



## Better Living Through Innovation

Technology is all around us, from our homes to our schools to the great outdoors. While we tend to think of technology as the latest electronic gadget, any invention that makes our lives easier could be considered an application of technology. The cellphone in your pocket is an example of technology, but so is the high-tech fabric of your pants—and so is the technology that allowed your pants to be mass-produced and shipped to your favorite store.

Technology has produced incredible tools and devices that make our lives more interesting and fun. This month's meetings and outings will focus on some that relate to your life in Scouting.

### Objectives

This month's activities should:

- Define technology.
- Allow Scouts to become familiar with technology used in Scouting.
- Teach Scouts to be safe while using technology.
- Make Scouts better leaders in the use of technology.
- Demonstrate how technology is developed and how it affects society.
- Encourage Scouts to be better technology consumers.

### RELATED ADVANCEMENT AND AWARDS

- Cyber Chip
- Automotive Maintenance, Aviation, Canoeing, Cycling, Drafting, Electricity, Energy, Farm Mechanics, Motorboating, Nuclear Science, Railroad, Small-Boat Sailing, Space Exploration, and Truck Transportation merit badges
- Boy Scout and Venturing Nova and Supernova awards



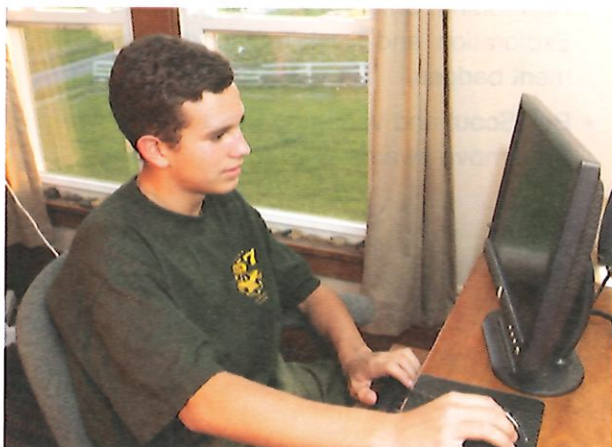
## Leadership Planning

As a leadership team, you may want to discuss the following items when choosing technology as your program feature during your planning meetings.

1. What areas of technology do we want to focus on?
2. Who do we know who could help facilitate this month's meetings and activities?
3. Who in our unit has earned a Nova or Supernova award?
4. Do we want to focus on the Nova and Supernova awards this month?
5. Should we incorporate completion of the Cyber Chip into this month's meetings?
6. What changes should we make to the sample meeting plans that would fit our needs better?

### PARENTS CAN HELP WITH THE TECHNOLOGY PROGRAM FEATURE BY:

1. Identifying subject experts who can help with meetings and activities
2. Sharing their experiences with technology and how technology has changed over their lifetimes
3. Encouraging the appropriate use of communication technology
4. Encouraging safe Internet use at home by parents and Scouts



## TECHNOLOGY INFORMATION

Technology is a broad area of public endeavor that includes computers, transportation, manufacturing, communications, robotics, and countless other topics. With your parent's permission, you can use an Internet search engine to find information that interests you.

Topics to explore can include:

### GPS units

- The science behind how they work
- Other factors necessary to make the technology functional
- Comparison to the old technology of using a compass

### Cellphones

- The science behind how they work
- Other factors necessary to make the technology functional
- Exploration of the development of cellphones and discussion of potential future developments

### Robotics

- The science behind how robots are designed and programmed
- How hobby robots compare with those used in engineering
- The availability of robotics competitions in your area.

### Cyber Chip

Staying safe online is an important skill today's Scouts need. To help families and volunteers keep youth safe while online, the Boy Scouts of America introduced the Cyber Chip. In developing this tool, the BSA teamed up with content expert NetSmartz®, part of the National Center for Missing and Exploited Children® and training expert for many law enforcement agencies. You can learn more at [www.scouting.org/cyberchip.aspx](http://www.scouting.org/cyberchip.aspx).





### Requirements for Grades 6–8

1. Read and sign the Level II Internet Safety Pledge from NetSmartz®. (BSA Cyber Chip green card)
2. Write and sign a personalized contract with your parent or guardian that outlines rules for using the computer and mobile devices, including what you can download, what you can post, and consequences for inappropriate use.
3. Watch the video “Friend or Fake,” along with two additional videos of your choosing, to see how friends can help each other to stay safe online. ([www.netsmartz.org/scouting](http://www.netsmartz.org/scouting))
4. As an individual or with your patrol, use the EDGE method and mini lessons to teach Internet safety rules, behavior, and “netiquette” to your troop or another patrol. You are encouraged to use any additional material and information you have researched. Each member of the patrol must have a role and present part of the lesson. ([www.netsmartz.org/scouting](http://www.netsmartz.org/scouting))
5. Discuss with your unit leader the acceptable standards and practices for using allowed electronic devices, such as phones and games, at your meetings and other Scouting events.

### Requirements for Grades 9–12

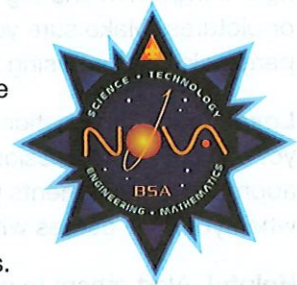
1. Read and sign the Level II Internet Safety Pledge. (BSA Cyber Chip green card)
2. Write and sign a personalized contract with your parent or guardian that outlines rules for using the computer and mobile devices, including what you can download, what you can post, and consequences for inappropriate use.
3. Discuss with your parents the benefits and potential dangers teenagers might experience when using social media. Give examples of each.
4. Watch three “Real-Life Story” videos to learn the impact on teens. ([www.netsmartz.org/scouting](http://www.netsmartz.org/scouting))
5. As an individual or patrol, use the EDGE method and the Teen Volunteer Kit to teach Internet safety rules, behavior, and “netiquette” to your troop or another patrol. You are encouraged to use any additional material and information you have researched. Each member of the patrol must have a role and present part of the lesson. ([www.netsmartz.org/scouting](http://www.netsmartz.org/scouting))

6. Discuss with your unit leader the acceptable standards and practices for using allowed electronic devices such as phones and games at your meetings and other Scouting events.

### Nova and Supernova Awards

Boy Scouts and Venturers can earn special awards for learning more about STEM (science, technology, engineering, and math). Here’s an introduction.

**Nova Awards.** The Nova Awards allow Scouts and Venturers to discover some of the basic principles of STEM and to experience science, technology, engineering, and mathematics in fun and interesting ways.



Nova activities are fairly basic and are designed to spark interest in one or all of the categories of awards. They are straightforward to complete and offer a quick reward in the form of the Nova patch for the first award earned and a pi ( $\pi$ ) pin to attach to the Nova patch for each additional award earned. Each Nova Award can be accomplished fairly easily in a few weeks.

### Supernova Awards.

The Supernova Awards require a deeper level of understanding and effort. They challenge Scouts and Venturers who have a greater interest in the STEM fields to experiment, understand the outcomes of these experiments, and present their findings to their Supernova mentor. The focus is to build on the basic STEM topics with activities that will result in greater learning and an increasing complexity in the youth’s knowledge. Completing the requirements takes more work and includes some research. Completion of a Supernova Award earns the Scout or Venturer the right to wear the Supernova Award medal. Most Supernova activities will take several weeks or months to complete.



You can learn more at [www.scouting.org/stem.aspx](http://www.scouting.org/stem.aspx).



### **The Scout Law and Cybersafety/Cyberbullying**

Today we are online more than ever before. We use technology to save us time with research, connect with others, navigate, and have fun. Here are some ideas of how the digital world and the Scouting community can live side by side.

**Trustworthy.** Be truthful with others online, and be very careful of the information you share. Do the right thing when sharing other people's words or pictures. Make sure you have the owner's permission before using them.

**Loyal.** Share information about others only if you have their permission to share it. Uphold appropriate agreements you make with friends when you play games with them.

**Helpful.** Alert others to scams, cheats, and suspicious sites. Point them to reliable and accurate sources of information. Encourage people to report bad behavior online.

**Friendly.** Reach out to support others who are doing good things, like posting quality creative works. Support those who are bullied.

**Courteous.** Be polite and respectful. When you use other people's work, be sure to ask permission when necessary, follow fair use standards, and give credit to the people who created and own the work.

**Kind.** Treat people with respect when you are on social networks, playing games, talking or texting on a cellphone, or in other digital activities.

**Obedient.** When using digital devices, follow the rules set by your parents/guardians, teachers, and Scout leaders. Abide by the rules established by sites, services, devices, and games.

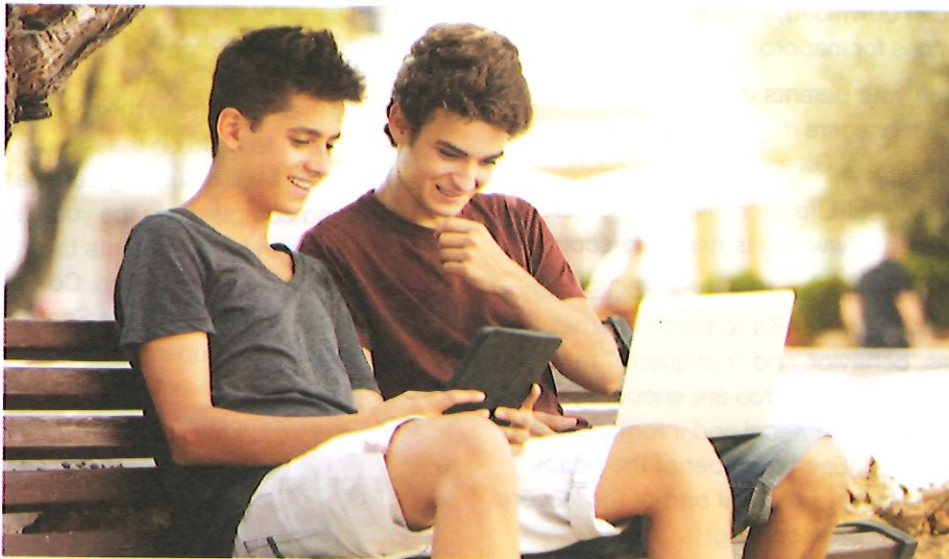
**Cheerful.** Use games, messaging tools, and social forums to build your relationships with others while having fun.

**Thrifty.** Be a smart consumer. Know your voice, text, and data plans and use them wisely. Be sure to study digital devices and services you want. Before buying them, make sure you're not overspending on functions and features you won't need. Be careful not to run up charges on apps and sites.

**Brave.** Stand up for what is right. Do not participate in mocking and bullying others, even if your friends are doing it. Report suspected abuse to a trusted adult, like your parent or leader; call 911 or call the Cyber Tip line at 1-800-843-5678. If the incident involves any part of the Scouting program, call your council Scout executive immediately or email [youth.protection@scouting.org](mailto:youth.protection@scouting.org).

**Clean.** Use clean language and discuss only appropriate topics when using digital devices to communicate with others.

**Reverent.** Respect the feelings of other people. Do not use digital devices to spread irreverent ideas.





## TECHNOLOGY GAMES

### Nitro Transport

**Equipment:** For each team, an open can, a transport device (a 12-inch-square board with six 8-foot ropes attached), water

**Method:** Each team must move a can of “radio-active nitroglycerin” (can full of water) from point A to point B (a distance of 25 to 30 feet) by lifting the can with the transporting device. All groups must pick it up at the same time without spilling the liquid.

**Scoring:** The group that moves the nitro to the destination first without spilling wins.

**Notes:** After the game, discuss the dangers of transporting hazardous fuel. Explore how gasoline, natural gas, and nuclear fuel are transported.

### Photo Scavenger Hunt

**Equipment:** For each team, a smartphone and a computer with Internet access

**Method:** Teams go around your meeting place and photograph an assigned list of items (e.g., tree), actions (e.g., high five), and/or concepts (e.g., happy). They then upload their photos to an assigned multimedia website like Flickr, Instagram, or Facebook.

**Scoring:** The first team to upload its photos wins.

**Variation:** You could assign more subjects than teams have time to photograph. They would then have to manage their time in order to shoot and upload as many photos as possible; teams that miss the deadline would be disqualified.



### Find What They Hid

**Equipment:** For each team, a GPS receiver and an object to hide

**Method:** Teams hide objects, noting the GPS coordinates. They then give those coordinates to other teams to find.

**Scoring:** Award points to teams that find objects, as well as to those who have their objects found.

**Notes:** To increase the challenge, don't identify the objects. Instead, give GPS coordinates and clues or riddles that hint at what the objects are.



### Tech Timeline

**Equipment:** For each team, a set of 15 to 20 cards showing milestones in the history of technology (e.g., the first telephone call, the introduction of the Model T, the first personal computer)

**Method:** Before the game, tape or pin each team's cards in random order on one wall of the room. Teams line up relay style at the other end of the room. On signal, the first player on each team runs forward and relocates two cards to be in the correct order. He or she then runs back to tag the next player, who can also relocate two cards. Continue playing until one team declares it has put its cards in the right order. If they're correct, they win.

**Scoring:** First team to put its cards in correct order wins.

**Notes:** An Internet search for “technology timeline” will turn up plenty of milestones to put on the cards.



# E.D.G.E. Ideas

*Explain* how it is done—Tell them.

*Demonstrate* the steps—Show them.

*Guide* learners as they practice—Watch them do it.

*Enable* them to succeed on their own—Have them practice/teach it.

## EXPLAIN

- Define technology and how new technology is developed.
- Discuss new technologies and the older technologies they replaced.
- Explain how technology affects society and how society affects technology.
- List some dangers involved with online technology.
- Discuss how distractions caused by smart-phones can be a safety issue.

## DEMONSTRATE

- Show how to identify spam and avoid risky websites.
- Show Internet videos of technology advances.
- Demonstrate how GPS can be used to find a geocache.
- Do a show-and-tell that illustrates advancements in technology.

## GUIDE

- Help Scouts develop strong online passwords.
- Guide members to earn the Cyber Chip for their age group.
- Guide members as they research high-tech camping gear.
- Facilitate discussions of appropriate uses of technology.
- Play a game that lets Scouts practice GPS usage.
- Provide guidance as Scouts build robots for a competition.

## ENABLE

- Enable Scouts to use the Internet safely.
- Empower Scouts to teach younger Scouts what they've learned.
- Prepare Scouts to make informed decisions on technology purchases, weighing costs and benefits of various options (including making do with what they have).

## MAIN EVENT SUMMARIES

● ESSENTIAL	■ CHALLENGING	◆ ADVANCED
Day Activity	Overnight Activity	Day Activity
Tech field trip—Visit a technology company or the manufacturer of a technological product. Visit with company personnel to learn about the technology they create—and the technology they use to create their products or services.	Travel technology up close—Take a trip on a boat, bus, plane, or train. Before and during the journey, learn as much about the operation as you can by visiting the engine room, control cab, dispatch station, bridge, etc.	Robot tournament—Find a robot competition that interests your group. (This could be as simple as a Lego® Mindstorms® tournament or as complex as a BattleBots® melee.) Plan, design, and then build a robot to compete.



# TECHNOLOGY

## Meeting Plan: Transportation and Energy



Week 1 Date \_\_\_\_\_

ACTIVITY	DESCRIPTION	RUN BY	TIME*
<b>Preopening</b> 15 minutes before meeting	Watch a technology-related video that involves transportation or transportation technology.		6:45 p.m.
<b>Opening Ceremony</b> 10 minutes	Flag presentation Scout Oath and Scout Law Uniform inspection		7 p.m.
<b>Group Instruction</b> 10 minutes	Define technology as inventions that aid daily life. Discuss how technology affects society and how society affects technology. Explain how new technology tends to replace old technology, and brainstorm where technology could go in the future.		7:10 p.m.
<b>Skills Instruction</b> 40 minutes	Begin one of the following merit badges: —Automotive Maintenance, Aviation, Canoeing, Cycling, Drafting, Electricity, Energy, Farm Mechanics, Motorboating, Nuclear Science, Railroad, Small-Boat Sailing, Space Exploration, or Truck Transportation. <b>Note:</b> This is the list of merit badge options for the Boy Scout Nova technology module, Start Your Engines.		7:20 p.m.
	Design and build a working model vehicle (not from a kit). For guidance, see the Boy Scout Nova module, Start Your Engines, and the Venturing Nova module, Power Up.		
	<ul style="list-style-type: none"> <li>• List energy sources currently used in transportation technology.</li> <li>• Discuss alternative sources of energy.</li> <li>• Discuss the pros and cons of using alternative energy.</li> </ul>		
<b>Breakout Groups</b> 15 minutes	Continue project begun during Skills Instruction or begin planning for participation in the main event.		8 p.m.
<b>Game</b> 10 minutes	Play Nitro Transport (described earlier).		8:15 p.m.
<b>Closing</b> 5 minutes	Announcements Leader's minute Closing		8:25 p.m.
<b>Total 90 minutes of meeting</b>			
<b>After the Meeting</b> 15 minutes	Leadership team reviews plans for the next meeting and for the main event.		

\*All times are suggested.



# TECHNOLOGY

## Meeting Plan: Cyber Chip and GPS



Week 2 Date \_\_\_\_\_

ACTIVITY	DESCRIPTION	RUN BY	TIME*
<b>Preopening</b> 15 minutes before meeting	Have early arrivers review the Cyber Chip requirements for their age group. See <a href="http://www.scouting.org/cyberchip.aspx">www.scouting.org/cyberchip.aspx</a> for details. Review each Scout's Cyber Chip status.		6:45 p.m.
<b>Opening Ceremony</b> 10 minutes	Flag presentation Scout Oath and Scout Law		7 p.m.
<b>Group Instruction</b> 20 minutes	<ul style="list-style-type: none"> <li>Review how the Scout Law relates to cybersafety and cyberbullying.</li> <li>Watch one or more videos from the NetSmartz® Workshop (<a href="http://www.netsmartz.org/scouting">www.netsmartz.org/scouting</a>) website about staying safe online.</li> </ul>		7:10 p.m.
<b>Skills Instruction</b> 30 minutes	With a GPS receiver for each participant, do the following: <ul style="list-style-type: none"> <li>Learn about global positioning satellites</li> <li>Understand how latitude and longitude are represented in GPS devices</li> <li>Explore the basic functions of the GPS receiver</li> <li>Compare GPS usage to the usage of map and compass</li> </ul> <b>Note:</b> Ideally, all GPS receivers should be the same model. If a variety of receivers is used, the instructor needs to be familiar with each model.		7:30 p.m.
	<ul style="list-style-type: none"> <li>Review the above information.</li> <li>Learn how to program a route using multiple waypoints into a GPS receiver.</li> </ul>		
	<ul style="list-style-type: none"> <li>Review the above information.</li> <li>Learn the science behind personal locator beacons. Discuss the difference between latitude and longitude and the Universal Transverse Mercator (UTM) coordinate system. Discuss when each system is preferable.</li> <li>Convert latitude and longitude coordinates into UTM coordinates.</li> </ul>		
<b>Breakout Groups</b> 15 minutes	<ul style="list-style-type: none"> <li>Continue planning for participation in the main event.</li> <li>Work on individual advancement and/or Scout skills as needed.</li> </ul>		8 p.m.
<b>Game</b> 10 minutes	Play Find What They Hid (described earlier).		8:15 p.m.
<b>Closing</b> 5 minutes	Announcements Leader's minute Closing		8:25 p.m.
<b>Total 90 minutes of meeting</b>			
<b>After the Meeting</b> 15 minutes	Leadership team reviews plans for the next meeting and for the main event.		

\*All times are suggested.





# TECHNOLOGY

## Meeting Plan: Smartphones



Week 3 Date \_\_\_\_\_

ACTIVITY	DESCRIPTION	RUN BY	TIME*
<b>Preopening</b> 15 minutes before meeting	As Scouts arrive, work with them to develop strong but memorable passwords they can use online. A good technique is to take a memorable sentence and convert it into a password. For example, <i>I had a blast at the 2013 National Scout Jamboree!</i> becomes lhab@t2013NSJ.		6:45 p.m.
<b>Opening Ceremony</b> 10 minutes	Flag presentation Scout Oath and Scout Law Uniform inspection		7 p.m.
<b>Group Instruction</b> 10 minutes	<ul style="list-style-type: none"> <li>Discuss the evolution of long-distance communication, including smoke signals, semaphore, telegraph, telephone, cellphone, and smartphone.</li> <li>Discuss the safety risks of using smartphones (such as texting while driving or walking).</li> </ul>		7:10 p.m.
<b>Skills Instruction</b> 40 minutes	<ul style="list-style-type: none"> <li>Explore the evolution of the telephone.</li> <li>If possible, show examples or pictures of the following devices: hand-crank telephone (using a switchboard), dial telephone, push-button phone, cordless phone, original cellphone ("brick phone"), flip phone, and smartphone.</li> </ul>		7:20 p.m.
	<ul style="list-style-type: none"> <li>Using a smartphone, demonstrate the basic functions of:               <ul style="list-style-type: none"> <li>—making a phone call</li> <li>—setting a calendar date</li> <li>—sending a text</li> <li>—finding an address</li> <li>—checking the weather</li> </ul> </li> <li>Share your favorite apps within the group.</li> </ul> <p><b>Note:</b> Depending on the experience of the group, you may want to cover more advanced functions.</p>		
	<ul style="list-style-type: none"> <li>Learn what it takes to develop an app, including how apps are coded and uploaded to an app store.</li> <li>Brainstorm ideas of an app that would be useful to your group.</li> </ul>		
<b>Breakout Groups</b> 15 minutes	<ul style="list-style-type: none"> <li>Continue planning for participation in the main event.</li> <li>Work on Scout skills as appropriate.</li> </ul>		8 p.m.
<b>Game</b> 10 minutes	Play Photo Scavenger Hunt (described earlier).		8:15 p.m.
<b>Closing</b> 5 minutes	Announcements Leader's minute Closing		8:25 p.m.
<b>Total 90 minutes of meeting</b>			
<b>After the Meeting</b> 15 minutes	Leadership team reviews plans for the next meeting and for the main event.		

\*All times are suggested.



# TECHNOLOGY

## Meeting Plan: High-tech Camping



Week 4 Date \_\_\_\_\_

ACTIVITY	DESCRIPTION	RUN BY	TIME*
<b>Preopening</b> 15 minutes before meeting	Invite early arrivers to read the "Ask the Gear Guy" column from <i>Boys' Life</i> magazine to learn more about technological advances in outdoor gear.		6:45 p.m.
<b>Opening Ceremony</b> 10 minutes	Flag presentation Scout Oath and Scout Law		7 p.m.
<b>Group Instruction</b> 10 minutes	<ul style="list-style-type: none"> <li>Have someone who has been camping for decades discuss how camping technology has evolved since he or she started camping.</li> <li>If possible, share information from an early Boy Scout handbook, such as a reprint of the 1911 <i>Handbook for Boys</i>, to demonstrate the technology early Scouts used.</li> </ul>		7:10 p.m.
<b>Skills Instruction</b> 40 minutes	<ul style="list-style-type: none"> <li>Use outdoor magazines, catalogs, and websites to research the technologies used in the Scout Basic Essentials and other basic camping gear.</li> <li>Discuss when it's appropriate to pay more for higher-tech gear.</li> </ul>		7:20 p.m.
	<ul style="list-style-type: none"> <li>Learn about the technology involved in camp stoves and camp lanterns.</li> <li>Discuss the safety features required for gear that uses flammable materials.</li> <li>Discuss when it's appropriate to pay more for higher-tech gear.</li> </ul>		
	<ul style="list-style-type: none"> <li>Use outdoor magazines, catalogs, and websites to find the ultimate high-tech camping gear, such as extremely light sleeping bags or camp stoves with USB ports.</li> <li>See who can come up with the most amazing (or ridiculous) application of technology for camping.</li> <li>Discuss when it's appropriate to pay more for higher-tech gear.</li> </ul>		
<b>Breakout Groups</b> 15 minutes	Finalize plans for participation in the main event.		8 p.m.
<b>Game</b> 10 minutes	Play Tech Timeline (described earlier).		8:15 p.m.
<b>Closing</b> 5 minutes	Announcements Leader's minute Closing		8:25 p.m.
<b>Total 90 minutes of meeting</b>			
<b>After the Meeting</b> 15 minutes	Leadership team reviews plans for the next meeting and for the main event.		

\*All times are suggested.



# TECHNOLOGY

## Main Event: Tech Field Trip



Date \_\_\_\_\_

### Logistics

Location: \_\_\_\_\_

Departure time: \_\_\_\_\_

Return time: \_\_\_\_\_

Duration of activity: 4 to 6 hours

Budget: Completed \_\_\_\_\_ Approved \_\_\_\_\_

Camping: Duty roster \_\_\_\_\_ Menu \_\_\_\_\_

Transportation: Group \_\_\_\_\_ Self \_\_\_\_\_

Tour and activity plan: Completed \_\_\_\_\_ Submitted \_\_\_\_\_

### Essential (Tier I)

Visit a technology company or the manufacturer of a technological product. Visit with company personnel to learn about the technology they create—and the technology they use to create their products or services.

### Equipment List

- Appropriate clothing
- Lunch (group or individual)
- Camera
- Thank you notes

### Activity

- Identify a local technology company or manufacturer.
- Make contact with the organization to set up a visit.
- Gather for transportation to facility.
- Take a tour and allow time for questions from the group.
- Have lunch, as appropriate.
- Return home.
- Write thank you notes.

### Safety

- Follow your host's safety instructions for factory and lab tours.

### Notes



# TECHNOLOGY

## Main Event: Travel Technology Up Close



Date \_\_\_\_\_

### Logistics

Location: \_\_\_\_\_

Departure time: \_\_\_\_\_

Return time: \_\_\_\_\_

Duration of activity: 4+ hours (potential overnight if out of town)

Budget: Completed \_\_\_\_\_ Approved \_\_\_\_\_

Camping: Duty roster \_\_\_\_\_ Menu \_\_\_\_\_

Transportation: Group \_\_\_\_\_ Self \_\_\_\_\_

Tour and activity plan: Completed \_\_\_\_\_ Submitted \_\_\_\_\_

### Challenging (Tier II)

Take a trip on a boat, bus, plane, or train. Before and during the journey, learn as much about the operation as you can by visiting the engine room, control cab, dispatch station, bridge, etc.

### Equipment List

- Waivers and releases from transportation company
- BSA flying plan and consent forms if taking orientation flights
- Proper clothing
- Scout Basic Essentials (Review the list and take what you need.)
- Meals
- Overnight gear as appropriate

### Activity

- Identify opportunities to travel on a boat, bus, plane, or train in your area.
- Contact the operator to arrange for transportation and a tour.
- Travel to the departure point.
- Camp overnight in the area as appropriate.
- Learn about transportation technology.

### Safety

- Always follow the directions of the hosts to avoid incidents.

### Notes



# TECHNOLOGY

## Main Event: Robot Tournament



Date \_\_\_\_\_

### Logistics

Location: \_\_\_\_\_

Departure time: \_\_\_\_\_

Return time: \_\_\_\_\_

Duration of activity: 4+ hours (potential overnight if out of town)

Budget: Completed \_\_\_\_\_ Approved \_\_\_\_\_

Camping: Duty roster \_\_\_\_\_ Menu \_\_\_\_\_

Transportation: Group \_\_\_\_\_ Self \_\_\_\_\_

Tour and activity plan: Completed \_\_\_\_\_ Submitted \_\_\_\_\_



### Advanced (Tier III)

Find a robot competition that interests your group. (This could be as simple as a Lego® Mindstorms® tournament or as complex as a BattleBots® melee.) Plan, design, and then build a robot to compete.

### Equipment List

- List of upcoming robot tournaments
- Official rules and entry form
- Parts to build the robot of your design
- Tools for assembly
- Food and snacks for during competition
- Camping/overnight gear, as appropriate

### Activity

- Find a robot tournament that interests the unit.
- Become familiar with the rules and objectives for the competition.
- Submit an entry form before the deadline.
- Build the robot per competition guidelines. Make sure each member of the unit has the opportunity to contribute.
- Travel as necessary.
- Compete in the tournament.
- Do repairs as required.
- Write a closeout report.

### Safety

Be aware that many robot accidents occur during non-routine operating conditions, such as programming, maintenance, testing, setup, or adjustment. During these operations the operator may temporarily be within the robot's working envelope where unintended operations could result in injuries.

### Notes

This main event is classified as advanced due to the funding, resources, and costs of transportation required to prepare for and participate in the tournament.



## REFERENCES

### Books

*Robotics merit badge pamphlet*

Cook, David. *Robot Building for Beginners*. Apress, 2002.

Erlbach, Arlene. *The Kids' Invention Book*. Lerner Publishing Group, 1999.

Macaulay, David. *The New Way Things Work*. HMH Books for Young Readers, 1998.

Valk, Laurens. *The LEGO® Mindstorms® NXT 2.0 Discovery Book: A Beginner's Guide to Building and Programming Robots*. No Starch Press, 2010.

Voltz, Stephen and Fritz Grobe. *How to Build a Hovercraft: Air Cannons, Magnet Motors, and 25 Other Amazing DIY Science Projects*. Chronicle Books, 2013.

### Websites

#### Appalachian Mountain Club

#### Navigation Showdown

Website: [www.outdoors.org/publications/outdoors/2009/features/gps-map-compass-challenge.cfm](http://www.outdoors.org/publications/outdoors/2009/features/gps-map-compass-challenge.cfm)

#### Compass vs. GPS

Website: [outdoor-gear-deals.com/how-to-articles/compass-vs-gps/](http://outdoor-gear-deals.com/how-to-articles/compass-vs-gps/)

#### List of Robot Competitions

Website: [en.wikipedia.org/wiki/Robot\\_competition](http://en.wikipedia.org/wiki/Robot_competition)

#### roboGames

Website: [www.robotgames.net](http://www.robotgames.net)

#### Robotics Education and Competition Foundation

Website: [www.robotevents.com](http://www.robotevents.com)

#### Smartphones

Website: [gizmodo.com/5870601/everything-you-need-to-master-your-new-smartphone](http://gizmodo.com/5870601/everything-you-need-to-master-your-new-smartphone)

### Related Program Features

Engineering, Geocaching, Multimedia, Project Planning, Science

### Photo and Illustration Credits

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Meeting Plan: \_\_\_\_\_

Week \_\_\_ Date \_\_\_\_\_



ACTIVITY	DESCRIPTION	RUN BY	TIME*
<b>Preopening</b> __ minutes before meeting			
<b>Opening Ceremony</b> __ minutes	Flag presentation Oath and Law Uniform inspection		
<b>Group Instruction</b> __ minutes			
<b>Skills Instruction</b> __ minutes	●		
	●		
	●		
	■		
	■		
	■		
	◆		
	◆		
	◆		
<b>Breakout Groups</b> __ minutes			
<b>Game</b> __ minutes			
<b>Closing</b> __ minutes	Announcements Leader's minute Closing		
<b>Total 90 minutes of meeting</b>			
<b>After the Meeting</b> __ minutes	Leadership team review plans for the next meeting and for the main event.		

\*All times are suggested.



Main Event: \_\_\_\_\_



Date \_\_\_\_\_

**Logistics**

Location: \_\_\_\_\_  
\_\_\_\_\_

Departure time: \_\_\_\_\_

Return time: \_\_\_\_\_

Duration of activity: \_\_\_\_\_

Budget: Completed \_\_\_\_\_ Approved \_\_\_\_\_

Camping: Duty roster \_\_\_\_\_ Menu \_\_\_\_\_

Transportation: Group \_\_\_\_\_ Self \_\_\_\_\_

Tour and activity plan: Completed \_\_\_\_\_ Submitted \_\_\_\_\_



Essential | Challenging | Advanced

**Equipment List**

- 
- 
- 
- 
- 
- 

**Activity**

- 
- 
- 
- 
- 
- 
- 

**Safety**

**Notes**





**Tour involves:**  Swimming     Boating     Climbing     Orientation flights (attach **Flying Plan** required)  
 Wilderness or backcountry (must carry **Wilderness Use Policy** and follow principles of **Leave No Trace**)  
 Shooting     Other (specify) \_\_\_\_\_

**Activity Standards:** Where swimming or boating is included in the program, **Safe Swim Defense** and/or **Safety Afloat** are to be followed. If climbing/rappelling is included, then **Climb On Safely** must be followed. At least one person must be current in CPR/AED from any recognized agency to meet **Safety Afloat** and **Climb On Safely** guidelines. At least one adult on a pack overnigher must have completed **Basic Adult Leader Outdoor Orientation (BALOO)**. At least one adult must have completed **Planning and Preparing for Hazardous Weather** training for all tours and activities. **Trek Safely** and Basic First Aid are recommended for all tours, and **Wilderness First Aid** is recommended for all backcountry tours.

Expiration date of commitment card/training (two years from completion date)							
Name	Age	Youth Protection	Planning and Preparing for Hazardous Weather	BALOO (no expiration)	Climb On Safely	Safe Swim Defense	Safety Afloat
Name	Age	CPR Certification/Agency		CPR Expiration Date	First-Aid Certification/Agency		First Aid Expiration Date
Name	Age	NRA Instructor and/or RSO					
		No. _____	<input type="checkbox"/> Rifle <input type="checkbox"/> Shotgun <input type="checkbox"/> Pistol (Venturing only) <input type="checkbox"/> Range Safety Officer <input type="checkbox"/> Muzzle-loading rifle <input type="checkbox"/> Muzzle-loading shotgun				
		No. _____	<input type="checkbox"/> Rifle <input type="checkbox"/> Shotgun <input type="checkbox"/> Pistol (Venturing only) <input type="checkbox"/> Range Safety Officer <input type="checkbox"/> Muzzle-loading rifle <input type="checkbox"/> Muzzle-loading shotgun				

**Unauthorized and Restricted Activities:** The BSA's general liability insurance policy provides coverage for bodily injury or property damage that arises out of an official Scouting activity as defined by the **Guide to Safe Scouting**. Volunteers, units, chartered organizations, and local councils that engage in unauthorized activities are jeopardizing their insurance coverage. PLEASE DO NOT PUT YOURSELF AT RISK.

**INSURANCE**

**All vehicles MUST be covered by a liability and property damage insurance policy.** The amount of this coverage must meet or exceed the insurance requirement of the state in which the vehicle is licensed and comply with or exceed the requirements of the country of destination for travel outside the United States. It is recommended, however, that coverage limits are a \$100,000 combined single limit. Any vehicle designed to carry 10 or more passengers is required to have a \$500,000 combined single limit. In the case of rented vehicles, the requirement of coverage limits can be met by combining the limits of personal coverage carried by the driver with coverage carried by the owner of the rented vehicle.

If the vehicle to be used is designed to carry more than 15 people (including the driver), the driver must have a valid commercial driver's license (CDL). In some states (California, for example), this policy applies to drivers of vehicles designed to carry 10 or more people.

All vehicles used in travel outside the United States must carry a public liability and property damage liability insurance policy that complies with or exceeds the requirements of that country. Attach an additional page if more space is required.

Name \_\_\_\_\_ CDL expires \_\_\_\_\_

Name \_\_\_\_\_ CDL expires \_\_\_\_\_

MAKE	MODEL	YEAR	NUMBER OF SAFETY BELTS	DRIVER/OWNER	VALID DRIVER'S LICENSE (Y or N)	LIABILITY INSURANCE COVERAGE
						Combined Single Limit

## Budget Worksheet

<i>Item</i>	<i>Total Cost</i>	<i>Per-Person Cost</i>
<p><b>Transportation</b> This may or may not include meals. Check insurance coverage on packs and luggage if traveling by commercial carrier.</p>	_____	_____
<p><b>Lodging</b> Include cost of overnight stops to and from your activity, including user fees for public campgrounds.</p>	_____	_____
<p><b>Meals</b> Each individual can pay for his or her own meals en route, or meal expenses can be pooled. Include tips and snacks.</p>	_____	_____
<p><b>Training</b> Determine cost of meals and other costs for weekend training.</p>	_____	_____
<p><b>Use or Participation Fees</b> Many public areas may charge a use fee. Include fees such as tickets for ski lifts and sporting events. Find out how much these fees are and include them here.</p>	_____	_____
<p><b>Insurance</b> Include vehicle insurance and accident and sickness insurance if not already covered.</p>	_____	_____
<p><b>Equipment Purchase or Rental</b> Include purchase or rental of equipment such as tents, snowboards and boots, paddleboards, and life jackets.</p>	_____	_____
<p><b>Side Trips and Tours</b> Include costs of any special side trips or activities that are planned.</p>	_____	_____
<p><b>Promotion</b> Include costs of mailings, postage, special hats, or T-shirts.</p>	_____	_____
<p><b>Contingency</b> Allow for any unexpected expenditures, such as a vehicle breakdown necessitating another overnight stay. Refund at the end of trip if not used.</p>	_____	_____
<p><b>Total</b></p>	_____	_____

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