



# Digital Technology

Scouts BSA · STEM

Name

Started

Completed

Digital Technology helps you understand the devices you use every day, from how they store pictures to how they keep your information safe. You'll do real projects, learn to stay safe online, and think about using technology responsibly.

## Requirements

Every official requirement, in plain language. Check the official wording when you sign off ([scouting.org/merit-badges/digital-technology/](https://scouting.org/merit-badges/digital-technology/)). Tips and examples are ideas, not extra requirements.

- ☐ **1** With a parent or guardian's permission, watch the Personal Safety Awareness "Digital Safety" video

**Tip:** Watch the video with a parent or guardian so you can talk together about what you learned and set some ground rules for your devices.

**2** **Digital technology then and now**

**Tips for this section:** Ask a grandparent or older neighbor what computers and phones were like when they were young. Then imagine what devices might look like in 20 years.

**Example for this section:** Trace a timeline from room-sized computers to desktops, the web, flip phones, smartphones, and smart watches. Then predict one future device, like glasses that translate signs as you read them, and explain how it might work.

- ☐ **2a** Outline how digital technology has changed over time, and talk with your counselor about how the tech of your lifetime differs from what a parent, grandparent, or other adult grew up with

- ☐ **2b** Describe the computers or devices you think might exist by the time you're an adult

### 3 How digital devices work

**Tips for this section:** Compare the file size of a photo saved at high and low quality. It's an easy way to see compression in action.

**Example for this section:** Save the same photo at high and low quality and compare the file sizes, then zoom in to spot the blocky areas compression creates. Explain why music and video are compressed so they can stream.

- ☐ **3a** Tell your counselor how text, sound, and images are turned into digital data for storage

- ☐ **3b** Explain lossy vs. lossless data compression and give an example of when you'd use each

- ☐ **3c** Describe two digital devices and how their programming makes them more useful

- ☐ **3d** Compare computers, mobile devices, and gaming consoles: how they're alike and how they differ

- ☐ **3e** Explain what a computer network is and how a local area network (LAN) differs from a wide area network (WAN)

#### 4 Software and stored data

**Tips for this section:** Look at the security settings on a family device with a parent. Scan a QR code and talk about what information it holds.

**Example for this section:** Scan a QR code on a cereal box or museum sign and explain that it's just encoded text, often a web address. Compare it with a barcode at a store and the RFID chip in a library book or toll tag.

- ☐ **4a** Explain what a program or app is and how a computer runs it using its CPU and memory

- ☐ **4b** Name four apps or programs that you or your family rely on and explain how each one helps

- ☐ **4c** Describe malware and explain how to keep your devices, and the information on them, safe

- ☐ **4d** Explain what barcodes, QR codes, and RFID tags are and what data they hold, with at least two examples of where each is used

#### 5 Using the internet

**Tips for this section:** Practice searching for a school topic and checking whether each site is trustworthy. Look for the lock icon and https in the address bar.

- ☐ **5a** Describe at least two ways data can travel across the internet

- ☐ **5b** With a parent or guardian's permission, use a search engine to collect ideas from at least three websites for a campfire program or troop court of honor; present them to your counselor and explain how you searched

- ☐ **5c** With a parent or guardian's permission, open a secure HTTPS website in a browser; explain to your counselor how to judge whether its security certificate is trustworthy and what a secure connection means

## 6 Digital projects: Choose 3 of 8

**Tips for this section:** Pick three projects you'd enjoy, like a campout food budget in a spreadsheet, a flyer for a troop event, or a simple webpage for your patrol. Back everything up to a second place when you're done.

**Example for this section:** Three projects might be a spreadsheet food budget for your patrol's next campout, a flyer for a troop fundraiser that mixes text with a photo, and a five-slide presentation about your last campout. Back each one up to a second drive or cloud folder.

- ☐ **6a** With a spreadsheet or database program, plan the food budget for a weekend patrol campout OR build a troop roster listing each Scout's name, rank, patrol, and phone number and show you can sort it by rank, by patrol, and by name. Back up the files and share with your counselor

- ☐ **6b** Use a word processor to draft a letter inviting your troop's parents or guardians to a troop event. Back up the file and share it with your counselor

- ☐ **6c** Use a graphics program to draw a plan of your troop's campsite OR make a flyer for an upcoming troop event that combines text with a photo or illustration. Back up the file and share it with your counselor

- ☐ **6d** Use presentation software to build a report on a counselor-approved topic with at least five slides, each combining text with a photo or illustration. Back up the file and share it with your counselor

- ☐ **6e** Take a picture of a troop activity with a digital device and move it to a device where your counselor can see it. Back up the file and share it with your counselor

- ☐ **6f** Record your voice digitally, move the file to another device, and have your counselor play it back. Back up the file

- ☐ **6g** Start a blog that journals your Scouting activities online (meetings, discussions, campouts, other events) with at least five entries and two photos or illustrations; show your counselor and back it up. It need not go online, but get approval from a parent or guardian AND your counselor first if it does

- ☐ **6h** Build a webpage for your patrol, troop, school, or place of worship with at least three articles, two photos or illustrations, and one or more links your audience would like; show your counselor and back it up. It need not go online, but get approval from a parent or guardian AND your counselor first if it does

## 7 Intellectual property

**Tips for this section:** Before using a picture or song, ask yourself who made it and whether you have permission. Talk through a few real-life examples with your counselor.

**Example for this section:** Talk through cases: Is it okay to use a song you like in your video? A photo you found in a search? A font someone shared? Explain copyright, Creative Commons licenses, and when you need permission.

- ☐ **7a** Explain to your counselor what copyrights, patents, trademarks, and trade secrets protect and why each exists

- ☐ **7b** Explain when it's OK to accept software for free from a friend

- ☐ **7c** Discuss with your counselor an article, or an online report found with a parent or guardian's permission, about a recent legal case over intellectual property

**8 Disposal and recycling: Choose 2 of 5**

**Tips for this section:** Find out where your town takes old phones and computers. Many electronics stores and city recycling centers have drop-off programs.

**Example for this section:** Find where your town accepts old phones and laptops, and explain why batteries and circuit boards shouldn't go in the trash. Before recycling a device, help a parent back it up and wipe it.

- ☐ **8a** Explain why digital technology must be disposed of properly, and list at least three hazardous chemicals that may be used to make digital devices or found inside them

- ☐ **8b** Explain to your counselor why it matters to use a certified recycler for digital hardware and devices

- ☐ **8c** Search online for a group that collects old digital hardware or devices to reuse or recycle, learn what happens to the waste, and share your findings with your counselor

- ☐ **8d** Visit a recycling center that handles digital hardware or devices, learn what happens to the waste, and tell your counselor what you learned

- ☐ **8e** Find a battery recycling center near you, learn how it recycles batteries, and share with your counselor the right ways to recycle them

## 9 Careers and hobbies: Choose 1 of 2

**Tips for this section:** Talk with someone who works in technology, or try a related hobby like coding, robotics, or photography.

- ☐ **9a** Research a digital technology career: education and training, costs, job outlook, pay, duties, and advancement (by searching, interviewing a professional, or visiting a workplace, with a parent or guardian's permission); discuss your findings with your counselor and what makes the career appealing

- ☐ **9b** Explore how digital technology skills could support a hobby or interest: research training, costs, and groups that support it, then discuss possible short- and long-term goals with your counselor