GRIT Camp Guide

For Hosts, Host Facilitators, Education Leads, Mentors, and Volunteers

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WHAT IS A GRIT CAMP?

GRIT Camp is a hands-on, adventure-style experience designed for youth ages 12–17 to explore the skilled trades. Each Student gets a blueprint (their adventure map) at the beginning and will use their hands and a variety of tools to build the items shown and fill in the missing pieces.

Along the way, Mentors will encourage Students, ask them critical-thinking questions, and teach safe practices. The Students will have their hands on the tools; the Mentors are just there to guide them. Mentors are experienced tradespeople who are trained in safety and background-checked.

Our goal is to spark curiosity and give young people a positive, real-world glimpse into the skilled trades—all in an approachable, bite-sized way.

THE CHALLENGE/STORY OF GRIT CAMP

College can be a great fit for some people, but it's not the right path for everyone. The trades open doors for people who like to work with their hands, build things that matter, and avoid student loan debt. Our communities also need the skilled trades to keep us sheltered, safe, and healthy.

The GRIT Camp challenge places students in a "what-if" world where crucial trade skills have been forgotten: carpentry, plumbing, and electrical work. The science behind them has also been lost. With blueprints full of missing pieces and clues, it's up to the Students to figure it out. They must figure out how to measure, cut, connect, and build as they bring their blueprint to life—the Mentors won't do it for them, but they'll ask questions to get the Students to think through the process.

That's the heart of GRIT: letting young people tackle real problems with their own hands, building confidence, curiosity, and practical skills that last a lifetime.

About the GRIT Foundation

The GRIT Foundation is a registered 501(c)(3) nonprofit organization.

EIN: 33-1405549

Contributions are tax-deductible to the extent permitted by law.

Effective Date of Exemption: October 9, 2024

Public charity status: 170(b)(1)(A)(vi)

Organization Name: The GRIT Foundation

GRIT CAMP ROLE DEFINITIONS

HOST

Definition: The individual or company organizing and supporting the GRIT Camp event.

Responsibilities:

- Coordinate and approve the camp date, schedule, and other major camp decisions
- Provide the facility and work areas
- Recruit the necessary Mentors, Volunteers, and Students
- Market the camp and secure sponsorships
- Provide or secure the Host-supplied tools, materials, food, and resources
- Select the Host Facilitator (or inherit those responsibilities—see below)
- Act as the primary organizational contact with the GRIT Foundation

The Host may also select a Host Facilitator to run the camp day operations. The Host is the one who makes the big camp decisions. The Host may also take on other roles, such as Education Lead or a Mentor.

HOST FACILITATOR (Highly Recommended)

Definition: A designated point of contact who is CC'd on emails between GRIT Administrative Staff and the Host, manages camp flow, and owns camp day operations.

Responsibilities:

- Coordinate the day-of setup
- Make sure the Stations, Staging Areas, food areas, and check-in areas are ready
- Assign and direct Volunteers
- Manage check-in, drop-off, and pickup
- Manage food, breaks, room changes, and transitions
- Keep the camp on schedule
- Communicate logistical changes
- Coordinate with the Education Lead
- Handle parent questions during the event
- Make sure shared tools and supplies reach the right stations
- Coordinate the group photo, surveys, cleanup, and dismissal
- Make sure any agreed camp-day changes are communicated to everyone affected
- The Host Facilitator and Education Lead may adjust pacing, activity order, layout, and selected activities to suit the people and conditions on the day. Accommodate preferences wherever practical; when they conflict, the on-site leader responsible for that area makes the decision and tells the people affected. Keep safe tool use and direct supervision in place. These guides provide practical defaults, not a script for every situation.

Host and Host Facilitator responsibilities may also be delegated to other individuals. For example, a Host may have a dedicated procurement team and may want to have them take ownership of material purchasing and inventory.

GRIT ADMINISTRATIVE STAFF

Definition: GRIT Foundation staff members who communicate with Hosts and Host Facilitators, provide resources, ship GRIT-provided tools and materials, and provide required documentation.

Responsibilities:

- Initial camp intake and coordination with the Host
- Help establish the camp date, location, expected attendance, and primary contacts
- Provide the current registration links and camp documents
- Provide waivers, safety acknowledgments, and other required forms
- Track Student and Mentor registration
- Initiate and track Mentor background checks through Checkr
- Collect Mentor photos and prepare badges
- Provide access to the current Host and Mentor training resources
- Make sure the Host receives the current versions of the guides and Blueprint
- Ship GRIT-provided PPE, Blueprints, electrical kits, badges, and personalized tools
- Coordinate any GRIT-owned tools that are being loaned to the Host
- Help the Host and Host Facilitator identify missing GRIT-provided items before camp
- Maintain the current source documents, forms, links, and revision history
- Support communication among the Host, Host Facilitator, and Education Lead
- Collect or organize requested post-camp documentation, photos, surveys, and feedback

Note: GRIT Administrative Staff do NOT manage day-of camp operations.

EDUCATION LEAD

Definition: A trained tradesperson who is the instructional leader of the GRIT Camp. This person arrives before all Mentors (at least 120 minutes before camp) and debriefs them afterward. The Education Lead is not a paired Mentor, saw-area supervisor, or floater; the role focuses on Mentor coaching, gaps in instruction, and the lunch learning sessions.

Responsibilities:

- Spend the first 60 minutes before camp with the Host Facilitator checking tools, equipment, materials, Station setup, and necessary changes to the original plan
- Spend the final 60 minutes before camp coaching the Mentors
    - Review the Mentor Quick Start Guide and current Blueprint
    - Rehearse the Socratic teaching method
    - Make sure Mentors understand the commonly missed teaching moments
    - Confirm the selected pipe joining and/or aluminum repair processes
- Lead or coordinate the Challenge Introduction and Safety Briefing
    - Connect the skilled trades to applied science and meaningful work
    - Introduce Students to PPE and safe practices
    - Introduce Students to the tools
- Lead the lunch science session
- Watch teaching quality and instructional pace throughout the camp
- Provide quick coaching when Mentors begin taking over

- Lead the short closing
- Debrief with the Host Facilitator and Mentors after the Students leave

Note: GRIT's Head of Training (Ty Branaman) can travel to the GRIT Camp and serve as the Education Lead. If he is not present, this role must be assigned to another qualified person who has read the Education Lead Guide, not divided informally among the Host and Mentors.

MENTOR

Definition: A trained tradesperson coaching the Students through hands-on learning. Each Mentor may coach no more than 2 Students; Hosts may choose a 1-to-1 ratio. Plan at least one additional floater Mentor, preferably an experienced Mentor, to cover breaks and provide support.

Responsibilities:

- Review the GRIT Camp modules in advance
- Supervise and coach their 1–2 assigned Students through the modules at their Station
- Follow the selected camp processes (such as the approved pipe joining process)
- Use the Blueprint and Mentor Quick Guide to guide discovery
- Use the Socratic Method to guide Students by asking questions, not telling them answers
- Allow Students to measure, decide, build, test, and correct their work
    - Allow Students to make mistakes safely, not immediately correct them
- Demonstrate tasks only when necessary for safety
    - Return the tool or decision to the Student to complete on their own
- Reinforce safety guidance and protocols
- Ask the Education Lead for help when a process or explanation is unclear
- Complete a background check with Checkr prior to GRIT Camp participation

Note: For a full-size camp of 16 Students, plan at least 8 assigned Mentors PLUS at least 1 floater Mentor (9 total). Add more assigned Mentors when choosing 1-to-1 groups. The Education Lead is a separate role. Mentors should NOT be alone with a Student out of view at any point.

VOLUNTEER

Definition: An individual supporting the Host Facilitator with event-day logistics and general assistance, NOT education or direct work with the Students.

Responsibilities may include:

- Check-in and parent communication
- Food and refreshments
- Photography and video
- Move and restock supplies
- Support transitions between activities
- Clean and organize the camp space
- Conduct surveys and exit interviews
- Support drop-off and dismissal

Note: Volunteers are NOT Mentors and do not guide Students through modules. They should also NOT be alone with a Student out of view at any point.

STUDENT

Definition: A youth participant doing the work and exploring the trades during the GRIT Camp. They will create a build based on the Blueprint given to them, and it is okay if the builds are not identical; Students will make mistakes along the way and customize their boxes to their liking.

Responsibilities:

- Work with their assigned Mentor to fill out the Blueprint and build the items shown
- Follow all safety protocols and wear PPE at all times
- Handle the tools and materials appropriate to the activity
- Measure, predict, test, and make decisions, learning from safe mistakes
- Ask questions and participate in discussions with their Mentor
- Clean up and transition between activities smoothly
- Explain some of what they discovered by the end of camp

Note: The maximum number of Students per GRIT Camp is 16. The recommended minimum is 10 Students, but smaller GRIT Camps are possible and can still be very rewarding.

PARENT

Definition: A Student's parent or guardian who handles all release forms and ensures that Students are dropped off and picked up.

Responsibilities:

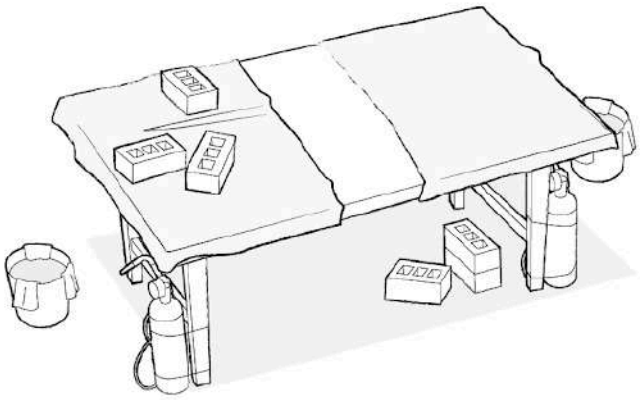
- Complete registration, releases, and required forms
- Provide accurate emergency and contact information
- Communicate allergies, accommodations, or other important Student needs
- Follow the stated drop-off and pickup process
- Arrive on time for pickup
- Direct camp-day questions to the Host Facilitator

Parents do NOT participate in the workflow unless they are a registered Volunteer or Mentor.

GRIT CAMP WORK AREA DEFINITIONS

STATION

Definition: A workspace (normally a table) where 1–2 Students are paired with 1 Mentor to build their project together. It is where the Students practice the trade skills. Stations should have the torches (tied down), water buckets, cored bricks, and fire blankets. Students and Mentors do NOT rotate Stations; they stay at ONE work Station for the carpentry and pipefitting tasks.





Plan to have 1 Station for every 2 Students who sign up (e.g., 10 Students = 5 Stations, etc.). When determining tool and material counts, "X per Station" generally means "X per 2 Students."

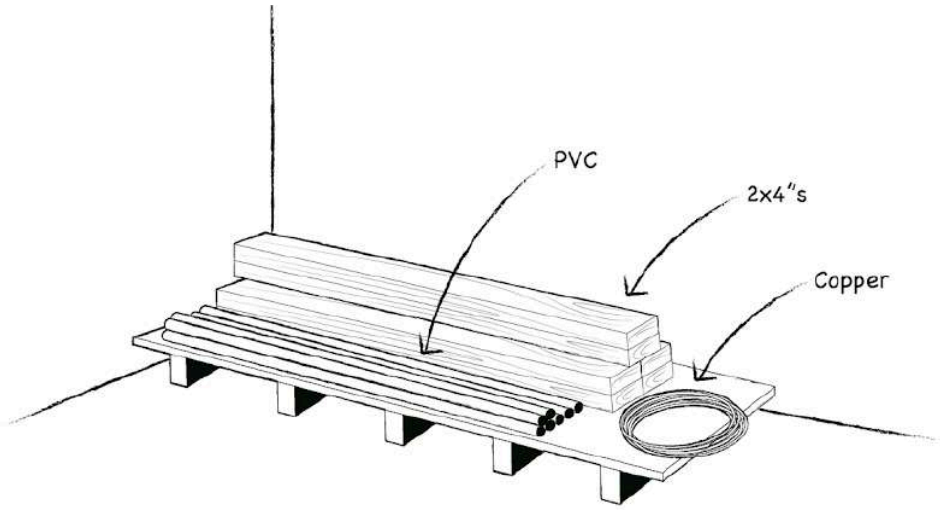
STAGING AREA(S)

Definition: Shared spaces within the camp that hold larger tools/materials that cannot fit at the Stations.

The area(s) will include:

- A line of guarded, clamped miter saws (shared by all Students, supervised by Mentors)
- A table or pallet with larger pieces of lumber, copper, or PVC
- Supply table(s) or cart(s) with smaller materials, supplies, and possibly hand tools

Students and Mentors will move between their Stations and the Staging Area(s) as needed during each module.





GRIT CAMP PREPARATION TIMELINE

Plan 10–16 weeks ahead for a GRIT Camp and allow at least one week of follow-up after camp. Here is the preparation timeline:

10–16 Weeks Before Camp

- Complete GRIT Camp Host interest form
- Have a short introductory conversation with GRIT (usually 30 minutes or less), confirm feasibility with your team, then arrange an approximately one-hour Camp Ready walkthrough for people, supplies, and timing. The Host and GRIT confirm the date together. Use Camp Ready for the current plan and printable supplies and timeline views.
- Review the Host and Mentor Quick Start Guides
- Confirm you have the time, space, and resources to commit to hosting a GRIT Camp
- Meet with GRIT's Executive Director to discuss questions, logistics, and expectations
- Confirm the camp date with GRIT, main point of contact, and Host Facilitator (if chosen). The date may be confirmed before Mentor training is complete.
- Identify experienced tradespeople who may serve as Mentors
- Have potential Mentors register early. Recruit for no more than 2 Students per assigned Mentor, plus at least 1 floater and a separate Education Lead; there is no fixed 6-Mentor requirement.
- Enroll Mentors in the required approximately 3-hour online course. The Host and Host Facilitator are encouraged to take it.
- Identify the ONE torch system Mentors feel most comfortable with
- Review the GRIT Camp Guide (this guide) and Camp Blueprint
- Estimate your target student count
- Review overall camp budget
- Identify potential sponsors and begin sponsor & community outreach
- Reserve your facility and confirm space requirements
- Review the GRIT Camp materials list (Master Materials List in this guide, plus any additional modules of your choice)
- Review what tools and materials you already have

6–12 Weeks Before Camp

- Create a waiting list for openings before the Student registration deadline (2 weeks before camp)
- Continue sponsor & community outreach
- Confirm Mentor availability
- Target Mentor course completion 6 weeks before camp. The firm deadline is 3 weeks before camp; if required training is incomplete then, postpone and notify Students and parents.
- Begin promoting the camp and recruiting Students 6–8 weeks before camp using GRIT-provided flyers and the registration link

- Order any specialty or hard-to-source items

4–6 Weeks Before Camp

- Continue promoting the camp and recruiting Students using the GRIT-provided flyers and registration link
- Track Student registration and manage overrecruiting as it happens
- Follow up with parents as needed
- Collect sponsor logos
- Order remaining materials
- Confirm tool inventory
- Confirm tables and workspace layout
- Review the cut list
- Optional: Build a sample project if the Host chooses. The Host decides whether and when to complete it and supplies the materials.

2–4 Weeks Before Camp

- Pre-cut project materials
- Confirm the backing board fits inside the frame's outer edges: 17.5″ x 12.5″ is the starting size, intentionally inset. Aim for about ½″ inset at the edges, measure the actual assembled frame, and confirm secure fastening.
- Confirm that saw, table, and torch counts are appropriate for the camp size
- Track Host-purchased materials and plan for them to be ready before camp. GRIT Student items and participant badges ship 1–2 weeks before camp.
- Inspect tools and replace worn drill bits or saw blades
- Confirm saw clamp functionality
- Confirm enough safety glasses for everyone attending (and some extra, if needed)
- Finalize and order or print sponsor signage
- Fill Student openings from the waiting list only before the firm registration deadline, 2 weeks before camp
- At 3 weeks before camp, verify required Mentor training is complete and confirm assignments: no more than 2 Students per assigned Mentor, plus a floater and separate Education Lead
- Create a plan for lunch during camp
- Close Student registration 2 weeks before camp to allow badge preparation and Student materials to be sent. GRIT sends the first reminder email 2 weeks before camp.

1 Week Before Camp

- Track delivery of GRIT-provided Student items and participant badges, which ship 1–2 weeks before camp
- Confirm Mentor attendance
- Confirm attendance of Students registered by the 2-week deadline
- Gather printed materials and quick-start guides
- Review quick-start guides

- Assign camp-day responsibilities and confirm them with Host Facilitator, Education Lead, Volunteers, and Mentors
- Name the attendee behavior support adult and confirm that they are experienced with children and available to respond.
- Prepare Mentor walkthrough materials
- Prepare Student welcome and introduction
- Verify your selected torch system and supplies (including wrenches, if applicable)
- Pre-order lunch for the day of camp
- GRIT sends the second reminder email 5–7 days before camp

Day Before Camp

- Confirm room layout and table setup
- Set up work Stations
- Organize all materials in the Staging Area
- Verify project kits
- Inspect tools one final time
- Set up sponsor signage
- Print participant lists
- Ensure all safety equipment is available
- Create a plan for pairing Mentors with Students
- Education Lead meets with Host and Host Facilitator at event space

Camp Day

Before Student Arrival

- Set up a welcoming check-in spot
- Conduct the Mentor walkthrough with Education Lead one hour before students arrive
- Review safety expectations
- Ensure all materials are ready before students enter
- Have a Volunteer welcome Students and start engaging the Mentors and Students

During Camp

- Support Mentors
- Keep the camp on schedule
- Capture photos and videos
- Welcome sponsors and visitors

Immediately After Camp

- Collect a group photo of all participants
- Thank Mentors and Volunteers
- Clean up and inventory reusable materials
- Note any supplies that need replacing

Within 1 Week of Camp

- Complete the Host feedback survey
- Share photos with GRIT via the GRIT-provided media upload link
- Thank sponsors and community partners
- Share your camp recap on social media
- Encourage Mentors and participants to complete surveys
- Begin discussing future GRIT Camp and/or workshop opportunities

GRIT CAMP PREPARATION

Allow 10–16 weeks to prepare for a GRIT Camp. This provides time for:

- Site planning tailored to the Host's facility
- Hosts, Host Facilitators, and Mentors to understand the GRIT Camp contents and flow
- Securing sponsorships and funding
- Recruitment and community outreach
- Mentors to learn and practice the Socratic method
- Purchasing materials
- Pre-cutting materials that require it
- Hosts and/or Host Facilitators to create an optional sample build if the Host chooses; the Host determines its timing and provides its materials

Mentors & Hosts will also use this time to take online courses that prepare them for the prep, procedures, and Socratic approach of the GRIT Camp.

GRIT Camp Costs

The GRIT Foundation does NOT charge Hosts to hold a GRIT Camp. However, the Host must provide the tools, materials, and site. They may already have many of those items or ask Mentors to bring their own, which can reduce the cost significantly.

Hosts are also responsible for recruiting Mentors and Volunteers, who may or may not be paid employees. The GRIT Camp Cost & Sponsorship Guide shares camp cost estimates, points to consider for counting *your* GRIT Camp's cost, and ways to seek sponsorships to reduce the cost.

Picking a GRIT Camp Date

Choose a date with GRIT during the recommended 10–16 week planning period. Dates may be confirmed before Mentor training is complete. Consider:

- Company calendar
- Personal calendar
- Calendar holidays
- Seasonal workloads
- Overtime pay on weekends
- Whether you want a GRIT Education Lead or other representatives
- Time needed for planning
- Other local community events
- School calendar

Weekday or Weekend: _____ GRIT representative requested? (Y/N): _____

Possible Dates: _____

Confirmed Date: _____ Do community events coincide? (Y/N): _____

If a set GRIT Camp date needs to be postponed or canceled for any reason, please contact the GRIT administrative staff. They will communicate the change with all registrants and share any new information about a postponed camp date as the Host wishes.

Hosts or Host Facilitators may also choose to contact parents as desired, but GRIT handles official communications.

Facility Planning

Identify and reserve a facility during the recommended 10–16 week camp planning period. Some common facilities include

- Tent rentals in a backyard or park
- Shared space with another contractor
- Union hall
- Your existing company headquarters or educational facility
- A large rented space

If you choose an indoor venue, there must be appropriate ventilation for torch work.

If you choose an outdoor venue, have a contingency plan in place for inclement weather. In the summer, plan to have fans in the area. In the winter, plan to have heaters.

Camp Location: _____ Indoors or Outdoors? _____

Ventilation strategy for torch work (indoors): _____

Inclement weather strategy (outdoors): _____

Facility Configuration

At least 8 weeks before the GRIT Camp, begin planning how the GRIT Camp will utilize the facility space. There will be four main areas to consider:

- Drop-off & pickup
  - Have clear access instructions and visible welcome signage
- Check-in & introduction area
  - Check-in table, chairs, and room for refreshments
- One seating area for the safety briefing, electrical module, and lunch (preferably indoors)
  - Tables and chairs in a U shape, with seating for all Students and attending adults; include Mentors, Volunteers, the Education Lead, and Host staff.
- One large indoor OR outdoor area for carpentry, pipefitting, torchwork, disassembly, and final kit customization
  - One table (Station) per Mentor group (2 Students; could also use kneeling pads), all arranged in a U shape
  - Line of miter saws with guards and clamps (up to 4 saws per camp)
  - Central tables and/or pallets with materials
  - Possibly a table or cart with hand tools (if hand tools are not at Stations)
  - Refreshments table on the open end of the U shape

Keep a site map that you can draw on, if you can. Determine where you will need directional signage and how you will walk the Mentors through the facility prior to GRIT Camp.

GRIT Camp Recruitment

Hosts recruit Mentors early in the 10–16 week planning period. Begin Student recruitment 6–8 weeks before camp and complete all Student registrations 2 weeks before camp, allowing

time for badges and Student materials. Recruit Volunteers in time to finalize their details 2 weeks before camp:

- Maximum 16 Students (at least 10 recommended; no fewer than 2)
    - Local middle and high schools
    - Homeschool groups
    - Churches and youth organizations
- At least 1 Mentor per 2 Students PLUS an extra/floater Mentor (background-checked by GRIT)
    - Trade schools
    - Local trades contractors (HVAC technicians, electricians, etc.)
- Volunteers as needed for camp setup & cleanup, photography, check-in, and lunch
    - Schools (high schools and adult education facilities)
    - Churches
    - Community groups

Specific recruiting recommendations are available in the GRIT Recruitment Guide.

Hosts must share all recruitment lists with GRIT. GRIT will conduct Mentor background checks through Checkr. GRIT will be responsible for collecting emergency contact information for each one in case of a major injury or medical event.

Target Students: _____

Mentors Needed (maximum 2 Students per Mentor; round up, PLUS at least 1 floater): _____

Station Tables Needed: _____ GRIT representative requested? (Y/N): _____

Procurement

Material and tool procurement should start AS EARLY AS POSSIBLE. Ideally, it will begin as soon as you have a GRIT Camp date on the calendar.

Take the Master Material checklist in the Master Materials List section and make a plan to gather the items you will need. Purchasing all the materials is a hefty expense, so here is our recommendation:

1. Search for items in the Host's warehouse.
2. Ask Mentors if they are willing to bring their own tools or any materials.
    a. See the Host Quick Start Guide for items you can ask Mentors to bring.
    b. See the GRIT Camp Cost & Sponsorship Guide for a method recommendation.
3. Purchase any remaining items from supply houses, Amazon, etc.

Order specialty or hard-to-source Host-supplied items early, and check your inventory 2 weeks before camp so there is time to fill gaps. Make sure saws, torches, drills, and other tools work safely; source replacements as needed. GRIT Student items and participant badges ship 1–2 weeks before camp, so track those deliveries separately. A sample build is optional; if chosen, the Host supplies its materials and sets its timing.

The back of this guide has some purchasing links for common items.

Creating a Sample Project & Pre-Cutting

A sample project is entirely optional. The Host decides whether and when to complete it and is responsible for its materials. If the Host chooses to make one, use the Blueprint and Mentor Quick Start Guide; the Host Facilitator or Education Lead may help.

An optional sample project can help the Host explore how materials fit together, how tools are used, and how the selected torch method works. If completed, it may be used during the Mentor walkthrough with the Education Lead on camp morning.

Verify backer dimensions and secure fastening against the actual frame dimensions before bulk cutting; a complete sample project is not required for that check. Here are the items that need to be pre-cut in batches 2–4 weeks prior to camp:

- 2×4s — 5′ board lengths
- Luan or pegboard backing — 17.5″ x 12.5″ starting size, intentionally inset; aim for about ½″ inset from the frame's outer edges and verify against the measured frame
- (Optional) Other wood types for discovery — Host preference

Do NOT pre-cut the PVC or copper to the exact lengths on the Blueprint.

Refreshment Planning

Refreshments are a commonly overlooked aspect of GRIT Camp preparation. Try to have these figured out around the same time as material procurement. (Check all that apply.)

Drinks: ☐ Bottled water ☐ Juice ☐Sports drink ☐Coffee ☐Other

Snacks: _____

Coffee Cups? (Y/N) _____ Cold Drink Cups? (Y/N) _____ Napkins? (Y/N) _____

Lunch Planning

Hosts will need to provide lunch for everyone at the GRIT Camp.

Details, demos, and purchasing links to the discovery items may be found in the GRIT Camp Lunch Guide, but here is a space to begin planning food service:

Number of Students: _____ Number of Adults (Mentors, Volunteers, etc.): _____

Food Served: _____ Served By: _____

Drinks Served: _____ Utensils: _____

Plates/Bowls Needed: _____ Napkins/paper towels: _____

Where to Wash Hands: _____

Delegating Camp Day Responsibilities

In the week leading up to GRIT Camp, it's up to the Host Facilitator to delegate the camp-day responsibilities among Volunteers and notify them of their role before camp. Mentors should also be aware of specific safety or hospitality responsibilities beyond mentorship.

Before camp, the Host Facilitator names an adult experienced with children who can give clear directions and set firm, respectful boundaries. This may be the Host Facilitator or

another suitable adult with time to respond. Tell Mentors who this person is. If a Student cannot participate safely, pause tool use and involve that adult while maintaining supervision; contact the parent if safe participation cannot resume. This support does not replace the assigned Mentor.

General/All-Day

- Recommended, optional: ONE Volunteer for digital photography or videography throughout camp. This is separate from the instant-photo role needed for the final project.
- At least ONE Volunteer: Help manage transitions (such as by cleaning up after each activity, arranging new items, etc.)
- At least ONE Volunteer: Supervise the refreshments table

Check-In

- At least ONE Volunteer: Checking Students in and assigning badges
- ALL Mentors: Welcoming Students and getting to know them





Safety

- ALL Mentors: Encourage Students to discover their tools upon receipt
    - Disassemble and reassemble their 6-in-1 screwdriver
    - Explore the tape measure and describe how it works and what the lines mean

Work Area for Carpentry & Pipefitting

- Suggested, not required: ONE Volunteer supervises saw-area flow and helps maintain the area. Each Student's Mentor remains responsible for instruction and direct supervision at the saw. This Volunteer is not the Education Lead or the floater Mentor.
- At least ONE Volunteer: Instant camera photography (ESPECIALLY during the sawing and torch use)



Lunch

- At least ONE Volunteer: Arrange lunch, plates, utensils, and discovery items in the lunch area as the Students and Mentors finish their last activity before lunch

Electrical

- ALL Mentors: Follow all safety protocols and make sure the multimeter is set up correctly before letting Students use it
- ALL Mentors: Bring your electrical multimeter, if asked, and set it up accordingly
    - Black lead goes to COM; Red lead goes to the voltage and resistance jack
    - Set the meter to DC volts for batteries and the low-voltage camp circuit
    - Resistance or continuity can be checked only with power removed

Final Customization Module

- Instant Photography Volunteer(s): Organize photos by each Student's face throughout the day; lay these stacks out on a table when the group begins the final module
- ONE Volunteer: Bring out the craft items on a central table or cart when the group begins the final customization module
- ALL Mentors: Supervise your Students and ensure fairness (and safety with scissors, hot glue guns, and possibly torches)



Signage

GRIT Camps need some basic welcome and directional signage, usually made the week of camp. They may be professionally made or made in-house with markers and paper or poster board:

- Welcome
- Check-in table directions
- Restroom directions
- Snacks
- First aid
- Backdrops for photos (optional)

MASTER MATERIALS LIST

This materials list is a comprehensive list of all the tools that will either be procured by the Host or provided by GRIT. The links lead to pictures of the items so that you can identify them at supply houses. Feel free to copy this list and use it as a checklist for acquiring the materials.

GRIT provides all Student safety PPE, blueprints, some personalized tools, and electrical kits. The Host provides all other items.

For purchasing, the Host confirms each item as supplied by GRIT, purchased/donated by the Host, or a specifically confirmed Mentor loan. Record quantity and pack size, selected activity, named provider, and any shortage in Camp Ready; print its supplies view for the shopper. Include all Students, Mentors, Volunteers, the Education Lead, and Host staff when counting meals, drinks, utensils, and lunch seating.

The Host selects optional modules and lunch demonstrations in advance with the Education Lead. Their materials and staffing are required only when selected. On-site leaders may adapt that selection when time, materials, and competent supervision permit.

A cost breakdown and some strategies to help reduce costs, such as asking Mentors to bring their own tools or securing sponsorships from local businesses or organizations, are available in the GRIT Camp Cost & Sponsorship Guide.

Host Provides:

Safety Items

- ☐ Hair ties
- ☐ Fire extinguishers (1–2 throughout the facility/space)
- ☐ Fire blankets (1–2 within reach of each torch Station)
- ☐ First aid kits (1 full one in work areas with saws and torches; 1 small one in other areas)
- ☐ Extra safety glasses (for ALL others in work area; GRIT provides glasses for Students)
- ☐ Situational: Low-level carbon monoxide (CO) monitor (at least 1 wall-mounted or personal if torch work must be done indoors)

General Setup & Administration Items

- ☐ Tables (1 folding or sturdy work table per 2-Student Station and as needed to hold tools and materials for Staging Areas)
  - ☐ Total needed: _____
- ☐ Chairs (one seat for every Student and attending adult; count all Mentors, Volunteers, the Education Lead, and Host staff)
- ☐ Facility to handle the camp in the event of rain or sun (e.g., warehouse or large tents)
  - ☐ Total needed: _____
- ☐ Signage for restrooms & the event (clearly labeled signs or banners)
  - ☐ Markers for labeling
- ☐ Extension cords & power strips
- ☐ Trash cans (2–4 large cans spread out in the event area)
- ☐ Cleanup supplies (brooms and dustpans, garbage bags by box/roll sized to the bins, paper towels by roll/multipack, wet wipes by tub)
- ☐ Optional: Digital photography or videography by a designated volunteer
- ☐ Optional: Outdoor heaters or fans (based on the weather and season)
- ☐ Optional: Rolling whiteboard w/ dry-erase markers & erasers for Host Facilitator to use as signage throughout the camp area

Photography for Final Customization Module

- ☐ Polaroid/Fujifilm-type instant mini camera

- [ ] Instant mini film (at least 5 pictures per Student, plus about 10% spare). Buy film matching the exact camera in 10- or 20-exposure packs; for 16 Students, purchase at least 90 exposures, usually rounded to 100.

Station / Work Table Items (2 Students per Station)

- [ ] Cored bricks or fire bricks (4 per Station)
  - [ ] Optional alternative: Tristand pipe chain vise
- [ ] Bucket(s) of water filled halfway (1 per Station)
- [ ] Cloth rags (4 per Station)
- [ ] Torch rigs (1 per Station; no extra floater torch kit required; see GRIT Torch Joining Field Guide)
  - [ ] Option 1: Air-acetylene torch rigs w/ proper tips and service wrench
    - Tips for torch rigs: Brazing copper - TurboTorch A-8 (1 per Station)
    - Tips for torch rigs: Soldering aluminum - TurboTorch A-3 (1 per Station)
    - Striker with flints (if push-button is not available on torch)
  - [ ] Option 2: Propane or MAP-Pro torch
  - [ ] Option 3: Oxy-acetylene torch rigs w/ proper tips and service wrench
    - Striker with flints

Saw Staging Area Items

- [ ] Miter saws w/guards (1 saw for every 4 Students)
  - [ ] Sawhorses or another cutting platform
- [ ] Two working clamps per saw, or the saw's manufacturer-provided clamping system (preferred), used according to its instructions

Building Materials

Buying quantities: Count Student project sets, add one sample set only if the Host chooses to build a sample, then allow about 10% for mistakes and replacements; round up to whole packs. The 16-Student examples below allow 19 sets: 16 Student sets, 2 spare sets, and 1 optional sample set. If no sample is planned, omit that one set while retaining Student and spare quantities. This margin adds materials, not extra torch stations or a floater torch kit. Use available sound stock first. Check dimensions, compatibility, package count, and usable quantities before purchasing; weights are not interchangeable with piece counts.

- [ ] 2×4 lumber cut down to 5 ft lengths (1 per project set). Buy by the board: for 16 Students, allow 19 sound 8-ft boards if each must supply an uninterrupted 5-ft starter. Retain the 3-ft offcuts for practice; do not divide total footage by 8 and assume every cut will fit.
  - [ ] Drops or unused pieces can be used for discovery
- [ ] 17.5″ x 12.5″ luan backing or pegboard (PRE-CUT before camp; 1 per project set including sample + about 10% spare; 19 for 16 Students). This starting size is intentionally inset to prevent overhang. Aim for about ½″ inset from the frame's outer edges; measure the actual frame and confirm secure fastening before bulk cutting. Buy by precut panel or full sheet; verify the cutting layout and saw kerf before choosing the sheet quantity.

- [ ] ¾″ Schedule 40 PVC pipes (NOT pre-cut; purchase 14″ of stock per project set as a trimming allowance; finished cuts follow the Blueprint). Buy standard 10-ft lengths: for 16 Students, three lengths cover 19 sets plus cutting/practice allowance. Do not cut Student pieces before camp.
- [ ] ⅞″ OD ACR soft copper tubing, scrap or rolled (NOT pre-cut; purchase 14″ of stock per project set as a trimming allowance, plus separate practice stock; finished cuts follow the Blueprint). Buy by coil or usable scrap length: for 16 Students, a 25-ft coil covers 19 sets with about 2 ft 10 in left before cut losses; add more if the sample/training uses that reserve.
    - [ ] Alternatively, ¾″ ID plumbing copper can be used if ⅞″ OD ACR is not available
- [ ] Optional: Various sizes and shapes of lumber samples for discovery
    - [ ] Short off-cuts in different lengths (1/2 ft, 1 ft, etc.)
    - [ ] Pieces of 2×6 or 1×4 in softwood and hardwood
    - [ ] Scrap plywood squares or triangles
    - [ ] Blocks or dowels in different diameters
    - [ ] Rough-cut vs. finished/sanded pieces
- [ ] Optional: Other pipe sizes and types for discovery
    - [ ] ⅝″ OD soft copper tubing
    - [ ] Scrap copper tubing
    - [ ] Galvanized steel

Material Supply Table or Cart

- [ ] 3″ T-25 Torx-head wood screws (10 per project set). Buy 1-lb or 5-lb boxes, or count packs. For 16 Students, stage 190 usable screws and round the purchase up to a package total of at least 200. Read the package's piece count; one pound is not a fixed number of screws.
- [ ] 1 ¼″ finish nails (10 per project set). Buy by 1-lb box where practical; for 16 Students, stage 190 and buy a package total of at least 200. Verify the stated count for the exact nail gauge and length before choosing the box weight.
- [ ] PVC glue and primer cans taped together (1 set per Station). Buy matched PVC-compatible primer/cement pairs, commonly 4-oz or 8-oz cans. For 16 Students at 8 Stations, stage 8 pairs plus 1 shared spare pair; check product coverage and shelf life.
- [ ] Emery cloth sandpaper (at least 6″ per project set). Buy by roll; for 16 Students, a 10-ft roll covers 19 six-inch strips with a small remainder. Add training stock if needed.
- [ ] Teflon tape or pipe dope (1 compatible roll or small can per Station). Buy rolls or cans, not loose footage; for 16 Students at 8 Stations, stage 8 plus 1 shared spare. Verify compatibility with the PVC/copper threaded connection.
- [ ] ¾″ Schedule 40 PVC adapter, slip socket FPT, coupling (1 per project set). Buy individually or in bags: for 16 Students, provide at least 19 usable fittings; round to a 20-count purchase where available.
- [ ] ¾″ Schedule 40 PVC slip socket coupling (1 per project set). Buy individually or in bags: for 16 Students, provide at least 19 usable fittings; round to a 20-count purchase where available.

- [ ] ¾" Schedule 40 PVC cap (1 per project set). Buy individually or in bags: for 16 Students, provide at least 19 usable fittings; round to a 20-count purchase where available.
- [ ] ¾" copper sweat x ¾" NPT adapter (1 per project set). Buy individually or in bags: for 16 Students, provide at least 19 usable fittings; round to a 20-count purchase where available.
- [ ] Copper cap for ⅞" OD tubing / ¾" nominal copper (1 per project set including sample/spares, only when the Host selects the capped-end option). Specify a plain cap to join during camp, or identify a prepared subassembly explicitly. Omit caps for the approved swaged-end option and provide its matching tool instead. For 16 Students using caps, provide 19 and round to a 20-count purchase where available.
- [ ] 0%, 5%, or 15% phos-copper brazing rods, only for the selected brazing method. Buy rods in a labeled tube or weight pack, commonly 1 lb. Plan at least 1 full-length rod per project set plus any additional training demand; for 16 Students, select a pack with at least 19 rods. Verify rod diameter, length, count, and alloy; do not assume rods per pound.
    - [ ] Optional: Replace with lead-free, silver-bearing plumbing wire solder AND a matching plumbing flux if soft-soldering only. Buy solder by spool weight (for example, 1-lb spools) and flux in small tubs. Estimate consumption from practice joints or an optional sample build, multiply by project sets, and round up; provide each active Station access to the selected solder, flux, and brush.
- [ ] Cardboard to use over each table when gluing (1 per Station)
- [ ] Optional: Other fastener types and sizes for discovery/discussion
    - [ ] Self-tapping screws
    - [ ] Drill point screws
    - [ ] Concrete screws
    - [ ] Roofing nails
    - [ ] Framing nails

Hand Tools (at Stations or at a central table/cart; acquire at least 1 item per 2 Students)

- [ ] Rotary drill with a ½" chuck compatible with the selected Forstner-bit shank. Most Forstner bits do not fit an impact driver's quick-change chuck. The drill may also drive screws; a separate impact driver is optional.
- [ ] 15/16" Forstner bit preferred; 7/8" alternative after a fit check (source these EARLY and include some extras)
- [ ] 1⅛" or 1 3/16" Forstner bit (source these EARLY and include some extras)
- [ ] T25 drill bit (1 per 2 Students PLUS some extras)
- [ ] Hammer
- [ ] PVC cutters
- [ ] Copper tubing cutters
- [ ] Copper deburring tools
- [ ] Pliers
- [ ] Adjustable wrench

- [ ] Optional: 7/64″ or ⅛″ pilot bit (keeps wood from splitting in dry climates)
- [ ] Optional: Speed squares (for drawing straight lines)
- [ ] Optional: Clamps (any type)
- [ ] Optional: Needle-nose pliers (may help with holding nails in place)
- [ ] Optional: Swaging tools (for discovery or if the Host chooses not to use caps)

Electrical Circuit Components & Tools

- [ ] Good AA batteries (at least 2 per circuit kit plus sample/spares). Buy multipacks of the exact kit size/type; for 16 Students, allow at least 38 usable cells and round to available pack sizes, such as 40 or 48.
- [ ] Dead and/or corroded AA batteries (at least 2 per Student PLUS extras)
- [ ] Extra battery types for discovery, including dead and corroded
    - [ ] AAA
    - [ ] 9V
- [ ] Electrical multimeters (at least 1 meter per 2 Students)
- [ ] Extra 3V DC light bulbs for discovery (assorted good and defective)
- [ ] Optional: Extra circuit kits (GRIT provides enough electrical circuit kits; 1 per Student)
- [ ] Optional: Scrap copper wire (recommended for discovery)
- [ ] Optional: Toggle-style light switches (recommended for discovery)
- [ ] Optional: Breakers (recommended for discovery)

Craft Items (“Recommended” items are optional; you can choose your own):

- [ ] Scissors
- [ ] Hot glue guns and compatible sticks (buy glue sticks by bag or pound pack; match full-size versus mini sticks to the guns and test usage on the sample before rounding up)
- [ ] Paint markers (assorted colors)
- [ ] Mounting or double-sided tape (buy by roll; determine the total from five mounted photos per Student plus about 10% spare and the tape used on the sample)
- [ ] Highly Recommended: Varied pieces of scrap copper wire
    - [ ] #12 solid wire
    - [ ] #12 stranded wire
    - [ ] Thermostat wire (stripped and unstripped)
- [ ] Recommended: Decorative tape (duct tape, masking tape, painter's tape, gaffer tape)
- [ ] Recommended: Decorative items (colored paper, stickers, etc.)
- [ ] Recommended: Fairy lights
- [ ] Recommended: Pipe cleaners/chenille stems (craft type)

Lunchtime Activities (determine which activities you’re doing in the GRIT Camp Lunch Guide):

- [ ] Thermal imaging camera (strongly recommended; ask the group whether one can be borrowed). An infrared thermometer is the minimum substitute for the temperature activity; adapt the lesson if no thermal image is available.
- [ ] Food warming mat/hot plate

- ☐ Heat lamp
- ☐ Air cannons w/ paper cups
- ☐ Hand boiler
- ☐ Drinking bird w/ drinking cup
- ☐ Bernoulli bags
- ☐ Thermometer
- ☐ Tungsten, aluminum, and/or copper cubes of the same volume
- ☐ Tabletop Stirling engine (low-temperature-difference gamma or displacer-style)
- ☐ Spray bottle filled with water and a small tabletop fan
- ☐ For the selected tarp activity, provide one tarp or sheet large enough for the group. For the selected airflow-tracer activity, provide a site-approved tracer used as directed in the Lunch Guide, or ribbon/tissue when smoke is unsuitable. Buy supplies for the chosen demonstrations only.
- ☐ Atmospheric-pressure mat with hook/handle

Aluminum Repair Module Components

- ☐ Aluminum evaporator coil (availability will vary; try for 1 per 2 Students)
- ☐ Clean aluminum cans — 30 total per camp, including practice and spare cans
- ☐ Aluminum repair kit (1 per 2 Students)—Choose ONE type:
  - ☐ Lucas-Milhaupt AL 822 or Harris Aluxcor Zn78/22 flux-cored repair rod
  - ☐ SolderWeld Alloy-Sol with its matching powder flux
  - ☐ Uniweld UNI-4300 with its matching liquid flux
- ☐ Stainless steel wire brush (1 per 2 Students)
- ☐ ⅛″ drill bit or sharp awl for making holes (1 per 2 Students)

Disassembly Module Components

- ☐ HVAC blower wheel assemblies (ideally 1 per 2 Students but can also be done in groups of 4 Students)
- ☐ Condenser fan motor assemblies (ideally 1 per 2 Students but can also be done in groups of 4 Students)
- ☐ Penetrating oil spray (1 per 2–4 Students)

GRIT Provides:

- ☐ Waivers
- ☐ Safety acknowledgement
- ☐ Background check (via Checkr for Mentors upon sign-up)

Student Kits—1 per Student (GRIT ships Student items and participant badges to the Host 1–2 weeks before camp)

- ☐ GRIT-branded tape measure
- ☐ Pre-sharpened carpenter pencil (with sharpeners)
- ☐ Permanent marker
- ☐ 11″x 17″ GRIT Blueprint

- ☐ Student/safety badge
- ☐ High-visibility vest
- ☐ GRIT-branded tool belt
- ☐ Safety glasses (only for Students)
- ☐ Safety gloves
- ☐ Electrical circuit kit (with extras in case of out-of-the-box defects)
- ☐ GRIT-branded 6-in-1 screwdriver

GRIT may also be able to loan some hand tools to Hosts, which would be shipped with the Student kits. These tools will be subject to availability, so please call to check whether GRIT has the tools. If they are readily available and ready for shipment, we will send them.

MENTOR PREPARATION & SITE WALKTHROUGH

At least two weeks before the GRIT Camp, communicate the expectation that Mentors MUST show up to a pre-camp site walkthrough and coaching session one hour before the camp begins. If the Host Facilitator or an in-house Education Lead will take ownership of the walkthrough, plan it carefully; you may use the Education Lead Guide as a resource.

The site walkthrough must include:

- Sequence of the modules
- Station setup and arrangement
- Staging Areas and the materials and/or tools present
- Saw station hazards and safety practices
- PPE expectations for Students AND Mentors
- Blueprint review (and emphasis that it must be used the *entire* time)



- Review of the Blueprint and, if the Host chose to complete one, the optional sample project
- Material use and considerations:
    - Lumber (and its nominal vs. actual dimensions)
    - Fasteners (and whether to use an impact driver/drill or hammer)
- Tool use and considerations:
    - 6-in-1 screwdriver
    - Tape measure
    - Saw (and clamps)
    - Drill (and bits)
- Torch use refresher

    - Selected torch system (air-acetylene, oxy-acetylene, or propane)
    - The solder or brazing alloy and how to apply it

This coaching session should also reveal the key teaching points and how the Mentors relate to the materials, tools, and overall camp setup:

- Using the Socratic method in general
    - Ask the Students how they think things work (instead of giving direct answers)
    - Let mistakes happen safely
    - Let the Students do all the hands-on work
    - Only directly intervene if the situation is unsafe
- Carpentry
    - Why a 2×4 is actually 1.5″ x 3.5″
        - Explain that nominal sizing is different from actual
        - Explain losses during processing
    - Reading a tape measure properly
    - Getting the correct cut
        - Explain saw blade kerf
        - Explain how to put the saw blade on the correct side of the cut line
    - Using clamps to hold wood in place
    - Safe body positioning before drilling or sawing
        - Sawing: One hand on the handle, other behind the back
        - Drilling: Get Students to think about drilling down, not sideways
- Pipefitting
    - Using the correct cutter type for the pipe
    - Cutting PVC and using a coupling if the Students glue the PVC outside the box
    - Using cored bricks to hold the copper in place while cutting or brazing
    - Basic torch and fire safety
    - Joining method and flux use (based on method chosen from Torch Joining Field Guide)
- Electrical
    - Multimeter use
    - Good vs. bad battery voltage
    - Good vs. bad bulb resistance
    - Series vs. parallel circuit behavior

Mentors must complete the approximately 3-hour Mentor course, targeting 6 weeks before camp and finishing no later than 3 weeks before camp. The Host and Host Facilitator are encouraged to take it. If required training is incomplete at the deadline, postpone and notify Students and parents. We also recommend sending out extra resources at least a week before the walkthrough (such as via the Mentor Quick Start Guide, the respective torch method chosen from the Torch Joining Field Guide, etc.).

The walkthrough itself should take place at least 1 hour BEFORE camp. Then, let the Mentors know when they can expect to be paired with their Students.

The Socratic Method and Handling Mistakes

The goal of the GRIT Camp is to spark curiosity in the science of skilled trades work. We do that with the Socratic method.

The Socratic method has four key steps:

1. Observe. Ask the student to describe what they see, measure, or expect.
2. Ask one question. Use what, where, how, or why. Do not stack five questions together.
3. Wait. Give the student enough silence to think, inspect, and try.
4. Nudge. If they are stuck, reduce the size of the problem. Point to the Blueprint, a meter reading, or a reference edge instead of giving the answer.

Here is an example:

1. Observe: “Let’s look at the dimensions on the Blueprint.”
2. Ask one question: “If we’ve got this 2×4, how do we need to cut it to make this box?”
3. Wait: Student looks at the Blueprint. “We measure these numbers and cut them, right?”
4. Nudge: “Sounds like a good idea. Let’s take a closer look to see if you’re right, though. Are those numbers lined up with the cuts that we see on the Blueprint?”

In the case above, after some back-and-forth, the Mentor’s guidance will help the Student come to the conclusion that they will need to subtract the board’s width or depth from the dimensions to get the actual cut lengths.

Again, it’s okay if Students get the answers wrong! Instead of correcting the Students, Mentors should give them a reference or follow-up question, or they can let the Student make a small, safe, fixable mistake. One example of a common, fixable mistake is when a Student glues the PVC fittings outside the box and can’t get the pipe in. We can always cut the pipe and glue the ends together with a coupling inside the box.

Throughout the day, Mentors should ask their Students several of these types of questions about what they think is happening and what to do next. Several of these instances are covered in the Mentor Quick Start Guide.

Mentor Attire

Mentors will be leading by example throughout the camp, and their appearance is no exception:

- Wear professional work clothes and work boots or other closed-toe, safety-style shoes appropriate for a trades professional
- Tie long hair back

Mentors should also bring their own basic PPE, including:

- High-visibility vest (optional for Mentors)
- Safety glasses
- Gloves



Mentors do not need to arrive at the GRIT Camp site with their PPE on. They can put it on with their Students during the safety briefing.

FACILITY SETUP

The day before camp, the Host and/or Host Facilitator (if assigned) and other delegates will physically prepare the facility.

We'll break down the preparation phases by area.

General Site and Check-In Area Setup

Students and Mentors should know where to go as soon as they arrive. Set up:

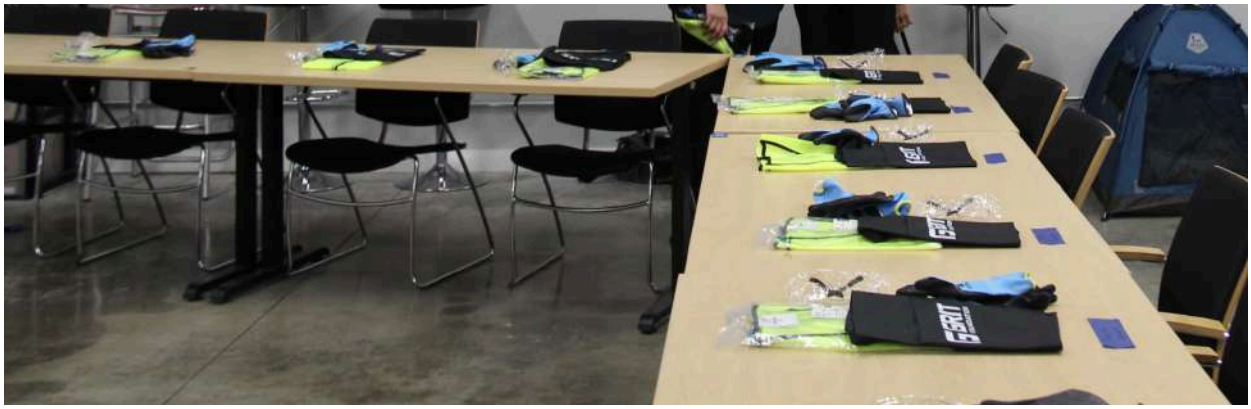
- Directional signage
  - Check-in area
  - Restrooms
  - First-aid kits & snacks in camp area
- Check-in table
  - Set up table and chairs for Volunteers
  - Make and put up a "Check-In" sign at the table
  - Print and organize Student and Mentor badges
  - Make space for light refreshments to go on the morning of camp
  - Print the attendance sheet

Suggested time for a GRIT Camp is 9:30 AM to 3:30 PM. The Host will choose the schedule. The Host Facilitator MUST communicate the drop-off and pick-up times to the GRIT admin staff, as that information will be communicated to ALL parents. The Host Facilitator must also instruct Mentors and Volunteers to arrive no later than an hour before the camp start time.

Protect the final 90 minutes for electrical learning, customization, photos, and pickup. For a 3:30 PM finish, aim to start electrical by 2:00 PM, move to customization at 2:50 PM, and begin final photos and closing at 3:15 PM. The Education Lead calls transitions with the Host Facilitator. Adjust these targets for the camp; shorten earlier optional activities if needed rather than rushing safety or removing the electrical lesson.

Safety, Lunch, and Electrical Area

Arrange tables and chairs in a U shape. The person who delivers the safety briefing and leads lunch lessons will be front and center.



If there is a whiteboard, write a welcome message or draw some important concepts on it to make the experience feel official and exciting for the Students.



Before camp, arrange the Students' PPE sets at each seat around the U-shaped tables. Each seat should have:

- Safety glasses
- High-vis safety vest
- Gloves
- Tool apron



The following should also be grouped into individual piles per Student in the same room (or included with the PPE piles):

- GRIT Blueprint
- GRIT tape measure

- GRIT 6-in-1 screwdriver
- GRIT-provided carpenter pencil
- GRIT-provided permanent marker
- Any Host-provided small hand tools

Here are some other items to keep close to the area (but not at the tables with the PPE):

- Small first-aid kit
- Lunch discovery items
- Electrical module items (if the electrical module is taking place in the same room)

Main Work Area

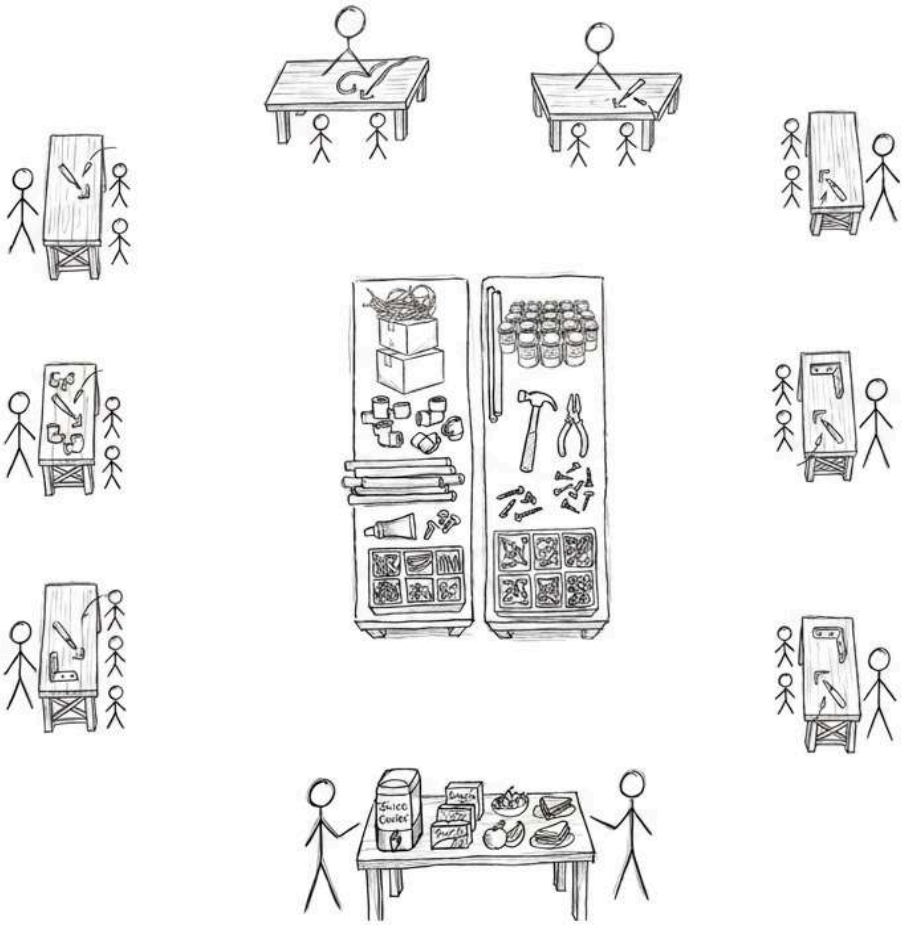
Ideally, the main work area will be outdoors. If this area is indoors, there MUST be proper ventilation and low-level CO monitors present.

Early headcount estimates and procurement of tools and materials will help you visualize how many tables and how much space you will need.

There will be four main setup considerations:

- Central Staging Area for tools, supplies, and materials
  - Across as many tables, pallets, or carts as needed
- Saw area
  - Saws (unplugged), cutting platforms, and clamps
  - Extension cords and power strips (routed safely to prevent trip hazards)
- One Station for each Mentor-Student group
  - Tables positioned AROUND the Staging Area, if possible
  - Fuel tanks for torches (tied securely to table legs to prevent tipping)
  - Hand tools may be arranged here as well
- Refreshment table
  - Snacks and drinks
  - FULL first aid kit
  - Extra hair ties
  - Fire extinguishers and fire blankets
  - Trash can(s)

Ideally, Stations will be arranged in a U shape around the Staging Area. Students should face *away* from the Staging Area, facing their Mentor. Mentors should be on the opposite side of the table, facing *toward* the Staging Area to see what everyone else is doing. The sketch below shows the ideal arrangement.



Notice the refreshment table at the open end of the U. The saws are in a separate nearby location.

Hosts will also need to have some safety information and plans. These are detailed in the GRIT Camp Safety Guide.

If you know there will be light rain, the camp may still go on in its outdoor location, so long as there is sufficient cover. Large pop-up tents may be able to keep people dry.

The Host Quick Start Guide and the Master Materials List (in this guide) indicate which items need to be arranged at the Stations and Staging Areas.

Aluminum Module Prep

The aluminum repair module is optional but highly recommended. Before offering the module, keep the following items in mind:

- The aluminum coil repair only works with all-aluminum coils
- Coils with copper U-bends will not work
- Degrease the repair area before the camp
- Students will clean the work area with a wire brush
- Cleanup after the repairs must follow the filler and flux manufacturers' guidance

You can keep the aluminum coils and cans in a separate area and have a Volunteer bring them out when it's time. Or you may keep them underneath the Station tables.

The GRIT Soldering, Brazing & Aluminum Repair Quick Start Guide offers three repair methods. Pick ONE, acquire the filler and flux for that one system, and share the chosen method with your Mentors.

Electrical Module Prep

Generally, the electrical module takes place in the same indoor area as the safety briefing and lunch. You can have it elsewhere if preferred, though.

Here are the items to keep in the area:

- Electrical circuit kits (provided by GRIT)
- Electrical multimeters
- Mixed good and bad batteries & bulbs (in cups or on plates)
- Recommended discovery items (breakers, switches, and scrap copper wire)

If there are no bad batteries or bulbs on hand, you can make some:

- Short the batteries: Connect the terminals with a short copper wire
- Burn out the bulbs: Wire the bulbs in circuits greater than their voltage rating (such as a 9V circuit for 3V bulbs)

Electrical multimeter setup:

- Black lead in COM
- Red lead in the voltage and resistance jack

The GRIT Blueprint and procedure in this guide ONLY requires DC voltage measured across two points and resistance or continuity checked (only with power removed).

Final Customization Module Prep

Generally, the final customization module takes place in the same large area as the carpentry and PVC & copper modules.

At the bare minimum, you will need to keep the following items on a central table or cart:

- Scissors
- Hot glue guns and sticks
- Paint markers (assorted colors)
- Mounting or double-sided tape

Other recommended materials are in the Master Materials List, but the possibilities are endless.

There should also be a clearly defined location where the instant photography Volunteer can lay out the photos they've taken throughout the day. These photos should be organized into stacks by the Student's face. Students will be able to identify themselves and take their photos back to their Stations for gluing.

Optional: It may also be useful to have the torch rigs still set up, as those are a crucial part of a fun optional activity where Students make their initials out of scrap copper wire. Items needed for that activity include:

- Scrap copper wire
- Torch rig*
- Hammer* or mallet
- Copper tubing cutter*
- Brazing alloy OR compatible lead-free soft solder and matching flux, for the selected method**
- Scrap copper tubing**

*Already on the tool list

**Already on the material list; please plan to procure some more

CAMP DAY & OVERALL FLOW

Pre-Camp

The Education Lead and Host Facilitator will arrive 2 hours before camp to finalize and confirm the camp setup:

- Test all tools to verify that they are working and in safe condition
- Verify that all Stations are set up
- Verify that all materials and tools are staged
- Verify that all required signage is in place
- Ensure badges are printed, organized, and ready for distribution at the check-in table

Mentors and Volunteers will arrive at least 1 hour before camp and receive their badges. Mentors will do the Mentor walkthrough, and Volunteers will help with any last-minute setup.

Student Arrival & Pairing Consideration

Once setup and the walkthrough are complete, the Volunteers will take up their respective tasks, and Mentors will go to the check-in table and begin welcoming Students.

The Host Facilitator should have a clear plan for pairing Students with Mentors ahead of the GRIT Camp (1:2 ratio of 1 Mentor to 2 Students). Here are some general guidelines:

- Avoid pairing family members
- Avoid pairing friends or known troublemakers
- Diversity in age is generally a good thing in pairs
- Try to pair the Students and Mentors who seem to hit it off at check-in

Once everyone has checked in and received their badges, bring the group together for the combined Challenge Introduction and Safety Briefing. Announce Mentor–Student pairings after that session and before work begins, allowing time for late arrivals.

If the Challenge Introduction takes place in a different location from check-in, the Education Lead and Host Facilitator should lead the Students and Mentors to that location.

Challenge Introduction

The Education Lead will own this portion. It's a short, interactive moment that establishes a world where trade skills matter, lets the Students see what they'll be doing, and hypes them up to work with their hands.

It begins with a short message that we're entering a world where hands-on skills matter. It is not a long, elaborate speech, and the Education Lead can involve the Students with questions:

- Ask Students to imagine life without their homes, electricity, or clean drinking water
- Ask if the Students like working with their hands and doing science

The conclusion is that the trades need people who know science and are skilled with their hands, which is what Students are there to do!

Afterward, the Education Lead and Host Facilitator will lead Students and Mentors to the Safety Briefing location (if different). Treat the introduction and safety briefing as one

combined opening session, with an 8–10-minute target that covers all required safety points before work begins.

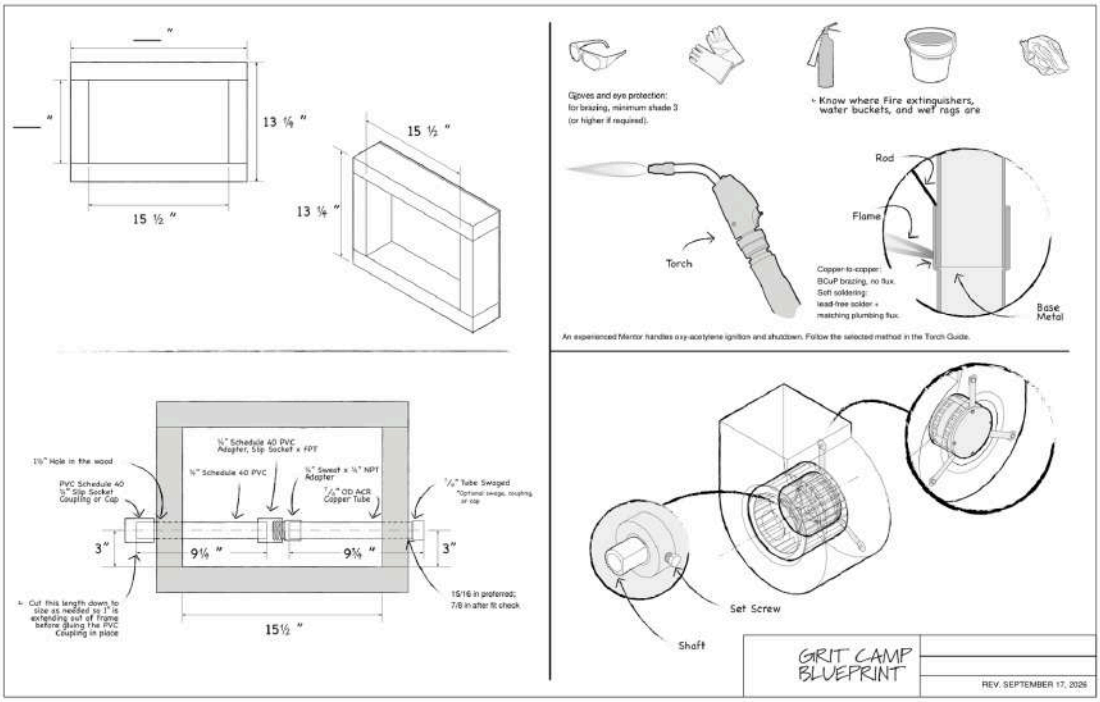
Safety Briefing

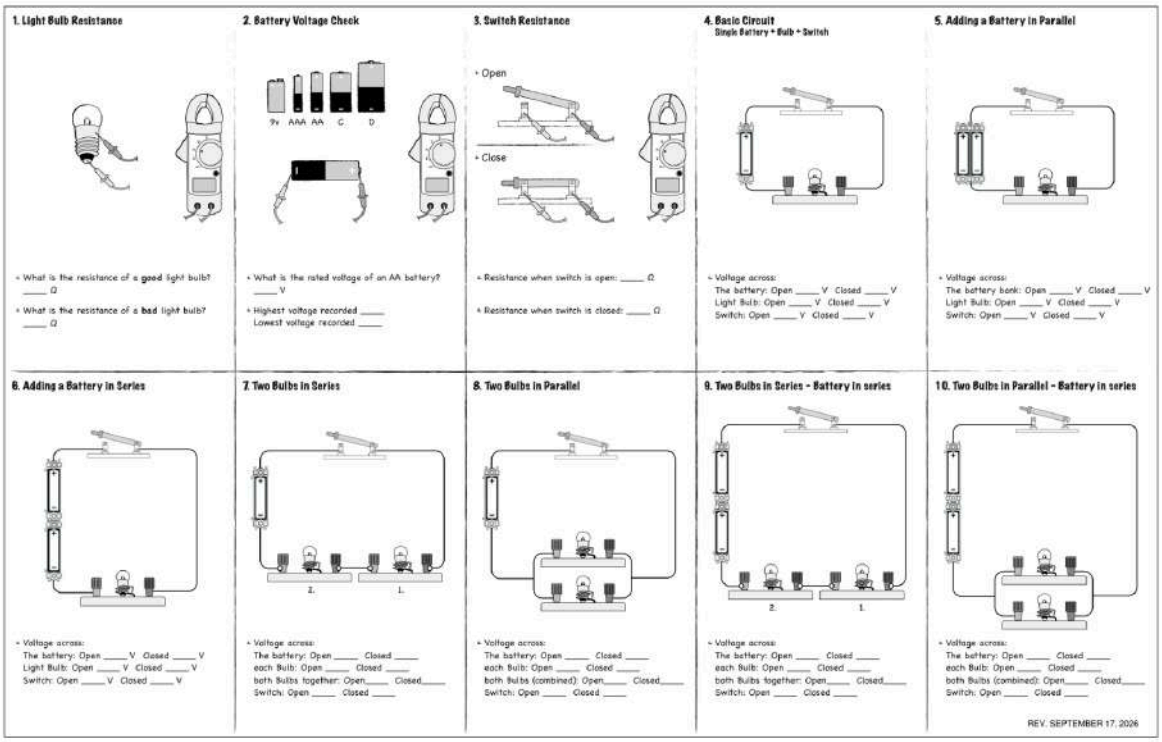
The Education Lead will also lead the Safety Briefing. Student safety kits should already be laid out on the tables as the Students walk in. This briefing will be based on the GRIT Safety Guide.

Students and Mentors will put their PPE on together as the Education Lead carries out the safety briefing.



At this point, Students will also receive their GRIT-branded tools and Blueprint (shown on the next page). Mentors must make it clear that the Blueprint is the plan, and Students are expected to build according to it and check their work against it.





Before starting, Mentors will encourage the Students to discover how their 6-in-1 screwdriver and tape measures work. Examples of how to do this are in the Mentor Quick Start Guide.

After the Students have put on their PPE and learned about tools, the Education Lead and Host Facilitator will lead the group to the main working area for the first activity: carpentry. Before diving into the carpentry activities,

Carpentry Module

Using the Blueprint as the guide, the Students should figure out what they'll use to build the frame. The answer is in the Staging Area: 2×4s. Students will take these back to their Stations with their Mentors.



Mentors will guide the Students with questions and let them make decisions (and mistakes!) but NOT directly instruct them OR have their hands on the tools (saw, drill, hammer, etc.).

Here is the basic activity sequence (Students do ALL the work):

1. Pick out and measure the 2×4s with a tape measure.
    a. Students will have to measure the width and depth of the 2×4s with their tape measures and get something closer to 1.5" x 3.5" (actual dimensions vary, so measure the lumber being used).
2. Use the Blueprint to measure out and mark the lengths we will need to cut.
    a. The Blueprints have measurements, but they don't have the actual cut lengths.
    b. Use the REAL 2×4 measurements and do some subtraction! Write them down.
    c. Measure out the lengths and mark them on the wood with a carpenter pencil.

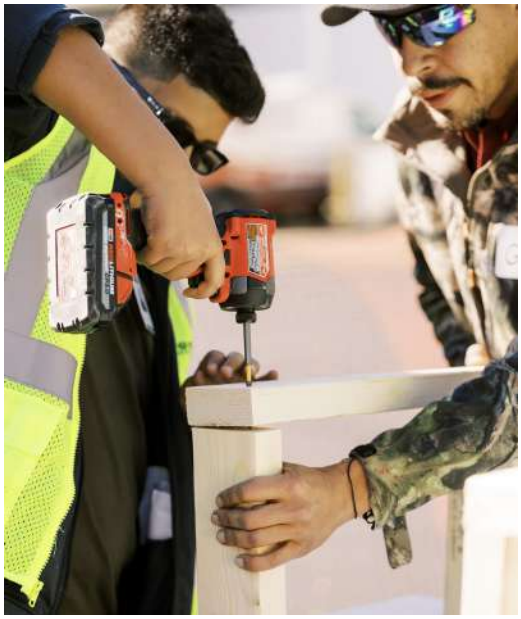


3. Go to the saw area and cut the wood.
    a. Figure out how to hold the wood in place while cutting (clamps).
    b. Figure out which side of the line the blade should go on (accounting for blade kerf and thickness).
    c. Mentor conducts a safety check: Gloves, glasses, secured workpiece, Student's free hand behind their back, and any additional PPE required by the site-specific safety plan. Keep hearing protection available at the saw station.
    d. Mentor plugs in the saw for the Student to cut the wood.
    e. The Student measures their cut. If satisfied, continue the rest of the cuts. If unsatisfied, redo the cut.
    f. Mentor unplugs the saw.





4. Figure out which fastener and tool to use to hold the wood together.
    a. Right answer: Use the drill, T25 bit, and wood screws.
    b. Mentor should make Student think through their posture while drilling; what'll make the screw go through more easily? Sideways or vertically? (Vertically.) But Mentors should NOT tell Students to drill vertically outright.
    c. Student will drive the screws; Mentors can hold the frame but should not drill for their Students.
        i. Mentors may suggest drilling a pilot hole or tapping the screw if the Student struggles a lot.





5. Use the Blueprint to figure out where to bore a hole for the tubing—and how big it will need to be.
    a. Right answer: use the Forstner bits.
    b. Use the tape measure and Blueprint dimensions together to determine where the hole will need to be drilled.
    c. Mentor should make Student think through their posture while drilling; what'll make the screw go through more easily? Sideways or vertically? (Vertical drilling is crucial for this step.)



6. Check your work against the Blueprint, making sure the shape lines up and that the dimensions resemble those on the drawing.

PVC & Copper Module

This module consists of joining PVC and copper. A GRIT Camp may use one of THREE different copper joining methods: air-acetylene brazing (recommended), oxy-acetylene brazing, and soft soldering. We will provide the general procedure below, but the GRIT Torch Joining Field Guide has detailed instructions for each type. Hosts must choose the one they and the Mentors are most familiar with, not the one that seems most impressive or ambitious.

An experienced Mentor lights, adjusts, and shuts down oxy-acetylene. A Student may handle the lit torch only with that Mentor directly supervising. For any torch brazing, provide properly rated eye protection of at least shade 3 for operators and exposed observers; follow any higher manufacturer or site requirement. Ordinary clear safety glasses alone are not sufficient for brazing.

Using the Blueprint as the guide, the Students should figure out what they'll use to make the piping assembly. The Staging Area will have all their materials. If the tools aren't already at their Station, they will be able to get those from the Staging Area and take them back to their respective Stations.



Again, Mentors will guide the Students with questions and let them make decisions (and safe mistakes!) but NOT directly instruct them OR do the cutting and torch work for them.

Here is the basic activity sequence (Students do ALL the work):

1. Look at the Blueprint to identify the pipe types and connectors. Grab the PVC pipe, the tool to cut it, the connecting pieces, and the sealant we will use to join the PVC to the connecting pieces.
2. Using the tape measure, mark the cut line on the PVC according to the Blueprint, measure once more before cutting, and cut it with the correct cutting tool.
    a. Correct answer: PVC cutter.
    b. Mentors should warn Students about basic cutter safety and finger placement.
    c. Mentors should make the Students ensure that the PVC cutter is closed when not in use and that there is no cut PVC rolling around on the floor.



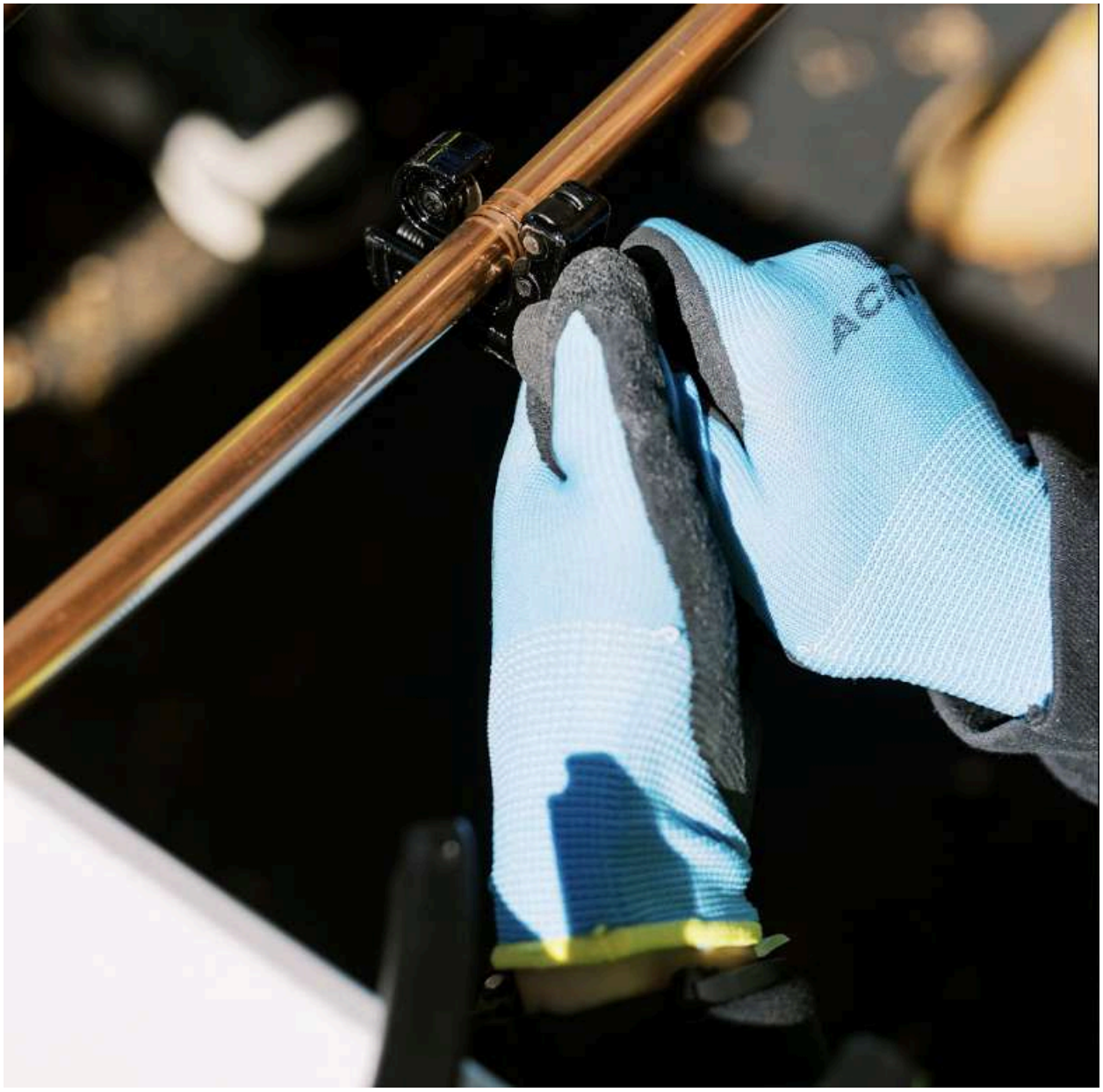


3. Prepare the PVC and glue it to the cap and adapter as shown on the Blueprint.
    a. Primer comes before glue.
    b. After gluing, push the surfaces together, make a quarter-turn, and hold firmly for 10 seconds.
    c. If the Student glues both pieces outside the box, cut the PVC and glue them together inside the box with a coupling.





4. Look at the Blueprint again and grab the copper, tools to cut and clean it, and the adapter (and cap, if applicable)
    a. Unroll the copper, if rolled.
    b. Emery cloth will help clean the copper when it's time to cut.
5. Using the tape measure, mark the cut line on the copper according to the Blueprint, measure once more before cutting, and cut it SQUARE with the correct cutting tool.
    a. Correct answer: Copper tubing cutter (with a wheel)
    b. Use some emery cloth to clean the copper before cutting it.
    c. Experiment a bit with tightening and rotating the tool.
    d. Possibly practice on spare scrap copper first.



6. Deburr the interior diameter of the copper using a deburring tool.



7. Prepare the copper and ¾″ copper sweat x ¾″ NPT adapter for joining.
    a. Clean the male end of the copper tubing and the inside of the adapter cup.
    b. ONLY IF SOFT-SOLDERING, apply a thin layer of appropriate plumbing flux.
    c. Fully seat the copper into the fitting.
    d. Clamp the pipe over the fire bricks to hold it in place.
8. Use the brazing or soft-soldering method chosen by the Host from the GRIT Torch Joining Field Guide to join the copper and its adapter in the box.
    a. Cored bricks will hold the tubing in place.
    b. Mentor will NOT hold the torch but will make sure the Student follows safety protocols.
    c. The ⅞″ ACR must be *fully seated* in the straight sweat cup of the ¾″ sweat x ¾″ male NPT adapter.
    d. Heat the base metal to draw the alloy/solder into the joint. Judge flow, not color.
    e. For this non-service GRIT practice assembly, leave the copper joint supported and undisturbed for approximately 30 seconds after removing the flame, and until the filler has solidified. The Mentor may then supervise wet-rag cooling or water quenching, keeping hands clear of steam and hot water. Keep the work in the marked cooling area and confirm it is cool before handling. Inspect and clean the completed joint.

f. If a cap is not used, swage the end of the copper with a swaging tool.



9. Use Teflon tape or thread sealant on the adapter threads. Then, join the tubing and tighten the connection with pliers and an adjustable wrench.
    a. Align the threads and tighten the connection using the tools.



10. Check the box against the Blueprint to make sure it looks right.
11. After all work has been checked, apply the backing board using the correct fastener and tool.
    a. Right answer: Hammer and finish nails.
    b. Aim for a ½" inset from the frame's outer edges.
    c. Mentor should make the Student think through the safest, easiest way to hold the nails in place while hammering. (Using needle-nose pliers, if possible.)



Lunch Module

Allow 45–60 minutes total for the lunch session and module. Volunteers should have food and drinks out in the lunch area by the time the Students finish fitting the pipes together. Students and Mentors may eat in the same room or separately.

The Education Lead will own the learning portion of the lunch lesson. They will hand-pick and teach a few lessons from the GRIT Camp Lunch Guide. Here is the general sequence:

- Let the Students eat
- Introduce a few scientific discovery items with demonstrations
- Leave plenty of time for the Students to interact with the discovery items
- Repeat the same demonstrations but change one variable
- Compare the prior and latest demonstration results and ask questions

The goal is *exploration*, not locking Students into a series of fixed demonstrations.

During the final ten minutes, the Education Lead will hand off the conversation to the Host, Host Facilitator, or a prepared Mentor and eat their lunch. The person who takes over will give specific examples of how heat, airflow, pressure, electricity, or material properties show up in their everyday skilled trades work.

Aluminum Repair Module

When present, the aluminum repair activity generally takes place after lunch. If you wish to include this activity, please consult the GRIT Soldering, Brazing & Aluminum Repair Quick Start Guide for detailed execution steps. It also has the instructions for the three different aluminum repair kit options (pick ONE):

- Flux-cored rod (Lucas-Milhaupt AL 822 or Harris Aluxcor Zn78/22)
- Rod and powder flux (SolderWeld Alloy-Sol)
- Rod and liquid flux (Uniweld UNI-4300)

Note that Students CANNOT use oxy-acetylene torches for aluminum repair. If the Students are brazing with oxy-acetylene, they must use a different torch for this activity. Those options are covered in the Quick Start Guide mentioned above and in the GRIT Torch Joining Field Guide.

The module's simplified sequence is as follows (carried out by Students unless stated otherwise):

1. Mentor will use a drill & ⅛" bit or an awl to make holes in aluminum cans and/or an all-aluminum HVAC evaporator coil.





2. Clean and degrease the repair area.
3. Prepare flux and alloy as necessary.
    a. For example, make sure a flux-cored rod is cut or a powdered flux coating is properly applied to the rod (shown below).



4. Heat the base metal around the hole according to the flux and alloy type.
5. Apply the flux first, then direct the alloy to make a flat patch over the hole.



6. Let the repair cool.
7. Clean the area around the patch according to the rod and/or flux manufacturer's instructions. Repeat on other cans or coil holes as time allows.
    a. You can see if cans hold water after being patched.

Disassembly Module

When present, the disassembly module generally takes place after lunch. It may take place before or after the electrical module; Mentors need to know the order.

The disassembly module requires Students to take apart an assembly, usually an HVAC blower or a condensing fan. They will get to explore the functions of their 6-in-1 screwdriver with a real field problem and see how the assembly's parts make it function.

Here is the basic sequence (Students do ALL the work):

1. With gloves on, grab an assembly from where they are staged.
2. Look at the fasteners holding the assembly together and try to loosen them with the tools available.
    a. Adjustable wrenches are also an option, not just the screwdriver.



3. Using the tools and materials that may help, loosen the parts until they come apart.
4. Take apart the motor, if time permits, and think about what each internal part does.
5. Reassemble the motor and/or assembly, time permitting.

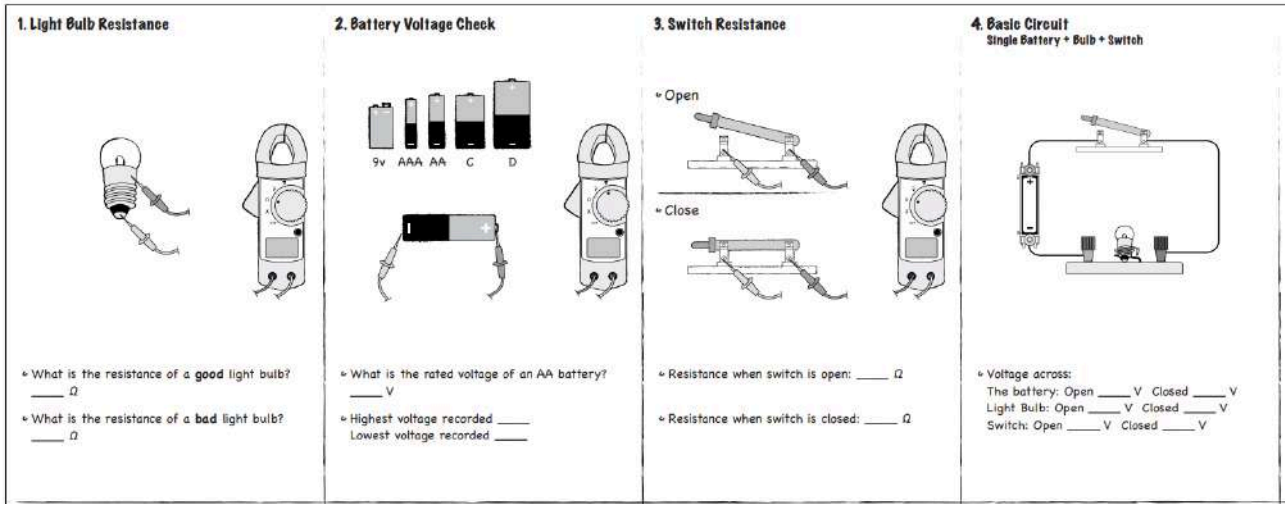
Mentors who work for HVAC companies may be able to bring some defective blowers and fan assemblies.

Electrical Module

GRIT provides the electrical circuit kits that are used in this module. The Host is responsible for sourcing the batteries (good and bad), extra bulbs (good and bad), electrical meters, and optional discovery items, possibly with help from the Mentors. The full list of items is in the Master Material List at the beginning of this guide.

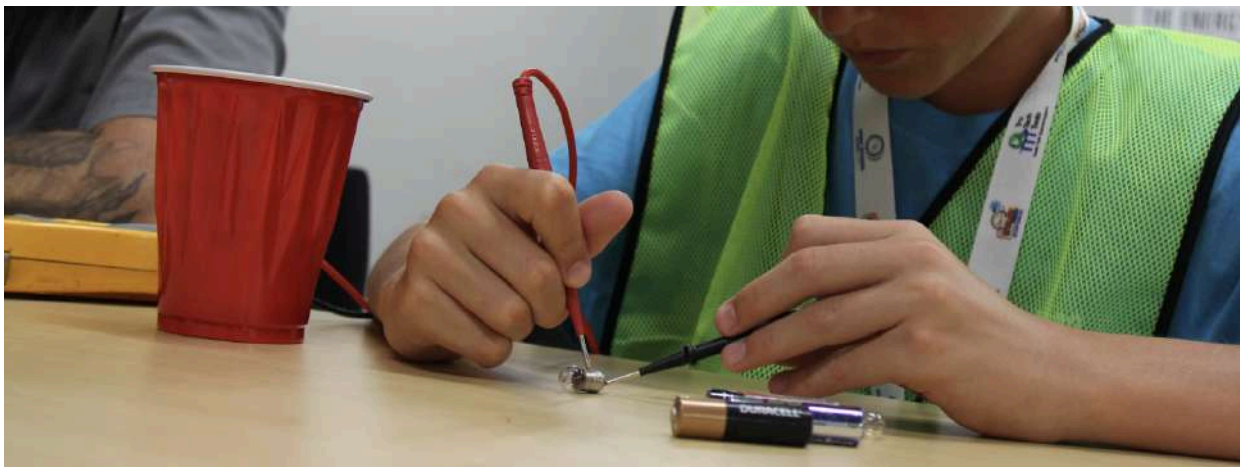
The different circuit types the Students will build in this module are on the BACK of the Blueprint. This Blueprint also shows where to place the meter leads and has blank spots for Students to write their answers down.

Here are examples from the first four panels:

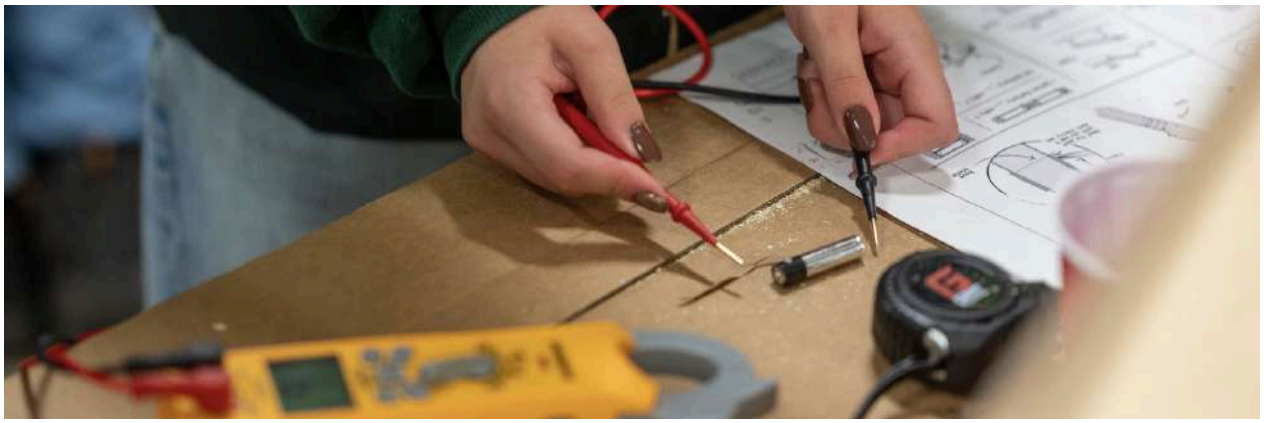


The general sequence of the module follows the sequence of the Blueprint panels:

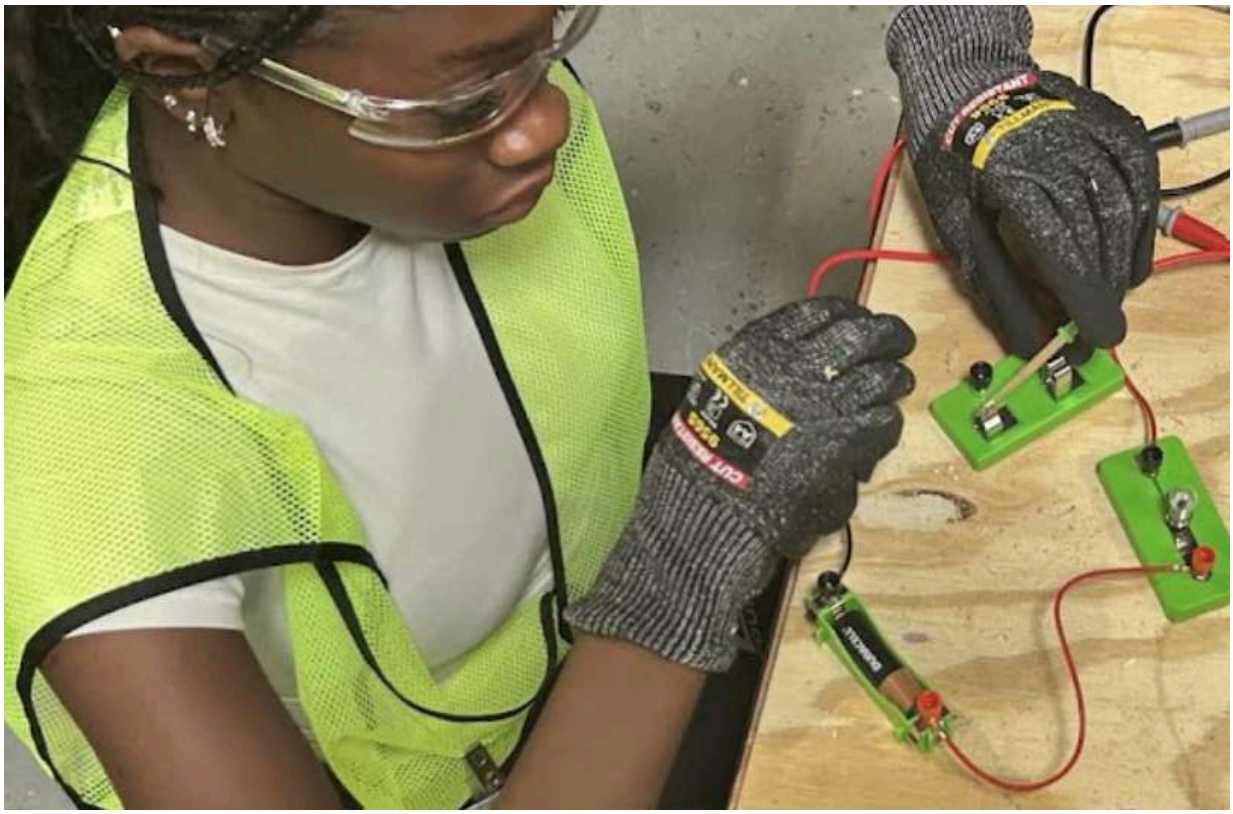
1. Use the multimeter to test for good and bad lightbulbs (resistance setting). Try a few different ones and write down the “good” and “bad” resistance readings.



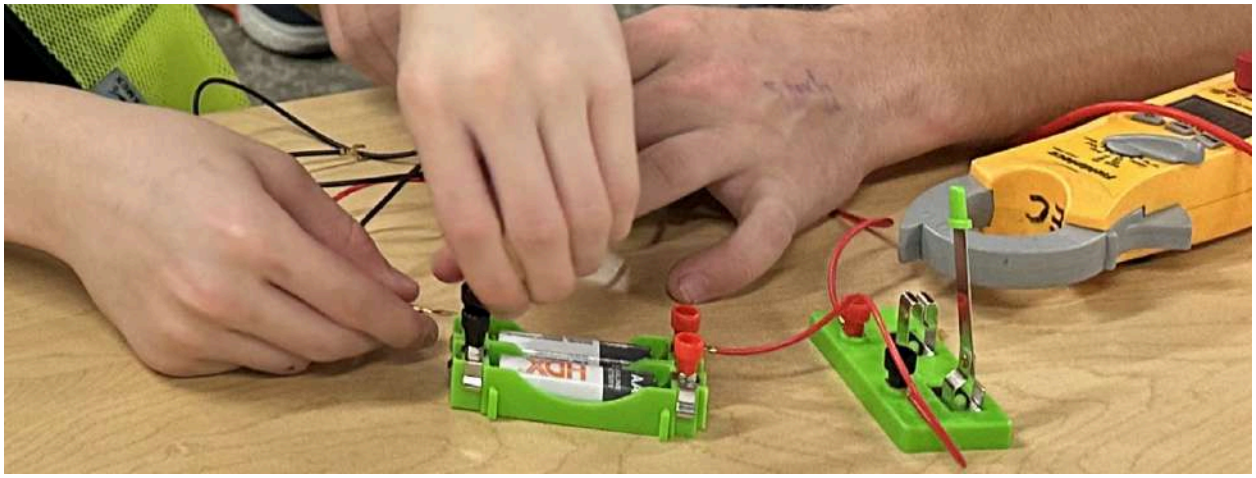
2. Use the multimeter to test for good and bad AA batteries (voltage setting). Try a few different ones. Write down the highest and lowest voltages recorded.
    a. Try measuring some of the other battery types available, like AAA or 9V.



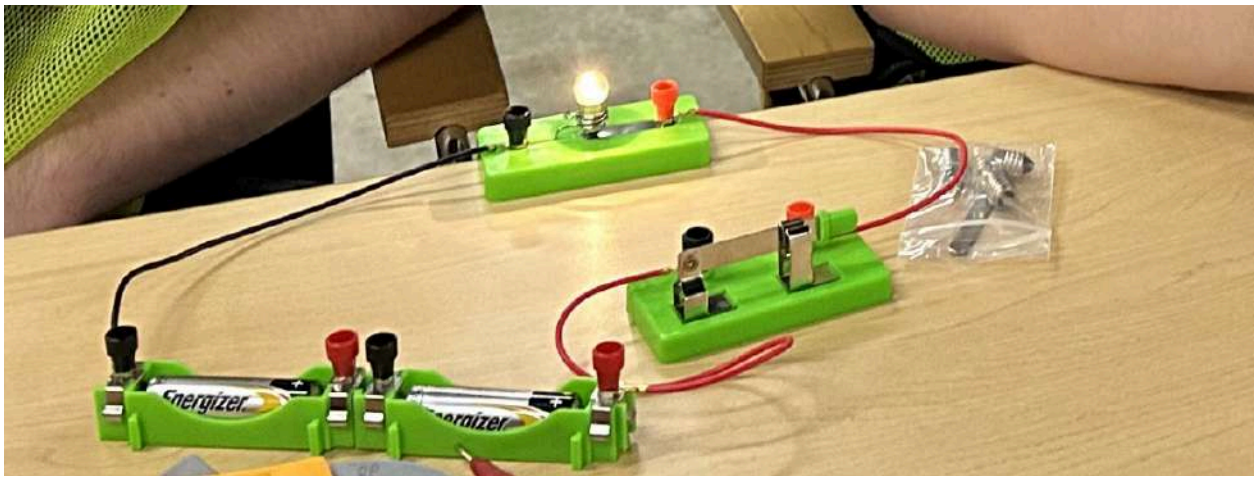
3. Use the multimeter to test resistance across an open switch and a closed switch. Note the differences.
4. Assemble a basic circuit with a load (light bulb), switch, and power supply (battery bank). Insert the battery and measure voltages across each component with the switch open and closed according to the Blueprint.



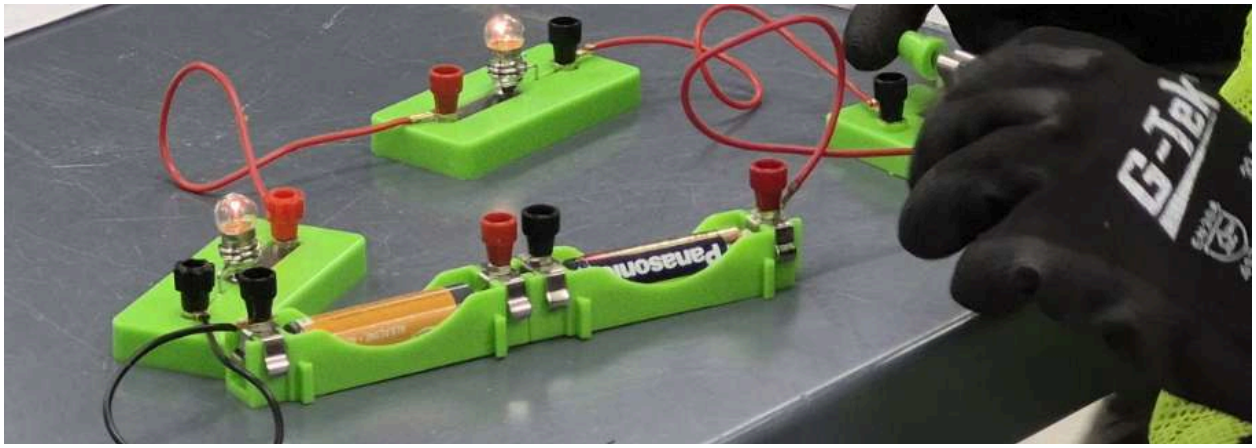
5. Assemble a circuit with two batteries in parallel to create a battery bank (plus a light bulb and switch). Measure voltages across each component with the switch open and closed according to the Blueprint.
    a. Parallel = side by side
    b. Battery holders clip together.



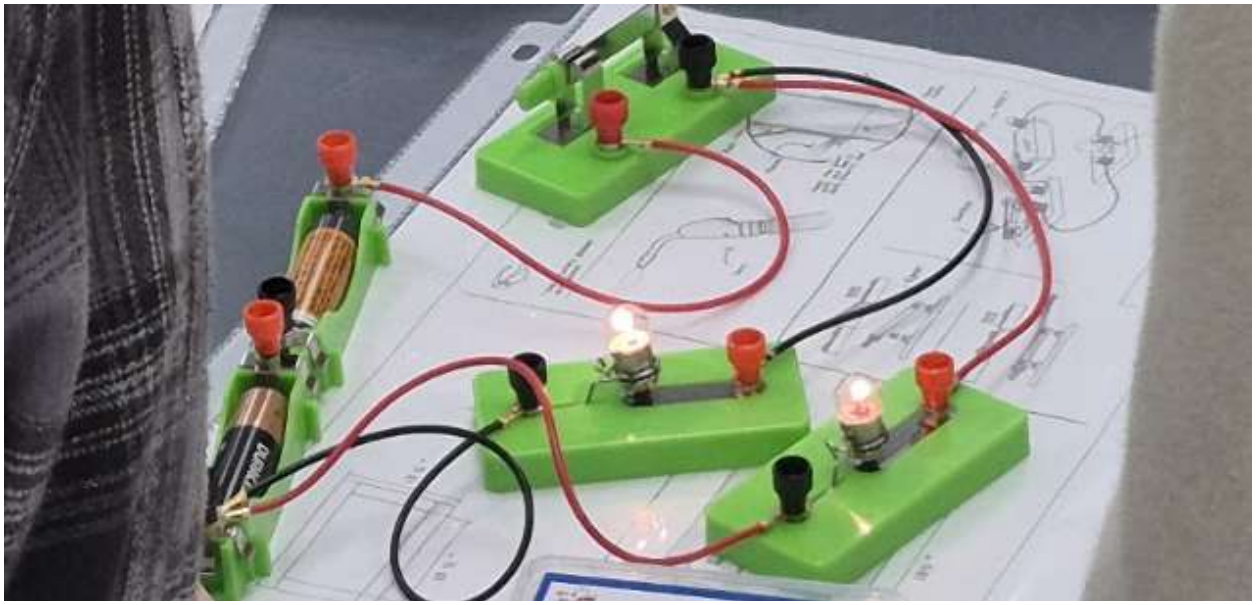
6. Assemble a circuit with two batteries in series (plus a light bulb and switch). Measure voltages across each component with the switch open and closed according to the Blueprint.
    a. Series = one after the other
    b. Battery holders clip together.



7. Assemble a circuit with two light bulbs in series (plus a battery and switch). Measure voltages across each component with the switch open and closed according to the Blueprint.
    a. Use wires to connect the bulbs in series.
8. Assemble a circuit with two light bulbs in parallel (plus a battery and switch). Measure voltages across each component with the switch open and closed according to the Blueprint.
    a. Use wires to connect the bulbs in parallel.
9. Assemble a circuit with two light bulbs in series AND two batteries in series (plus a switch). Measure voltages across each component with the switch open and closed according to the Blueprint.



10. Assemble a circuit with two light bulbs in parallel AND two batteries in series (plus a switch). Measure voltages across each component with the switch open and closed according to the Blueprint.



Some Students will take longer than others. It is okay if some of the Students don't get to complete every single circuit type within the allotted timeframe.

Final Customization Module

The final activity of the day will always be to decorate the boxes. Students will glue their electrical circuits and photos in the box, and they will be able to decorate them with craft items. There isn't a single right way to do this module, but here is what needs to happen at a minimum:

- The Volunteer who has been taking instant photos needs to organize the photos into stacks by face in a nearby location so that Students can pick theirs up.
- Mentors need to supervise hot glue and scissor use to prevent injuries and ensure fair sharing.

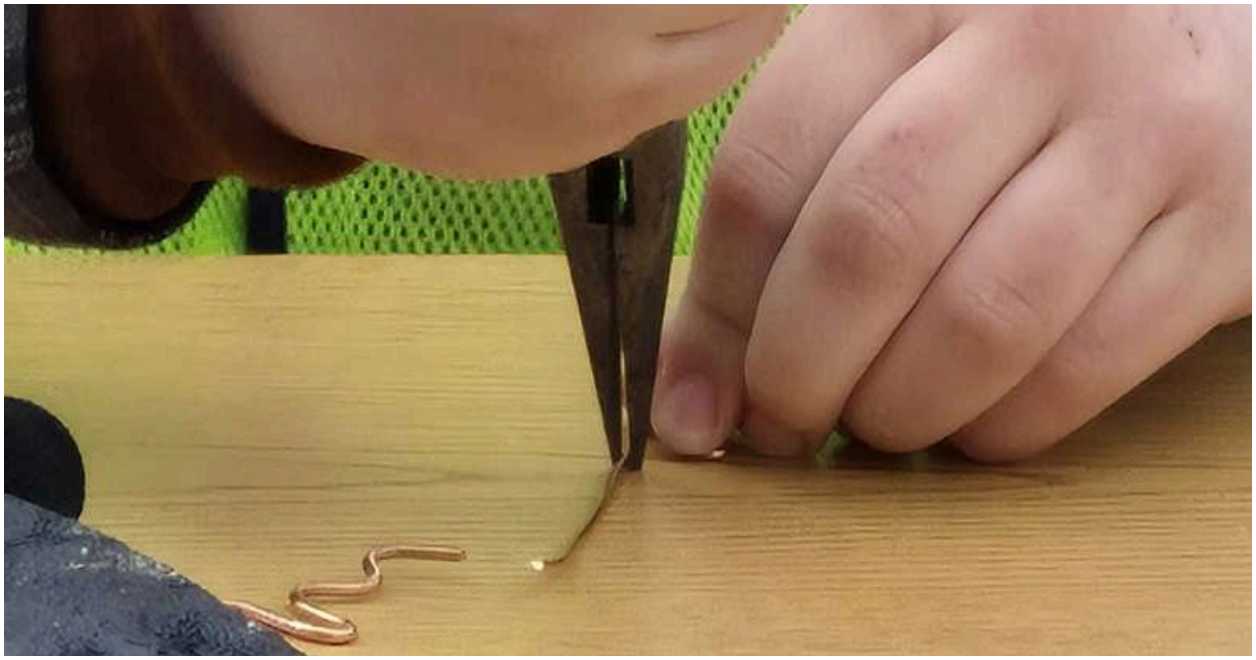
- Students must be able to choose from several craft items in a central location.





We also recommend a fun activity using copper wire, the alloy or filler metal rod, flattened copper tubing, and torches. Here is what the Students will do:

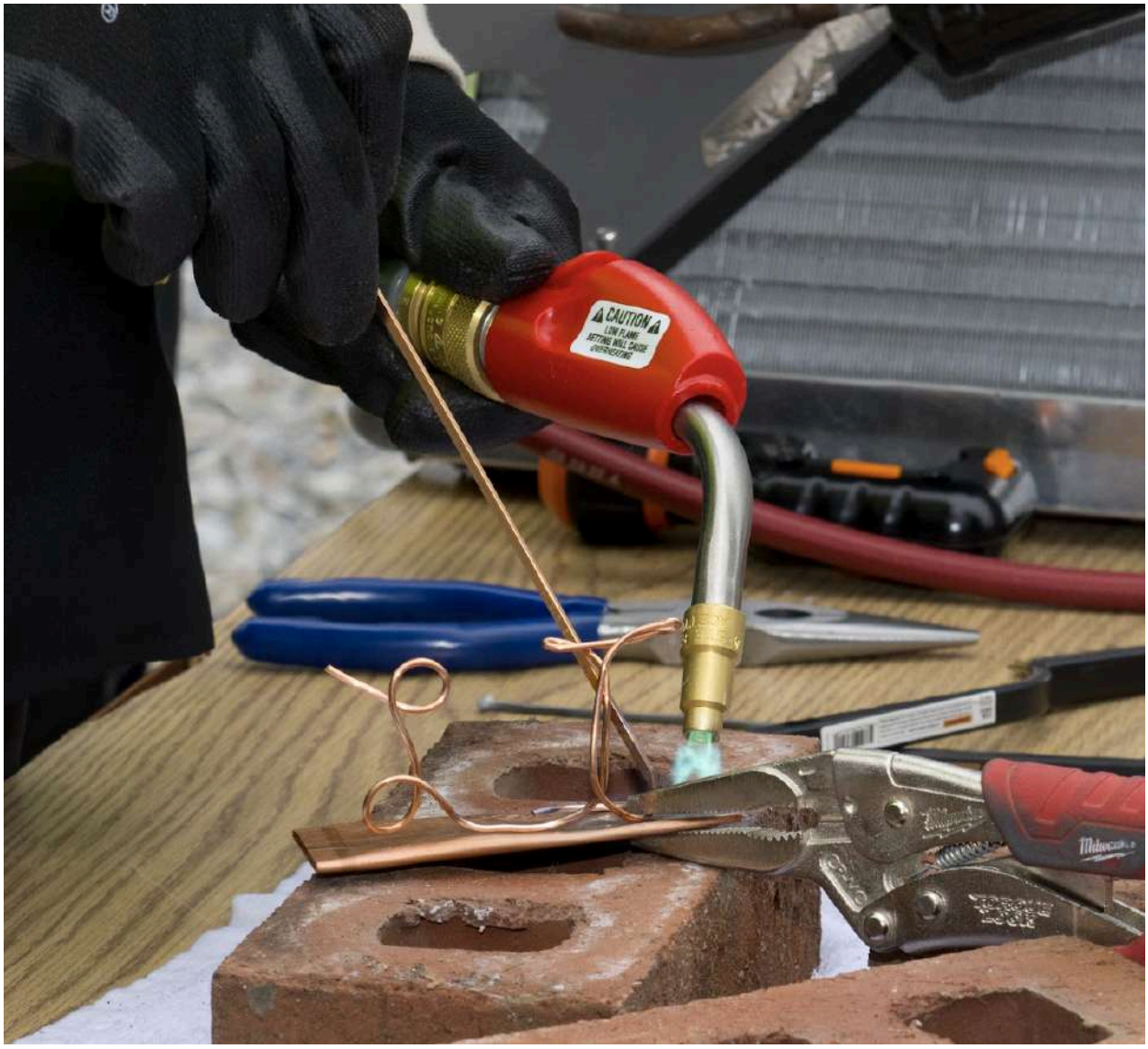
1. Use needle-nose pliers to bend copper wire into their initials.



2. Take some scrap copper tubing and pound it flat with a hammer or mallet to create a base for the lettering.



3. Use a torch to apply heat to the wire edges and the base. Use the selected brazing or soft-soldering and its matching filler/flux to join the wire to the base.
    a. The Mentor or other Student in the pair can hold the initials upright and in place with the needle-nose pliers.



Wrap-Up, Dismissal, and Debrief

Conclude the day with a 3–5 minute acknowledgment of what the Students did today and what they learned. Before the Students leave, take some photos:

- Individual photos with the Student and their completed project
- Student & Mentor photos
- Full group photo







Prior to dismissal, it is a good idea to conduct exit interviews with each Student. The Host or Host Facilitator may want to do this, or they may assign a Volunteer to do it. If you film these exit interviews, you can collect crucial feedback from the Students and Mentors. You could also potentially gather some good material to post on social media in a GRIT Camp recap video. See the GRIT Camp Community Outreach Guide for details on creating camp recaps.

Volunteers and Mentors should stay with the Students in the dismissal or pickup area until all Students have been picked up by their parents or guardians.

Everyone left on-site will clean up and account for any materials that need to be restocked.

After the site has been cleaned up and returned to its usual pre-camp state, the Education Lead, Host (and Host Facilitator, if present), and Mentors will debrief to discuss the day. This debrief should include:

- What went well
- Difficult moments and why they were difficult
- Material or tool issues
- Safety concerns
- Whether everyone was prepared enough (and where that could've been improved)
- Things everyone would do differently in a future GRIT Camp

Be sure to thank all Mentors and Volunteers before they leave! They are the ones who really make GRIT Camp have a lasting impression on the Students and deserve recognition.

POST-CAMP OUTREACH

Now that you have the GRIT Camp under your belt, it's time to thank your supporters and share how it went with the world! A great way to do that is by creating a GRIT Camp recap video to share on social media. We have tips for creating a good recap (and how to communicate with supporters and sponsors after the camp) in our GRIT Camp Community Outreach Guide.

Hosts, Mentors, and participants all have feedback surveys to complete. Be sure to take them and remind others to submit theirs as well.

The GRIT Foundation has social media platforms, and we're more than happy to share some camp highlights; you will receive a link to share your photos with us. But now is also a good chance to share photos and recap videos with YOUR social media audience to connect with the community. Thank sponsors and community partners in these recaps as well.

If you had a good camp experience or want to try to host an even better GRIT Camp later, keep in touch! We would love to help you arrange another camp or a GRIT Workshop!

GRIT Workshops

GRIT offers three workshops, each designed to last 2 hours. GRIT travels to host locations, and Hosts can discuss up to 2 sessions per day. Workshops are recommended for up to 20 Students; Volunteers are excluded from that number and may be involved at the Host's discretion. Recommended preparation is 4–6 weeks, with timing negotiable. Hosts coordinate facility space, seating, electricity, and any additional materials with GRIT.

We have multiple workshop themes for different audiences, so we recommend checking those out at https://www.thegritfoundation.com/grit-workshops.

Thank you for being part of GRIT—your time, effort, and dedication help build skills, confidence, and a brighter future for the next generation of builders.

APPENDIX A — SMALLER GUIDES & RESOURCES

This guide provides a general sequential overview of the preparation, material and tool use, and camp flow. More detailed information and guides for outreach, preparation for specific roles, and other general resources may be found in the guides below (in alphabetical order; available at https://www.thegritfoundation.com/resources):

Document	Description / Purpose	Who Should Read It?
Camp Blueprint	Project drawings for the carpentry, pipe assembly, and electrical portions of camp.	Host, Education Lead, Mentors
Camp Day Checklist	A practical checklist for preparing and running camp day.	Host, Host Facilitator, Education Lead
Camp General FAQ	Answers to common questions about GRIT Camps.	Hosts, Mentors, Volunteers, families
Camps vs. Workshops	A comparison of GRIT Camps and GRIT Workshops to help choose a format.	Prospective hosts and organizers
Community Outreach Guide	A guide to local community outreach before and after the camp, as well as content creation & curation for social media. Gives GRIT Camp photography tips and video editing strategies.	Host, Host Facilitator
Cost & Sponsorship Guide	Explains the costs of GRIT Camp, as well as ways to reduce them. Describes basic sponsorship types and promotional strategies.	Host, Host Facilitator
Education Lead Guide	An Education Lead's guide to a successful GRIT Camp. Includes preparatory activities, guidance on hosting a Mentor site walk in the hour before GRIT Camp, and overall responsibilities.	Host, Host Facilitator, Education Lead
Host & Host Facilitator Quick Start Guide	A quick start focused on camp setup for Hosts and flow for Host Facilitators. Also serves as a setup checklist.	Host, Host Facilitator
Host Timeline	A preparation timeline and checklist for planning a GRIT Camp.	Host, Host Facilitator
Luan Cut Layout	A cutting layout for preparing the project backer panels.	Host and preparation team
Lunch Guide	A guide with some basic lunch information, as well as recommendations for demonstrations and their sequences, material requirements, and application of the Socratic method.	Host, Host Facilitator, Education Lead

Document	Description / Purpose	Who Should Read It?
Mentor Quick Start Guide	A brief Blueprint and camp flow explainer for Mentors. Also shares how to integrate the Socratic method into the camp sequence.	Education Lead, Mentors
Parent FAQ	Answers to common questions from parents and guardians about GRIT Camp.	Parents and guardians
Press Release Template	A template Hosts can download and edit accordingly to submit press releases about their GRIT Camp to local media outlets. Comes with instructions about AP state abbreviations.	Host
Recruitment & Participant Communication Guide	Explains how to recruit Students, Mentors, and Volunteers for your GRIT Camp and clarifies the communication responsibilities of the Host and the GRIT administrative team. Includes methods and recommended timelines.	Host
Safety Guide	Covers all the PPE required of Students, Mentors, and others in the work area, how to teach safety to Students, and when to intervene due to safety issues.	Host, Host Facilitator, Education Lead, Mentors
Soldering, Brazing & Aluminum Repair Quick Start Guide	Covers setup and detailed execution of the torch work, including joining copper and repairing aluminum. Helps Hosts and Mentors anticipate and mitigate common mistakes.	Host, Host Facilitator, Education Lead, Mentors
Torch Joining Field Guide	Explores the three torch options for joining copper (and possibly soldering aluminum). Hosts must pick the method that best suits their Mentors' experience levels.	Host, Host Facilitator, Education Lead, Mentors
Workshop Flyer	An introduction to Ty Branaman's interactive GRIT Workshops.	Prospective hosts and participants
Workshop Host Guide	A planning resource for hosting an interactive GRIT Workshop.	Hosts and workshop organizers
Workshop Registration Guide	Guidance for registering and coordinating a GRIT Workshop.	Hosts and workshop organizers

APPENDIX B — Purchasing Links

While most of the required materials for the GRIT Camp can be found in most trades businesses and education facilities, you may be missing a few items. This list contains links to required *and* optional materials that some Hosts may not already have in their facilities or local supply houses.

REQUIRED

First Aid Kit
(Safety)



Fire Extinguisher
(Safety)



Fire Blanket
(Safety)



Bar Clamps
(Carpentry)



Drill
(Carpentry)



T-25 Bits
(Carpentry)



3″ T-25 Torx Head Screws (+ 1 Bit)
(Carpentry)



Forstner Bits (7/8″ alternative and 1 ⅛″ PVC; order preferred 15/16″ separately)
(Carpentry)



1 ¼″ Finish Nails
(Carpentry)



Hammer
(Carpentry)



¾″ Schedule 40 PVC Pipes
(PVC)



¾″ Schedule 40 PVC Adapter, Slip Socket x FPT Coupling
(PVC)



¾″ Schedule 40 PVC Slip Socket Coupling
(PVC)



¾″ Schedule 40 PVC Slip Socket Cap
(PVC)



PVC Primer and Glue
(PVC)



PVC Cutter
(PVC)



Emery Cloth Sandpaper
(Copper)



Copper Tubing Cutter
(Copper)



Copper Deburring Tool
(Copper)



¾″ Copper Sweat x ¾″ NPT Adapter
(Copper)



Copper Caps (If Selected)
(Copper)



Cloth Rags
(Copper)

Spark Lighter & Flints
(Copper)



0% Silver Phos-Copper Brazing Rods
(Copper)



Adjustable Wrench
(Joining PVC & Copper)



Teflon Tape
(Joining PVC and Copper)



Pliers
(Joining PVC and Copper)



Thermal Camera / IR Thermometer
(Lunch)



AA Batteries
(Electrical)



Electrical Meter
(Electrical)



Instant Camera & Film
(Final Customization)



Hot Glue Guns & Sticks
(Final Customization)



Double-Sided Tape
(Final Customization)



Paint Markers
(Final Customization)



OPTIONAL

Speed Square
(Carpentry)



Needle-Nose Pliers
(Carpentry & Final Customization)



Hand Swaging Tool
(Copper)



Extra Circuit Kits
(Electrical - GRIT provides enough for the camp)



Bare Wire (Rolls or Scraps for Discovery & Customization)
(Electrical & Final Customization)



Toggle Light Switches (Discovery)
(Electrical)



Breakers (Discovery)
(Electrical)

