

Programming

Merit Badge Workbook

This workbook can help you but you still need to read the merit badge pamphlet.

This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counselor

Merit Badge Counselors may not require the use of this or any similar workbooks.

You still must satisfy your counselor that you can demonstrate each skill and have learned the information. You should use the work space provided for each requirement to keep track of which requirements have been completed, and to make notes for discussing the item with your counselor, not for providing full and complete answers.

If a requirement says that you must take an action using words such as "discuss", "show",

"tell", "explain", "demonstrate", "identify", etc, that is what you must do.

No one may add or subtract from the official requirements found on Scouting.org.

The requirements were last issued or revised in 2022 • This workbook was undated in May 2022

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Scout's Name:			Unit:	
Counselor's Name:		Phone No.:	Email:	
Comm			out this workbook to: Workbooks@USScouts.Orgerit badge should be sent to: Merit.Badge@Scouting	g.Org
		ogramming merit badge website, http://www.tion and resources that may assist you in co		
1. Safe	ety Do the fol	lowing:		
☐ a.	Show your cou	inselor your current, up-to-date Cyber Chip		
		Earn the (Cyber Chip	
	Earning the Cyber Chip can help you learn how to stay safe while you are online and using social networks or the latest electronic gadgets. Topics include cell phone use, texting, blogging, gaming, cyberbullying, and identity theft. Find out more about the Cyber Chip at www.scouting.org/cyberchip .			
	Note: A wor	rkbook for the Boy Scout Cyber Chip is atta	ched at the end of this workbook.	
				could occur
	Eyestrain			
	Repetitive			
	Stress			
	Injuries			

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Programming	Scout's Name:
Other	
2. History Do the fo	ollowing:
•	story of programming, including at least three milestones related to the advancement or development
b. Discuss with y	our counselor the history of programming and the evolution of programming languages.

Programmir	ng	Scout's Name:
-		difference between licensing and owning software.
□ C.		differences between freeware, open source, and commercial software, and why it is important to erms of use of each.
		following: Inselor's approval, choose a sample program. Modify the code or add a function or subroutine to it. Emonstrate the modified program to your counselor
	The Propression	ogramming merit badge website, http://www.scoutlife.org/programming , has a number of sample at you could use for requirement 5a. However, you have the option of finding a program on your own. It's a good idea to seek your merit badge counselor's guidance.
	Language	
	Environment	
	Industry	
	Program:	

amming		Scout's Name:
☐ Modify	the code or add a function or subprogra	um to it.
Modifi	cation:	
	and demonstrate the modified program	
Debuç perfor	ging	
	1	
perfor	med	

Programmin	ıg	Scout's Name:
□ b.	from those us	unselor's approval, choose a second programming language and development environment, different sed for requirement 5a and in a different industry from 5a. Then write, debug, and demonstrate a rogram to your counselor, using that language and environment.
	Language	
	Environment	
	Industry	
	Program	
	Ū	
	Dahmaina	
	Debugging performed	
	•	
	Demonstrate	the program

Programmir	ng	Scout's Name:
□ c.	those used for	unselor's approval, choose a third programming language and development environment, different from or requirements 5a and 5b and in a different industry from 5a or 5b. Then write, debug, and a functioning program to your counselor, using that language and environment.
	Language	
	Environment	
	Industry	
	Program	
	9	
	Debugging performed	
	penomieu	
	Demonstrate	the program

based o	how the programs you wrote for requirements 5a, 5b, and 5c process inputs, how they make decision those inputs, and how they provide outputs based on the decision making.
Careers - F	ind out about three career opportunities that require knowledge in programming.
1.	The out about times career opportunities that require knowledge in programming.
2.	
3.	
	I find out the education, training, and experience required.
Career	out and outdood, admining, and oxpononion required.
Education	
Training	
Experience	
Discuss this	with your counselor and explain why this career might be of interest to you
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Scout's Name: _____

When working on merit badges, Scouts and Scouters should be aware of some vital information in the current edition of the *Guide to Advancement* (BSA publication 33088).Important excerpts from that publication can be downloaded from http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf.

You can download a complete copy of the Guide to Advancement from http://www.scouting.org/filestore/pdf/33088.pdf.

Programming



Scouts BSA Cyber Chip Workbook



This Workbook can help you organize your thoughts as you prepare to meet with your counselor. You still must satisfy your counselor that you can demonstrate each skill and have learned the information. You should use the work space provided for each requirement to keep track of which requirements have been completed, and to make notes for discussing the item with your counselor, not for providing full and complete answers. If a requirement says that you must take an action using words such as "discuss", "show", "tell", "explain", "demonstrate", "identify", etc. that is what you must do.

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No one may add or subtract from the official requirements found in Scouts BSA Requirements (Pub. 33216 – SKU 653801).

The requirements were last issued or revised in 2020 • This workbook was updated in May 2022.

Scout's Name:			Unit:	
Counselor's Name:		Phone No.:	Email:	
	Please submit errors, nments or suggestions for characteristics of the property of the propert	http://www.USScouts.Org • htt omissions, comments or suggestions abo hanges to the requirements for the award rements for Grades 6-8 el II Internet Safety Pledge on the BSA hop.org.)	out this workbook to: Workbooks@Ud should be sent to: Advancement.	Team@Scouting.Org
		Internet Safe	ty Pledge	
	 I will think before I I will respect other I will respect digita I won't meet face-t I will protect mysel 	r people online al media ownership to-face with anyone I meet in the digita	al world unless I have my parent's	permission
<u> </u>		nalized contract with your parent or gua you can download, what you can post		
	General comments			
	What I can download			

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What I can post			
	Consequences for inappropriate use		
	mappropriate use		
3.	choosing (www.nsteens safe online. • Post to be • Split Decision		riendOrFake), along with two additional videos of your st below, to see how friends can help each other to stay
	- Two rundo	Video Name	Date Watched
		Friend or Fake?	Bato Waterlea
<u> </u>	your troop or another pa		reach internet safety rules, behavior, and "netiquette" to dditional material and information you have researched. of the lesson.
<u> </u>		eader the acceptable standards and proposed in the second proposed i	actices for using allowed electronic devices, such as its.

Scouts BSA Cyber Chip

Scout's Name: _____

inappropriate use

Consequences for

Scouts I	BSA Cyber Chip	Scout's Name:		
☐ 3.	Discuss with your parents the benefits and	potential dangers teenagers might experience	e when using social media.	
	Give examples of each.			
<u> </u>	Watch three {of the following "Real-Life Sto the impact on teens.	ry" videos (<u>www.nsteens.org/videos.aspx?Br</u>	and=Real-Life-Stories) to learn	
	Friend or Fake? (youtu.be/NbPost to be Private (youtu.be/r			
	 Split Decisions (<u>youtu.be/HLL</u> 	Jv8DHt_R4)		
	Two Kinds of Stupid (<u>youtu.be</u>	e/T6ulH2bWCnY) deo Name	Date Watched	
		ado Hamo	Bate Wateriou	
<u> </u>	internet safety rules, behavior, and "netique	tz/downloadable/studentprojectkit/Student_Prete" to your troop or another patrol. You are e	encouraged to use any additional	
	material and information you have research lesson.	ned. Each member of the patrol must have a r	ole and present part of the	
☐ 6.		e standards and practices for using allowed e	electronic devices such as	
	phones and games at your meetings and o	ther Scouting events.		

Scouts BSA Cyper Chip	Scours Name:		

Note: All Cyber Chips will expire annually. Each Scout will need to go to Netsmartz (www.netsmartz.org) and complete two new resources to recommit to net safety and netiquette. Then, with the unit leader, the Scout can add the new date to the Cyber Chip card or certificate.

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Geocaching





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Scout's Name:		Unit:	
Counselor's Name:	_ Phone No.:		Email:
		http://www.MeritBa	
Please submit errors, omissions, Comments or suggestions for changes to			
1. Do the following:			
 Explain to your counselor and what you should do to 			while participating in geocaching activities and to these hazards.
Hazard:		-	
Anticipate & Prevent:			
Mitigate & Respond:			
Hazard:			
Anticipate & Prevent:			
Mitigate & Respond:			

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Geocaching Scout's Name: __ Hazard: **Anticipate & Prevent:** Mitigate & Respond: Hazard: Anticipate & Prevent: Mitigate & Respond: Hazard:

Anticipate & Prevent:	
Mitigate & Respond:	

		Scout's Name:
b.	geocaching acti	and prevention for the types of injuries or illnesses that could occur while participating in vities, including cuts, scrapes, snakebite, insect stings, tick bites, exposure to poisonous plants, eactions (sunburn, heatstroke, heat exhaustion, hypothermia), and dehydration.
	Cuts:	
	Scrapes:	
	эсгарсэ.	
	Snakebite:	
	Insect stings:	
	Tick bites:	
	Cymacyra ta	
	Exposure to poisonous	
	plants:	
	Sunburn:	
	Heatstroke:	

Geocaching

Geocaching		Scout's Name:
	Heat exhaustion:	
	exnaustion:	
	Hypothermia:	
	<i>3</i> 1	
	Dehydration:	
C.	Discuss how to with others, an	properly plan an activity that uses GPS, including using the buddy system, sharing your plan d considering the weather, route, and proper attire.
2. Discuss	the following wi	ith your counselor:
a.	Why you shoul	ld never bury a cache.

<u>aı</u>	ow to use proper geocaching etiquette when hiding or seeking a cache, and how to properly hide, post, maind dismantle a geocache.
c Th	ne principles of Leave No Trace as they apply to geocaching
G. 11	b find place of Ecuve No Trace as they apply to geocaething
Explain the trackable.	following terms used in geocaching: waypoint:, log, cache, accuracy, difficulty and terrain ratings, attribute
trackable.	following terms used in geocaching: waypoint:, log, cache, accuracy, difficulty and terrain ratings, attribute
Explain the trackable. Waypoint:	following terms used in geocaching: waypoint:, log, cache, accuracy, difficulty and terrain ratings, attribute
trackable.	following terms used in geocaching: waypoint:, log, cache, accuracy, difficulty and terrain ratings, attribute
trackable.	following terms used in geocaching: waypoint:, log, cache, accuracy, difficulty and terrain ratings, attribute
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trackable. Waypoint:	following terms used in geocaching: waypoint:, log, cache, accuracy, difficulty and terrain ratings, attribute

Geocaching

Scout's Name: _____

eocaching	Scout's Name:	-
Cache:		
		ļ
Accuracy:		
		l
		l
		l
Ditt. II		
Difficulty ratings:		l
		l
		l
		ł
Terrain		İ
ratings:		
		l
		ļ
Attributes:		l
		l
		l
		l
Trackable:		
Hackable.		l
		l
		-
		1
Choose five	additional terms to explain to your counselor.	
1.		ļ
		ļ
		1
		1

Geocaching	Scout's Name:
2.	
2.	
2	
3.	
4.	
5.	
4. Explain	ow the Global Positioning System (GPS) works.
C Then, u	ng Scouting's Teaching EDGE, demonstrate the use of a GPS unit to your counselor. Include marking and waypoint, changing field functions, and changing the coordinate system in the unit.
Culting	naypoint, oranging near functions, and oranging the coordinate system in the dist.

- 5. Do the following:
 - a. Show you know how to use a map and compass and explain why this is important for geocaching.

		benefits of each	
6 D	oscribo	the four stone to fine	ding your first cache to your counselor.
		the lour steps to line	any your mist cache to your counselor.
1.			
2.			
3.			
Э.			
4.			

b. Explain the similarities and differences between GPS navigation and standard map reading skills and describe the

C Then mark and edit a waypoint.

	1.			
С	2.			
С	3.			
	0.			
С	TL	on nick one of t	the three and find the cache.	
pe	ermiss	sion and help be	-	J.com. Ask your parent for
3. Do		E of the following		
С	a.	projects that ea	Eagle® series exists in your council, visit at least three of the 12 loca each cache you visit highlights, and explain how the Cache to Eagle® ice with the public.	tions in the series. Describe the program helps share our
			•	
		1.		
		1. Project		
		Project		
		Project 2.		
		Project		
		Project 2.		
		Project 2. Project		
		Project 2. Project 3.		
		Project 2. Project		
		Project 2. Project 3.		

7. With your parent's permission*, go to www.geocaching.com. Type in your city and state to locate public geocaches in your

area. Share the posted information about three of those geocaches with your counselor.

Seocaching		Scout's Name:
		Explain how the Cache to Eagle® program helps share our Scouting service with the public.
С	b.	Create a Scouting-related Travel Bug® that promotes one of the values of Scouting.
С		"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.
С	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 three-month maintenance plan for the geocache where you are personally responsible for those three months.
С		After setting up the geocache, with your parent's permission, follow the logs online for 30 days and share them with your counselor.
С		You must archive the geocache when you are no longer maintaining it.
С	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.
		eohunt for a youth group such as your troop or a neighboring pack, at school, or your place of worship. Choose a
		set up a course with at least four waypoints, teach the players how to use a GPS unit, and play the game.
The	eme	
c S et	up a	course
Wa	уроіі	nts:
1.		
2.		
۷.		

ning	Scout's Name:
3.	
4.	
Teach	the players how to use a GPS unit
Play th	ne game.
Tell yo	our counselor about your experience, and share the materials you used and developed for this event.
	3. 4. Teach

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