

Safety Activity Checkpoint Rocketry/ Model Rocketry

HIGH-ADVENTURE ACTIVITY: Trip or High-Adventure Approval Form Required
First-Aider Required

Council Approval: Not required

Activity Permitted For: J C S A

Activity Not Allowed for: Daisies and Brownies*



About Rocketry

**Daisies and Brownies are not quite ready to participate in model rocketry (as defined below), but they can participate in simple science experiments like air-powered drinking straw rockets, balloon rockets, stomp rockets or water-powered bicycle pump rockets.*

**Daisies and Brownies may observe model rocket launches at a safe distance.*

Launching model rockets is a relatively safe and inexpensive way to learn about the principals of engineering, design, physics, and in some cases, chemistry. Model rockets are constructed of paper, wood, plastic, and other lightweight materials and use an electrical launch system. Sport rocketry clubs can be found in communities across the United States.

Volunteers should use basic safety principles, including eye safety and safe distances when setting up simple rocketry experiments. Always consult the safety standards in the [Introduction: Safety Activity Checkpoints](#).

Note: Rockets over 1,500 grams are considered “High Powered Rockets” and require certification from the National Association of Rocketry. Refer to the [approved vendor page](#) for High Powered Rocketry vendors. Radio Controlled Rocket Gliders are not approved.

Learn More

- [National Association of Rocketry](#)
- [NASA Beginners Guide to Model Rockets](#)
- [ESTES Model Rockets Education](#)

Making Activities Accessible

In order to make your activity accessible to girls of all abilities, it's important to communicate with all girl attendees and their caregivers to learn about and accommodate their varied support needs. For resources and information on accessible sport and adventure activities, visit [Move United](#).

Equity

In addition to physical and social-emotional disabilities, consider the history, culture, and past experiences of the girls in your troop that could affect a girl's ability to equally participate in an activity. Work with girls and families to understand how an activity is perceived. Ensure that all girls and their families feel comfortable that they have access to whatever is needed to fully participate, such as the proper equipment, prior experiences, and skills needed to enjoy the activity.

Standard Safety Guidelines. Refer to the "Standard Safety Guidelines" in the [Introduction to Safety Activity Checkpoints](#) which apply to all Girl Scout gatherings and activities. When the adult-to-girl ratio, or other safety parameters, are stricter for a specific activity than in the Standard Safety Guidelines, always follow the stricter parameters in the activity chapter.

COVID-19 Guidelines. Review the "Coronavirus Safety in Girl Scouts" section in the [Introduction to Safety Activity Checkpoints](#) under the "Standard Safety Guidelines" section and be certain to consult with [GSNorCal's specific COVID-19 guidance](#). When applicable, always call ahead to the vendor, property or facility involved to check for their COVID-19 safety requirements as you prepare to take girls for this activity.

Emergency Action Plan (EAP). Review and document your Emergency Action Plan (EAP) ahead of time before taking girls out for this activity. Think through scenarios of what can go wrong, such as, an accident, physical injury to a girl, missing girl, or sudden illness.

Rocketry Checkpoints

Verify instructor knowledge and experience. Make sure that the facilitator has experience with model rocketry and understands common safety protocols. Consider partnering with your local rocketry club or science teacher who may have experience with model rockets.

Assess maturity level. Participants must be old enough to understand safety procedures and handle equipment so as not to endanger themselves and others.

Launch Site. Launch rockets outdoors in an open area. Choose a large open area or field that is free of crowds, away from power lines, buildings, tall trees, and low-flying aircraft. The larger the launch area, the better the chance of recovering the rocket. Football fields, parks, and playgrounds often work well. According to the National Association of Rocketry, launch site size depends on the size of the rocket and should be at least as large as the recommendations in the table below. Set up safety zones for launch and for observation (at least 15 feet away with D motors or smaller and 30 feet away with larger rockets.)

Source: <https://estesrockets.com/get-started/>

Launch Site Dimensions		
Installed Total Impulse (N-sec)	Equivalent Motor Type	Minimum Site Dimensions (ft.)
0.00 - 1.25	1/4A, 1/2 A	50
1.26 - 2.50	A	100
2.51 - 5.00	B	200
5.01 - 10.00	C	400
10.01 - 20.00	D	500
20.01 - 40.00	E	1000
40.01 - 80.00	F	1000

*Based on the Model Rocket Safety Code of the National Association of Rocketry

Prepare for emergencies. Follow your Emergency Action Plan (EAP) and always have a first aid kit available. Know ahead of time where the nearest emergency room is located. For this activity, have a specific preparedness plan in case of grass fires.

Get Permission. Check local ordinances. You should always check with your local city government for any special regulations that may apply to your city or county. Generally, you can fly most model rockets in a clear area the size of a football or soccer field. Check to make sure you check your area for designated rocket launch areas, as we are in fire country and strict regulations are enforced to prevent fires.

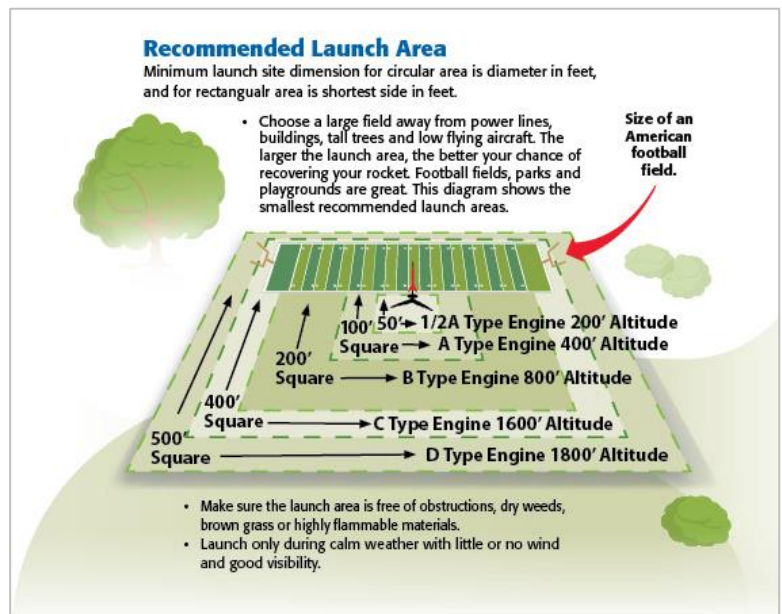
Follow FAA guidance. Never launch rockets near airports, low-flying aircrafts or military bases. If you are near a U.S. border, take care not to cross over into the territory of a foreign country or within the U.S. be careful not to cross into a sovereign nation or territory. Seek permission from the site and consider if permission is needed from any neighboring properties should rockets need to be recovered.

Check weather conditions. Check [Weather.com](https://www.weather.com) for safe weather conditions. Be prepared to postpone the launch, if needed. Wind speeds should not be greater than 20 miles per hour. There should be no lightning storms predicted in the area. Ensure there is no dry grass close to the launch pad and that the launch site does not present risk of grass or forest fires.

Materials. Ensure equipment and materials are in good working condition. Use materials that are lightweight and non-metal parts for the nose, body, and fins of the rocket. Rockets should not weigh over 1,500 grams, if they do, they will require a High-Power Rocketry Certification.

Motors. Use only certified commercially made model rocket motors. Do not tamper with the motors or use them for any purposes except those recommended by the manufacturer.

Ignition system. Launch rockets with an electrical launch system and electrical motor igniters. Launch system should have a safety interlock in series with the launch switch. Use a launch switch that returns to the "off" position when the rocket is released. Fuse-lit ignition is prohibited.



Launch safety. Use a countdown before launch and ensure observers are paying attention and at a safe distance. Safety zones may need to be adjusted based on wind conditions. Use a launch rod, tower, or rail that is pointed to within 30 degrees of vertical to ensure that the rocket flies nearly straight up. Make sure the rod is above eye-level or capped off when not in use. Use a blast deflector to prevent the motor's exhaust from hitting the ground. Consult the National Association of Rocketry for guidance on simultaneous launches.

Flight safety. Do not launch rockets at targets, into clouds or near airplanes. Do not put any flammable or explosive payload on/in the rocket.

Misfires. If the rocket does not launch, have a plan to safely disconnect the battery and wait at least 60 seconds before allowing anyone to approach the rocket.

Recovery. Use a flame-resistant or fireproof recovery system such as a streamer or parachute on the rocket so that it returns safely and undamaged. Rockets may be used again if they are not damaged. Do not attempt to recover a rocket from power lines, tall trees, or other dangerous places.

Dress appropriately for the activity. Dress for the weather. Often launch sites lack shade. In hot weather make proper arrangements for shade, ensure that participants have sunscreen, and make water available.

Girl Scouts of Northern California's Approval Process for Rocketry

Rocketry is considered a high-adventure activity and must be pre-approved by the council.

- **Trip or High-Adventure Approval Form:** Submit the online [Trip or High-Adventure Approval Form](#) to council at least 4-6 weeks prior to your activity. Gather the following information to complete this form:
 - ☐ Confirmation that your chaperones are registered members of Girl Scouts of Northern California, have a current background check, completed the troop chaperone course and troop driver course (if transporting girls), and completed the [California State Mandated Reporter Training](#). Troop Leaders can find this information in their [Volunteer Toolkit](#).
 - ☐ Name of First Aider and a copy of their current CPR/First Aid certification card. Certification needs to be renewed every two years. If you are hiking or backpacking farther than 30 minutes from a medical facility, please have the information of the member, who is certified in Wilderness First Aid, accompanying your troop.
 - ☐ Confirm that the necessary online and in-person courses have been completed for this trip. You can find more information or register for these courses in your [MyGS Account - GSLearn](#) in the section called Trip & Outdoor Advisor.
 - The **Trip & Outdoor Advisor Course** is required for all overnight and [high-adventure activities](#).
 - The **Camp Out course** is required for all camping trips that involve advanced outdoor cooking or camping trip with girls to a campground or other non-GSNorCal outdoor facility for longer than 1 night without indoor plumbing and electricity. Girls should have already had practice sleeping and cooking outdoors.
 - The **Extended Trips course** is required for troops traveling three (3) nights or more.
 - The **Girl Scout Small Craft Safety Training** is required before you take girls on a small craft water adventure.
- **High-Adventure Approved Vendor List:** GSNorCal troops/groups must select a high-adventure vendor from the [High-Adventure Approved Vendor List](#), which consists of organizations that meet Girl Scouts safety and insurance requirements for the activity. For the safety of our members, before a troop uses a high-adventure site/vendor for a troop or service unit event, the council must approve the high-adventure site/vendor. This process is designed to ensure a safe experience and protect the council's and volunteer's legal interests.