to 10 words using ASL.
		#4. Do the following:
X		**#4(a)** Give your counselor a brief explanation about semaphore, why it is used, how it is used, and where it is used.
X		**#4(b)** Explain to your counselor the difference between semaphore flags and nautical flags.
		#(c) After 4(a) and 4(b) have been completed, do the following:
X		**#4(c)(1)** Spell your first name using semaphore. Send or receive a message of six to 10 words using semaphore.
X		**#4(c)(2)** Using illustrations or photographs, identify 10 examples of nautical flags and discuss their importance.
		#5. Explain the braille reading technique and how it helps individuals with sight impairment to communicate. Then do the following:
X	X	**#5(a)** Either by sight or by touch, identify the letters of the braille alphabet that spell your name. By sight or touch, decode a braille message at least six words long.
X	X	**#5(b)** Create a message in braille at least six words long, and share this with your counselor.
		#6. Do the following:

Event Requirements

STEM in Scouting 2026

Signs, Signals, and Codes (2026 version): Signs, Signals, and Codes 2026-01-01

U	PR	
X		**#6(a)** Describe to your counselor six sound-only signals that are in use today. Discuss the pros and cons of using sound signals versus other types of signals.
X		**#6(b)** Demonstrate to your counselor six different silent Scout signals. Use these Scout signals to direct the movements and actions of your patrol or troop.
X		**#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 the Leave No Trace Seven Principles and the Outdoor Code by replacing or returning trail markers to their original locations.
		#8. For THREE of the following activities, demonstrate five signals each. Tell what the signals mean and why they are used:
X		**#8(a)** Sports official's hand signs/signals
X		**#8(b)** Heavy-equipment operator's hand signals
X		**#8(c)** Aircraft carrier catapult crew signals
X		**#8(d)** Cyclist's hand signals
X		**#8(e)** An activity selected by you and your counselor
		#9. Share with your counselor 10 examples of symbols used in everyday life. Design your own symbol. Share it with your counselor and explain what it means. Then do the following:
X		**#9(a)** Show examples of 10 traffic signs and explain their meaning.
X		**#9(b)** Using a topographical map, explain what a map legend is and discuss its importance. Point out 10 map symbols and explain the meaning of each.
X		**#9(c)** Discuss text-message symbols and why they are commonly used. Give examples of your favorite 10 text symbols or emoticons. Then see if your parent, guardian, or counselor can identify the meaning or usage of each symbol.
X	X	**#10** Briefly discuss the history of secret code writing (cryptography). Make up your own secret code and write a message of up to 25 words using this code. Share the message with a friend or fellow Scout. Then share the message and code key with your counselor and discuss the effectiveness of your code.

Event Requirements

STEM in Scouting 2026

Space Exploration (2026 version): Space Exploration 2026-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Tell the purpose of space exploration and include the following:

- [X] [ ] **#1(a)** Historical reasons
- [X] [ ] **#1(b)** Immediate goals in terms of specific knowledge
- [X] [ ] **#1(c)** Benefits related to Earth resources, technology, and new products
- [X] [ ] **#1(d)** International relations and cooperation
- [X] [X] **#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. Identify and explain the following rocket parts: Safety Note: Rocket must be built to meet the safety code of the National Association of Rocketry. See the "Model Rocketry" section of the Space Exploration merit badge. Alternative Requirement: If local laws prohibit launching model rockets, do the following activity: Make a model of a NASA rocket. Explain the functions of the parts. Give the history of the rocket.

- [X] [ ] **#3(a)** Body tube
- [X] [ ] **#3(b)** Engine mount
- [X] [ ] **#3(c)** Fins
- [X] [ ] **#3(d)** Igniter
- [X] [ ] **#3(e)** Launch lug
- [X] [ ] **#3(f)** Nose cone
- [X] [ ] **#3(g)** Payload
- [X] [ ] **#3(h)** Recovery system
- [X] [ ] **#3(i)** Rocket engine

Event Requirements

STEM in Scouting 2026

Space Exploration (2026 version): Space Exploration 2026-01-01

U	PR	
		#4. Discuss and demonstrate each of the following:
X		**#4(a)** The law of action-reaction
X		**#4(b)** How rocket engines work
X		**#4(c)** How satellites stay in orbit
X		**#4(d)** How satellite pictures of Earth and pictures of other planets are made and transmitted
		#5. Do TWO of the following:
X		**#5(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.
X	X	**#5(b)** Using articles from the internet, photographs and text, create a blog, website, or slide show about a current planetary mission or use magazine photographs, news clippings, and articles from the internet to make a scrapbook about a current planetary mission.
X	X	**#5(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, operation, and components of ONE of the following:
X		**#6a** Space shuttle or any other crewed orbital vehicle, whether government-owned (U.S. or foreign) or commercial
X		**#6b** 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:
X	X	**#7a** Source of energy
X	X	**#7b** How it will be constructed
X	X	**#7c** Life-support system
X	X	**#7d** Purpose and function

Event Requirements

STEM in Scouting 2026

Space Exploration (2026 version): Space Exploration **2026-01-01**

U	PR	
X	X	**#8** Explore careers related to this merit badge. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.

Event Requirements

STEM in Scouting 2026

Surveying (2024 version): Surveying 2024-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

[X] [ ] **#1.** Show that you know first aid for the types of injuries that could occur while surveying, including cuts, scratches, snake bite, insect stings, tick bites, heat- and cold-related reactions, and dehydration. Explain to your counselor why a surveyor should be able to identify the poisonous plants and animals found in your area.

#2. Do the following:

[X] [ ] **#2a.** Set an instrument over one of the corners of a five-sided lot laid out by your counselor and sighting one of the other corners for reference and, using radial measurement methods, record the angle turned and the distance measured to each of the remaining corners, as directed by your counselor. Record the angle and distance to five topographic features (trees, shrubs, rocks, etc.) near your work area.

[X] [ ] **#2b.** Measure to three of the same points with GPS measurement and compare the distances between the points measured.

[X] [ ] **#3.** From the field notes gathered for requirement 2, and using a protractor and scale, plot the points you measured and draw to scale a map of your survey which includes a north arrow, scale bar, title, date and a diagram of the lot you measured. Submit a neatly drawn copy.

[X] [ ] **#4.** Use one of the corner markers from requirement 2 as a benchmark with an assumed elevation of 100 feet. Using a level and rod, collect and record measurements, and determine the elevation of the other four corner markers.

[X] [X] **#5.** Get a copy of the deed to a piece of property approved by your counselor, from the local courthouse or title agency. Discuss with your counselor the different parts of the deed and their importance.

[X] [ ] **#6.** Discuss emerging surveying technology such as drones and laser scanning and the strengths and weaknesses of each.

[X] [ ] **#7.** Tell what GPS is; discuss with your counselor the importance of GPS and how it is changing the field of surveying.

[X] [ ] **#8.** Identify three career opportunities that would use skills and knowledge in surveying. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.