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Boy Scout Advancement Requirements Changes

Effective January 1, 2011

When there is a conflict between two published lists of requirements, such as *Boy Scout Requirements* (BSA Publication No. 33216) and a Merit Badge Pamphlet or the *Boy Scout Handbook*, the requirements book should be considered to be the controlling document, until a newer edition of *Boy Scout Requirements* is issued.

A new edition of Boy Scout Requirements (#33216 - SKU#34765) was released in mid January, 2011, and new pamphlets were issued in 2010 for 11 merit badges, including the new Geocaching, Scouting Heritage, and Inventing merit badges and revised editions for Architecture and Landscape Architecture, Astronomy, Horsemanship, Model Design and Building, Nuclear Science, Soil and Water Conservation, and Music (see below). The new Boy Scout Requirements booklet has a minor addition to Life rank requirement 4, a clarification to Eagle rank requirement 6, and major revisions to 3 merit badges, minor changes to 2 merit badges, and the requirements for the 3 new merit badges which were released in 2010.

A new 12th edition of the *Boy Scout Handbook* (34622) was issued in the summer of 2009. That book contained new requirements for each rank, which did not officially take effect until January 1, 2010. Scouts working toward ranks in 2009 could use the new requirements, or could continue to use the old requirements, at their option. If a Scout started work toward a rank before January 1, 2010, using the requirements that were current before January 1, 2010, he may complete **THAT RANK ONLY** using the old requirements. Any progress toward a rank that is begun after January 1, 2010, must use the requirements as they are presented in the *Boy Scout Handbook* (34622) or in the *current Boy Scout Requirements* book. The fact that a Scout can work on the requirements for Tenderfoot, Second Class and First Class simultaneously does NOT mean that he is "working toward all three ranks". He can NOT use the old requirements for all three. Similarly, if a Scout has multiple merit badges, he is NOT "working toward Star, Life, and Eagle". He may only use the old requirements for the NEXT rank he completes.

Scouts starting work on any of these rank badges at this point must use the new requirements.

BSA issued new editions of ALL of the merit badge pamphlets on August 1, 2008. The primary change to most of the pamphlets was the introduction of color photographs and diagrams, and new covers. The actual text and requirements, in most cases did not change from the previous editions. In some cases, however, the new editions do contain new information, and new requirements. ***If the copyright date in the new pamphlet is not 2008 or later, the text in the pamphlet, including the requirements, did not change, only the cover and illustrations.*** In addition, two of the old pamphlets, for the **Architecture and Landscape Architecture** Merit Badges were combined into a single pamphlet, although the Merit Badges remain separate and distinct from each other. Also, one Merit Badge, **Auto Mechanics**, was renamed to **Automotive Maintenance**, (and the emblem on the badge was changed). Although a new edition of the **Lifesaving** merit badge pamphlet was issued, the requirements did not change. However, the footnote relative to alternative requirements for the Second Class and First Class rank swimming requirements was deleted.

A new merit badge for Robotics has been announced, but it will not be issued until April, 2011.

In April or May, 2010, a new pamphlet, with revised requirements, for MUSIC Merit Badge was released. The changes, which included dropping Bugling as a separate merit badge, were to become effective on January 1, 2011, but Scouts with the new pamphlet could use the new requirements, if they wished, during 2010. BSA later reversed their decision on the dropping of Bugling Merit Badge. What we show below is what was to change, but the requirements for both the Music and Bugling merit badges shown in the 2011 edition of Boy Scout requirements are those that were shown before the MUSIC pamphlet was issued. We assume that, if Scouts have a copy of the new merit badge pamphlet with Music only, they can choose to earn the Music merit badge and complete the new bugling option as part of the requirements for the Music merit badge as listed in the pamphlet, or they may earn Music merit badge using the previous requirements. The requirements for Bugling merit badge are unchanged, even though they don't currently appear in a merit badge pamphlet.

RANK CHANGES

Life
Eagle

DISCONTINUED HISTORICAL MERIT BADGES

Carpentry
Pathfinder
Signaling
Tracking

These four Historical Merit Badges could only be earned during calendar year 2010,

in honor of the 100th anniversary of the Boy Scouts of America.

Scouts may no longer earn these badges and may not use them towards advancement unless they were completed by December 31, 2010.

Advancement Reports for these badges must be submitted by March 31, 2011.

NEW Merit Badges

Geocaching
Inventing
Scouting Heritage

REVISED Merit Badges

Archery
Astronomy
Horsemanship
Music
Nuclear Science
Sports



Life

An addition was made to requirement 6, by adding item (g) as a seventh option for Scouts teaching the EDGE method to another Scout. The new option reads as follows:

6. While a Star Scout, use the EDGE method to teach a younger Scout the skills from ONE of the following ~~seven~~ ~~six~~ choices, so that he is prepared to pass those requirements to his unit leader's satisfaction.
 - g. Three requirements from one of the Eagle-required merit badges, as approved by your unit leader.
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Eagle

BSA included a clarification of requirement 4, as follows:

The 2009 printing of the Boy Scout Handbook inadvertently included bugler as a position of responsibility under Eagle Scout requirement 4; it is not. The corrected Eagle Scout requirement 4 will appear in the next printing of the Boy Scout Handbook.



Geocaching

The requirements for this badge were released by BSA on April 12, 2010, and the badge and pamphlet were release in December, 2010.

The requirements are as follows:

1. **Do the following:**
 - a. **Explain to your counselor the most likely hazards you may encounter while participating in geocaching activities and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.**
 - b. **Discuss first aid and prevention for the types of injuries or illnesses that could occur while participating in geocaching activities, including cuts, scrapes, snakebite, insect stings, tick bites, exposure to poisonous plants, heat and cold reactions (sunburn, heatstroke, heat exhaustion, hypothermia), and dehydration.**
 - c. **Discuss how to properly plan an activity that uses GPS, including using the buddy system, sharing your plan with others, and considering the weather, route, and proper attire.**
2. **Discuss the following with your counselor:**
 - a. **Why you should never bury a cache.**
 - b. **How to use proper geocaching etiquette when hiding or seeking a cache, and how to properly hide, post, maintain, and dismantle a geocache**
 - c. **The principles of Leave No Trace as they apply to geocaching**
3. **Explain the following terms used in geocaching: waypoint, log, cache, accuracy, difficulty and terrain ratings, attributes, trackable. Choose five additional terms to explain to your counselor.**
4. **Explain how the Global Positioning System (GPS) works. Then, using Scouting's teaching EDGE, demonstrate the use of a GPS unit to your counselor. Include marking and editing a waypoint, changing field functions, and changing the coordinate system in the unit.**
5. **Do the following:**
 - a. **Show you know how to use a map and compass and explain why this is important for geocaching.**
 - b. **Explain the similarities and differences between GPS navigation and standard map reading skills and describe the benefits of each.**
 - c. **Explain the UTM (Universal Transverse Mercator) system and how it differs from the latitude/longitude system used for public geocaches.**
 - d. **Show how to plot a UTM waypoint on a map. Compare the accuracy to that found with a GPS unit.**
6. **Describe the four steps to finding your first cache to your counselor. Then mark and edit a waypoint.**
7. **With your parent's permission*, go to www.geocaching.com. Type in your zip code to locate public geocaches in your area. Share the posted information about three of those geocaches with your counselor. Then, pick one of the three and find the cache.**

***To fulfill this requirement, you will need to set up a free user account with www.geocaching.com. Ask your parent for permission and help before you do so.**
8. **Do ONE of the following:**
 - a. **If a Cache to Eagle® series exists in your council, visit at least three of the 12 locations in the series. Describe the projects that each cache you visit highlights, and explain how the Cache to Eagle® program helps share our**

- Scouting service with the public.
- b. Create a Scouting-related Travel Bug® that promotes one of the values of Scouting. "Release" your Travel Bug into a public geocache and, with your parent's permission, monitor its progress at www.geocaching.com for 30 days. Keep a log, and share this with your counselor at the end of the 30-day period.
 - c. Set up and hide a public geocache, following the guidelines in the *Geocaching* merit badge pamphlet. Before doing so, share with your counselor a six-month maintenance plan for the geocache where you are personally responsible for the first three months. After setting up the geocache, with your parent's permission, follow the logs online for 30 days and share them with your counselor.
 - d. Explain what Cache In Trash Out (CITO) means, and describe how you have practiced CITO at public geocaches or at a CITO event. Then, either create CITO containers to leave at public caches, or host a CITO event for your unit or for the public.
9. Plan a geohunt for a youth group such as your troop or a neighboring pack, at school, or your place of worship. Choose a theme, set up a course with at least four waypoints, teach the players how to use a GPS unit, and play the game. Tell your counselor about your experience, and share the materials you used and developed for this event.
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Inventing

The requirements for this badge were released by BSA on June 17, 2010.

1. In your own words, define inventing. Then do the following:
 - a. Explain to your merit badge counselor the role of inventors and their inventions in the economic development of the United States.
 - b. List three inventions and how they have helped humankind.
2. Do ONE of the following:
 - a. Identify and interview with a buddy (and with your parent's permission and merit badge counselor's approval) an individual in your community who has invented a useful item. Report what you learned to your counselor.
 - b. Read about three inventors. Select the one you find most interesting and tell your counselor what you learned.
3. Do EACH of the following:
 - a. Define the term intellectual property. Explain which government agency oversees the protection of intellectual property, the types of intellectual property that can be protected, how such property is protected, and why protection is necessary.
 - b. Explain the components of a patent and the different types of patents available.
 - c. Examine your Scouting gear and find a patent number on a camp item you have used. With your parent'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.

- d. Explain the term patent infringement.
4. Discuss with your counselor the types of inventions that are appropriate to share with others without protecting and explain why. Tell your counselor about one nonpatented or noncopyrighted invention and its impact on society.
5. Choose a commercially available product that you have used on an overnight camping trip with your troop. Make recommendations for improving the product, make a sketch that shows your recommendations, and 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 EACH of the following, while keeping a notebook to record your progress:
 - a. Talk to potential users of your invention and determine their needs. Then, based on what you have learned, write a proposal about the invention and how it would help solve a problem. This proposal should include a detailed sketch of the invention.
 - b. Create a model of the item using clay, cardboard, or any other readily available material. List the materials necessary to build a prototype of the item.
 - c. Share the idea and model with your counselor and potential users of your invention. Record their feedback in your notebook.
7. Build a working prototype of the item you invented for requirement 6*, then test and evaluate the invention. Among the aspects to consider in your evaluation are cost, usefulness, marketability, appearance, and function. Describe how your initial vision and expectations for your idea and the final product are similar or dissimilar. Have your counselor evaluate and critique your prototype.
8. Do ONE of the following:
 - a. Participate in an invention, science, engineering, or robotics club or team that builds a useful item. Share your experience with your counselor.
 - 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.
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.

***Before you begin building the prototype, you must share your design and building plans with your counselor and have your counselor's approval**



Scouting Heritage

The requirements for this badge were released by BSA around April 15, 2010.

The requirements are as follows:

1. **Discuss with your counselor the life and times of Lord Baden-Powell of Gilwell. Explain why he felt a program like Scouting would be good for the young men of his day. Include in your discussion how Scouting was introduced in the United States, and the origins of Boy Scouting and Cub Scouting under Baden-Powell.**
2. **Do the following:**
 - A. **Give a short biographical sketch of any TWO of the following, and tell of their role in how Scouting developed and grew in the United States prior to 1940.**
 1. **Daniel Carter Beard**
 2. **William D. Boyce**
 3. **Waite Phillips**
 4. **Ernest Thompson Seton**
 5. **James E. West**
 - B. **Discuss the significance to Scouting of any TWO of the following:**
 1. **Brownsea Island**
 2. **The First World Jamboree**
 3. ***Boy Scout Handbook***
 4. ***Boys' Life* magazine**
3. **Discuss with your counselor how Scouting's programs have developed over time and been adapted to fit different age groups and interests (Cub Scouting, Boy Scouting, Exploring, Venturing)**
4. **Do ONE of the following:**
 - A. **Attend either a BSA national jamboree, OR world Scout jamboree, OR a national BSA high-adventure base. While there, keep a journal documenting your day-to-day experiences. Upon your return, report to your counselor what you did, saw, and learned. You may include photos, brochures, and other documents in your report.**
 - B. **Write or visit the National Scouting Museum in Irving, Texas.* Obtain information about this facility. Give a short report on what you think the role of this museum is in the Scouting program.**
 - ***If you visit the BSA's national traveling tour, Adventure Base 100, in 2010, you may use this experience to fulfill requirement 4b. Visit www.adventurebase100.org (with your parent's permission) for the schedule and for more information.**
5. **Learn about the history of your unit or Scouting in your area. Interview at least two people (one from the past and one from the present) associated with your troop. These individuals could be adult unit leaders, Scouts, troop committee members, or representatives of your troop's chartered organization. Find out when your unit was originally chartered. Create a report of your findings on the history of your troop, and present it to your patrol or troop or at a court of honor, and then add it to the troop's library. This presentation could be in the form of an oral/written report, an exhibit, a scrapbook, or a computer presentation such as a slide show.**
6. **Make a collection of some of your personal patches and other Scouting memorabilia. With their permission, you may include items borrowed from family members or friends who have been in Scouting in the past, or you may include photographs of these items. Show this collection to your counselor, and share what you have learned about items in the collection. (There is no requirement regarding how large or small this collection must be.)**
7. **Reproduce the equipment for an old-time Scouting game such as those played at**

Brownsea Island. You may find one on your own (with your counselor's approval), or pick one from the Scouting Heritage merit badge pamphlet. Teach and play the game with other Scouts.

8. **Interview at least three people (different from those you interviewed for requirement 5) over the age of 50 who were Scouts. Find out about their Scouting experiences. Ask about the impact that Scouting has had on their lives. Share what you learned with your counselor**
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Archery

Minor changes were made to Requirement 5(OPTION A)(f)(2) and Requirement 5(OPTION B)(f)(2) as shown here:

5.
 - o **Option A - Using a Recurve Bow or Longbow**
 - f. Do ONE of the following:
 2. Shooting 30 arrows in five-arrow ends at an 80-centimeter (32-inch) five-color target at **15 +0** yards and using the 10 scoring regions, make a score of 150.
 - o **Option B - Using a Compound Bow**
 - f. Do ONE of the following:
 2. Shooting 30 arrows in five-arrow ends at an 80-centimeter (32-inch) five-color target at **15 +0** yards and using the 10 scoring regions, make a score of 170.
-



Astronomy

The requirements for this badge were revised with the issuance of a new merit badge pamphlet.

Requirement 1 was reworded by splitting the sentences into items a, b, and c. A new requirement 3d was added. Requirement 5b was revised and new requirements 5c and 5d were added. Requirement 6 was deleted, and old requirements 7-10 renumbered as 6-9. The wording of requirement 6b (old 7b) was revised. The wording of the first sentence of requirement 7a (old 8a) was revised, and the second sentence moved to a new requirement 7b. Requirement 7b (old 8b) was renumbered as 7c. The wording of requirement 9 (old 10) was revised. The changes to the last requirement are not included in Boy Scout Requirements 2011, but do appear in the merit badge pamphlet. We assume that was an editorial error.

The revisions are as follows:

1. *Describe the proper clothing and other precautions for safely making observations at night and in cold weather. Tell how to safely observe the Sun, objects near the Sun, and the Moon. Explain first aid for injuries or illnesses, such as heat and cold reactions, dehydration, bites and stings, and damage to your eyes that could occur during observation.*

Do the following:

- a. **Describe the proper clothing and other precautions for safely making observations at night and in cold weather.**
- b. **Tell how to safely observe the Sun, objects near the Sun, and the Moon.**
- c. **Explain first aid for injuries or illnesses, such as heat and cold reactions, dehydration, bites and stings, and damage to your eyes that could occur during observation.**
3. d. **Describe the proper care and storage of telescopes and binoculars both at home and in the field.**
5. b. **Using the Internet (with your parent's permission), books, and other resources, find *Find* out when each of the five most visible planets that you identified in requirement 5a will be observable in the evening sky during the next 12 months, then compile this information in the form of a chart or table. *Update your chart monthly to show whether each planet will be visible during the early morning or in the evening sky.***
 - c. **Describe the motion of the planets across the sky.**
 - d. **Observe a planet and describe what you saw.**
6. *At approximately weekly intervals, sketch the position of Venus, Mars or Jupiter in relation to the stars. Do this for at least four weeks and at the same time of night. On your sketch, record the date and time next to the planet's position. Use your sketch to explain how planets move.*
7. Do the following:
 - a. Sketch the face of the Moon and indicate at least five seas and five craters. Label these landmarks.
 - b. Sketch the phase and the daily position of the Moon at the same hour and place, for ~~a week~~ **four days in a row**. Include landmarks on the horizon such as hills, trees, and buildings. Explain the changes you observe.
 - c. List the factors that keep the Moon in orbit around Earth.
 - d. With the aid of diagrams, explain the relative positions of the Sun, Earth, and the Moon at the times of lunar and solar eclipses, and at the times of new, first-quarter, full, and last-quarter phases of the Moon.
7. ~~8.~~ Do the following:
 - a. Describe the composition of the Sun, its relationship to other stars, and some effects of its radiation on Earth's weather **and communications**. *Define sunspots and describe some of the effects they may have on solar radiation.*
 - b. **Define sunspots and describe some of the effects they may have on solar radiation.**
 - c. ~~b.~~ Identify at least one red star, one blue star, and one yellow star (other than the Sun). Explain the meaning of these colors.
8. ~~9.~~ With your counselor's approval and guidance, do ONE of the following:
 - a. Visit a planetarium or astronomical observatory. Submit a written report, a scrapbook, or a video presentation afterward to your counselor that includes the following information:
 1. Activities occurring there
 2. Exhibits and displays you saw
 3. Telescopes and instruments being used
 4. Celestial objects you observed.

- b. Plan and participate in a three-hour observation session that includes using binoculars or a telescope. List the celestial objects you want to observe, and find each on a star chart or in a guidebook. Prepare an observing log or notebook. Show your plan, charts, and log or notebook to your counselor before making your observations. Review your log or notebook with your counselor afterward.
 - c. Plan and host a star party for your Scout troop or other group such as your class at school. Use binoculars or a telescope to show and explain celestial objects to the group.
 - d. Help an astronomy club in your community hold a star party that is open to the public.
 - e. Personally take a series of photographs or digital images of the movement of the Moon, a planet, an asteroid ~~or meteoroid~~, **meteor**, or a comet. In your visual display, label each image and include the date and time it was taken. Show all positions on a star chart or map. Show your display at school or at a troop meeting. Explain the changes you observed.
9. ~~10. List at least~~ **Find out about** three different career opportunities in astronomy. ~~Pick the one you in which are most interested and explain how to prepare for such a career. Discuss with your counselor what courses might be useful for such a career~~
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.



Horsemanship

The requirements were substantially rewritten and rearranged. In the merit badge pamphlet, the word "leading" in Requirement 3 was omitted, apparently, in error. The changes to the requirements are as follows:

Do the following:

1. ~~Do the following:~~
 - a. Describe the safety precautions you should take when handling and caring for a horse.
 - b. **Describe the fire safety precautions you should take in a barn and around horses.**
~~Explain and demonstrate how to approach and lead a horse safely from a stall, corral, or field and how to tie the horse securely.~~
 - c. ~~Demonstrate how to safely mount and ride a horse and how to safely dismount the horse after your ride.~~
2. Name 15 main parts of a horse.
3. Name four leading breeds of horses. Explain the special features for which each breed is known.
4. **Describe the symptoms of colic. Name and describe four other horse health problems.**
~~Show how to care for a Western and English saddle and bridle. Name 10 parts of the~~

saddle and bridle that you will use.

5. **Explain what conformation is and why it is important. Explain the difference between lameness and unsoundness.**

Show how to groom, pick out hooves, prepare a horse for a ride, and care for a horse after a ride.

6. **Explain the importance of hoof care and why a horse might need to wear shoes.**

Describe the symptoms of colic. Describe four other horse health problems.

7. **Demonstrate how to groom a horse, including picking hooves and caring for a horse after a ride.**

Name three main conformation faults of the feet and legs, and explain how to detect them. Explain the difference between lameness and unsoundness.

8. **Explain how to determine what and how much to feed a horse and why the amount and kind of feed are changed according to the activity level and the breed of horse.**

Explain how to trim and shoe a horse's foot and how to make adjustments according to its conformation, the season of the year, and the riding conditions.

9. *Demonstrate the correct way to feed a horse. Explain how you determined what and how much to feed the horse and why the amount and kind of feed will be changed according to activity level and the kind of horse it is.*

Do the following:

- Name 10 parts of the saddle and bridle that you will use, and explain how to care for this equipment.**
- Show how to properly saddle and bridle a horse.**
- Demonstrate how to safely mount and dismount a horse.**

10. **Explain and demonstrate how to approach and lead a horse safely from a stall, corral, or field and how to tie the horse securely.**

Show how to saddle and bridle a horse.

11. On level ground, continuously do the following movements **after safely mounting the horse**. Do them correctly, at ease, and in harmony with the horse:

- Mount the horse.*
b. Walk the horse in a straight line for 60 feet.
- e. Make* **Walk the horse in** a half circle of not more than 16 feet in radius.
- d.* Trot or jog **the horse** in a straight line for *at least* 60 feet.
- e. Make* **Trot or jog the horse in** a half circle of not more than 30 feet in radius *at a jog or trot.*
- Lope (canter) the horse in a straight line for at least 60 feet.**
- Lope (canter) the horse in a half-circle not more than 30 feet in radius.**
- f.* Halt straight.
- g.* Back up straight four paces.
- h.* Halt and dismount.



Music

The requirements for this badge were revised with the issuance of a new merit badge pamphlet in 2010. However, due to BSA's reversal of the decision to drop the Bugling merit badge, we are unsure which, if any of the changes shown below will be made permanent.

The introductions to requirements 3 and 4 were changed. The wording of requirement 3b was revised. Requirement 3c was moved to 4b. Requirement 3d was renumbered as 3c. Requirement 4d was moved to 3d. Requirement 4b and 4c were renumbered as 4c and 4d. New requirements 4e, 4f, and 4g were added.

New requirements 4e, 4f, and 4g incorporate most of the requirements from the Bugling Merit Badge, which was going to be discontinued in 2011, but will be retained.

We assume that, if Scouts have a copy of the new merit badge pamphlet with Music only, they can choose to earn the Music merit badge using the requirements as listed in the pamphlet and shown below, including the new bugling option, or they may earn Music merit badge using the previous requirements.

The revisions are as follows:

3. Do ~~TWO~~ ONE of the following:
 - a. Attend a live performance, or listen to three hours of recordings from any two of the following musical styles: blues, jazz, classical, country, bluegrass, ethnic, gospel, musical theater, opera. Describe the sound of the music and the instruments used. Identify the composers or songwriters, the performers, and the titles of the pieces you heard. If it was a live performance, describe the setting and the reaction of the audience. Discuss your thoughts about the music.
 - b. Interview ~~your parents and grandparents~~ an adult member of your family about music. Find out what the most popular music was when ~~they~~ he or she was your age. Find out what ~~their~~ his or her favorite music is now, and listen to three favorite tunes with ~~them~~ him or her. How do ~~their~~ those favorites sound to you? Had you ever heard any of them? Play three of your favorite songs for ~~them~~ him or her, and explain why you like these songs. Ask ~~them~~ what ~~they~~ he or she thinks of your favorite music.
 - c. ~~Serve for six months as a member of a school band, choir, or other local musical group; or perform as a soloist in public six times.~~
 - d. Catalog your own or your family's collection of 12 or more compact discs, tapes, records, or other recorded music. Show how to handle and store them.
4. Do ~~ONE~~ TWO of the following:
 - a. Teach three songs to a group of people. Lead them in singing the songs, using proper hand motions.
 - b. Serve for six months as a member of a school band, drum and bugle corps, choir, or other organized musical group, or perform as a soloist in public six times.

- c. **b.** Compose and write the score for a piece of music of 12 measures or more, **and play this music on an instrument.**
- d. **e.** Make a traditional instrument and learn to play it.
- e. ~~*d. Catalog your own or your family's collection of 12 or more compact discs, tapes or records. Show how to handle and store them.*~~
Give a brief history of the bugle, and explain how the bugle is related to other brass wind instruments. Demonstrate how the bugle makes sound, then explain how to care for, clean, and maintain a bugle.
- f. **Compose a bugle call for your troop or patrol to signal a common group activity, such as assembling for mealtime or striking a campsite. Play the call that you have composed before your unit or patrol.**
- g. **Sound the following bugle calls:**
- **"First Call,"**
 - **"Reveille,"**
 - **"Assembly,"**
 - **"Mess,"**
 - **"To the Colors," and**
 - **"Taps."**

Then explain when each of these calls is used.

Note: A bugle, trumpet, or cornet may be used to meet requirements 4b (drum and bugle corps), 4e, 4f, and 4g.



Nuclear Science

The requirements were completely rewritten, and now read as follows:

1. **Do the following:**
 - a. **Tell what radiation is.**
 - b. **Describe the hazards of radiation to humans, the environment, and wildlife. Explain the difference between radiation exposure and contamination. In your explanation, discuss the nature and magnitude of radiation risks to humans from nuclear power, medical radiation, and background radiation including radon. Explain the ALARA principle and measures required by law to minimize these risks.**
 - c. **Describe the radiation hazard symbol and explain where it should be used. Tell why and how people must use radiation or radioactive materials carefully.**
2. **Do the following:**
 - a. **Tell the meaning of the following: atom, nucleus, proton, neutron, electron, quark, isotope; alpha particle, beta particle, gamma ray, X-ray; ionization, radioactivity, and radioisotope.**
 - 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. Use the three models to explain the difference between atomic number and mass number and the difference between the quark structure of a neutron and a proton.
3. Do ONE of the following; then discuss modern particle physics with your counselor:
 - a. Visit an accelerator (research lab) or university where people study the properties of the nucleus or nucleons.
 - b. Name three particle accelerators and describe several experiments that each accelerator performs.
 4. Do TWO of the following; then discuss with your counselor the different kinds of radiation and how they can be used:
 - a. Build an electroscope. Show how it works. Place a radiation source inside and explain the effect it causes.
 - b. Make a cloud chamber. Show how it can be used to see the tracks caused by radiation. Explain what is happening.
 - c. Obtain a sample of irradiated and non-irradiated foods. Prepare the two foods and compare their taste and texture. Store the leftovers in separate containers and under the same conditions. For a period of 14 days, observe their rate of decomposition or spoilage, and describe the differences you see on days 5, 10, and 14.
 - d. Visit a place where radioisotopes are being used. Using a drawing, explain how and why they are used.
 5. Do ONE of the following; then discuss with your counselor the principles of radiation safety:
 - 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. 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.
 - 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 concern related to radon gas and tell what steps can be taken to reduce radon in buildings.
 - 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.
 6. Do ONE of the following; then discuss with your counselor how nuclear energy is used to produce electricity:
 - a. Make a drawing showing how nuclear fission happens, labeling all details. Draw another picture showing how a chain reaction could be started and how it could be stopped. Explain what is meant by a "critical mass."
 - b. Build a model of a nuclear reactor. Show the fuel, control rods, shielding, moderator, and cooling material. Explain how a reactor could be used to change nuclear energy into electrical energy or make things radioactive.
 - c. Find out how many nuclear power plants exist in the United States. Locate the one nearest your home. Find out what percentage of electricity in the United States is generated by nuclear power plants, by coal, and by

gas.

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.
-



Sports

Minor changes were made to requirement 2, as shown here:

2. Explain the importance of the following:
 - a. The importance of the *The* physical exam
 - b. The importance of maintaining *Maintaining* good health habits for life (such as exercising regularly), and how the use of tobacco products, alcohol, and other harmful substances can negatively affect your health and your performance in sports activities. *especially during training*
 - c. The importance of maintaining *Maintaining* a healthy diet
-

This analysis was prepared as a service to Scouts and Scouters nationwide

Paul S. Wolf

Secretary

US Scouting Service Project, Inc.

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