

Guidelines for Model Rocket Construction

Learn to construct a model rocket that can be launched. This should be a learning and enjoyable project for the 4H'er.

1. The rocket should be constructed from manufactured or hand made parts. Materials used should be paper, cardboard, balsa wood or plastic. **NO METAL CAN BE USED IN EXTERIOR PARTS OF THE ROCKET.**
2. The degree of difficulty in the construction and the detail of finishing the exterior should increase each year.
3. Rockets should be sturdy, safe and aerodynamically designed so they can be launched.
4. Engine size should be in proportion for the size of the rocket and should not be larger than a size "C" engine.

RULES FOR ROCKET LAUNCH

1. Participants must be 4-H members.
2. No unauthorized persons on Launch Site
3. Launch Safety Officer will have discretion to disqualify launch if rocket is unsafe.
4. All rockets must have parachute or streamer recovery.
5. Each participant must have all necessary supplies.
6. Launch pads will be furnished.
7. Rocket landing closest to target will qualify for Best of Show and Outstanding Ribbons.
8. Rocket model judging will be held from 9:00 AM to Noon at the Non-livestock judging area.
9. You may use the same rocket for both model rocket judging and rocket launch.
10. Rockets will be inspected and weighed prior to launch for proper engine size. Engine size should be in proportion for the size of the rocket and should not be larger than a size "C" engine.
11. Gliders are permitted to launch.
12. Launch pad can be adjusted within safety requirements.
13. One launch per person for ribbon qualification, additional launches may take place after ribbon qualification is established.
14. Rocket launch will be held in the Riding Arena at 1:00 PM on the Saturday of Judging.

Robotics

All participants are to complete the notebook for this project. A sample notebook is available at the Extension Office and is also on the Barry County 4-H Website <https://drive.google.com/file/d/0B7rFKYr8hjp8MEh0SUw4V1JZRGM/view>.

Mechanical Engineering Projects

Component Construction, Drafting, Mechanical Engineering Kits may only be used if modified to reflect original design by participant. All participants are to complete the notebook for this project. A sample notebook is available at the Extension Office and is also on the Barry County 4-H Website <https://drive.google.com/file/d/0B7rFKYr8hjp8MEh0SUw4V1JZRGM/view>.

Electrical Engineering Projects

Electric Engineering, Robotic/ Automation Project

All participants are to complete the notebook for this project. A sample notebook is available at the Extension Office and is also on the Barry County 4-H Website

<https://drive.google.com/file/d/0B7rFKYr8hjp8MEh0SUw4V1JZRGM/view>.

Civil Engineering Projects

GPS, GIS, Civil Engineering Projects

All participants must make an educational poster or notebook. Your poster or notebook should include:

- Pictures of where you went and what you found.
- Print out of Geo Cache
- Description of what you found.
- What the purpose is behind this technology.

Computer Engineering Projects

Computer Construction, Computer Programming

All participants are to complete the notebook for this project. A sample notebook is available at the Extension Office and is also on the Barry County 4-H Website

<https://drive.google.com/file/d/0B7rFKYr8hjp8MEh0SUw4V1JZRGM/view>.

Science Project

Chemistry, Physics, Biology Project. All participants are to complete the notebook for this project. A sample notebook is available at the Extension Office and is also on the Barry County 4-H Website <https://drive.google.com/file/d/0B7rFKYr8hjp8MEh0SUw4V1JZRGM/view>.

Project Management/ Career Development

All participants are to complete a notebook or education display for this project.

Project Management (cost overview for the projects listed above)

Career Development (researching careers for the projects listed above)

Resources:

Junk Drawer Robotics

www.4-hmall.org

Power of the Wind

www.4-hmall.org

Exploring Spaces and Going Places

www.4-hmall.org

Educational Projects

Mechanical Guidelines

Woodworking

GENERAL

- Learn how to select wood, materials, tools and patterns for projects.
- Learn safe and correct use of hand & power tools.
- Learn names and use of tools
- Learn types and uses of different wood
- Members may get project ideas from woodworking catalogues and similar sources.
- It is very important for members to do the proper amount of sanding and evaluate each step before moving on.
- Advance skills in at least one area, each year
- Journals with photos, or drawing are appropriate for non-portable project
- Refinished furniture needs a journal with before and after photo

Suggested Project Goals

BEGINNER (9-11)

1. Assemble and finish one pre-cut article for an exhibit
2. Construct an article using hand tools only
3. Learn to select wood (soft woods, such as pine, basswood, or western cedar are most appropriate for this age group)
4. Learn to lay out a project with the grain; and measure, mark and cut
5. Sand & prepare wood surfaces for finishing
6. Learn how to use glue and finishes

INTERMEDIATE (12-14)

1. Learn how warping and swelling affect the use of wood
2. Learn how to use the grid system to make irregular shaped objects.
3. Learn to make and use joints, wood fasteners, and draw working sketches.
4. Learn more advanced skills in wood selection and finishes.
5. Learn to use power tools
6. Cut, construct and finish a project using basic power tools
7. Project ideas include: bookrack, footstool, step stool, chair, and picnic table, make extra items and sell at a craft show, etc.

ADVANCED (15-19)

1. Learn how woods are named and classified.
2. Learn about the economics of forest products.
3. Learn advanced skill in using tools, power tools and specialty tools
4. Develop original design(s)
5. Construct a building such as a tool shed
6. Learn how to make and install kitchen/bath cabinets.
7. Project ideas include: kitchen cabinets, table, desk, hutch, gun cabinet, hexagon picnic table, etc.

Welding

GENERAL:

- Learn basic fundamentals of how a welder operates; positive/negative/ground flow
- Know basic safety procedures and hazards to avoid
- Learn common types of metals, types of rod required and common temperature settings
- Advance skills in at least one area each year
- Seams should be appropriately ground
- Photo, journal, drawing or displays are appropriate for non-portable project.

GOALS:

BEGINNER: Accomplish a solid bond that will not break under normal use.

INTERMEDIATE: Learn and use a special weld(s) and know its practical application
Example: stitch weld for strength on a long or curved joint.

ADVANCED: Use a special type of weld or equipment (ex: mig welder)
And/or bond different types of metals (ex: Cast)

Resources:

Small Engines www.4-hmall.org
Finishing Up www.4-hmall.org
Electricity Excitement www.4-hmall.org

Communication

- Understand importance of public speaking as a life skill
- Demonstrate correct public speaking techniques and etiquette
- Learn about the different types of public speaking demonstrations and the tools used in each.
- Learn how to keep an audience's attention
- Learn to appropriately use the amount of time provide (speech not to short or long)

Resource:

Express Yourself www.4-hmall.org

Citizenship

4-H Event Notebooks, Posters or Educational Displays

- Demonstrate with their project leadership skills, the ability to help the community, setting & achieving goals, knowledge of new experiences & club records.
- Make a Poster Displaying a Citizenship Event that you attended or participated in.
- Include
 - Explain the event and what the 4-Her learned from this experience.
 - What was the process to get to this event? How did you learn about it? Did you get a scholarship? Did you fundraise?
 - Explain and demonstrate using pictures what you did at this event?
 - What did you expect from this experience? What did you learn?
- Examples Include
 - National 4-H Week
 - 4-H Exploration Days
 - Washington D.C. Focus
 - Capital Experience
 - National 4-H Congress
 - Local Official Meetings
 - Any other 4-H