



# 4-H Aerospace Project



## Step It Up!

Pass it on! Now that you know how, share it with others. Here are ideas to get you started.

## Are you Into It?

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Explore 4-H Aerospace!

- Learn aerospace foundations such as the forces of flight: Lift, Thrust, Drag and Gravity.
- Explore rocket science by constructing and flying air, water, and combustible propellant powered rockets.
- Learn to manually fly and program autonomous flight for Unmanned Aerial Vehicles (UAV's or Drones).

## Communication

- Share what you've learned with others through a speech or demonstration.
- Write a report or a descriptive paper on how you completed your project.

## Citizenship

- Utilize Drone technology to help in mapping community sites.
- Develop aerial video tours of local landmarks and attractions.

## Here's what you can do all year!

**Starting Out**  
Basic/Level 1

**Learning More**  
Intermediate/Level 2

**Expanding Horizons**  
Advanced/Level 3

- Learn how to construct and fly rockets that are powered by air or water.
- Learn how to safely handle necessary tools for construction and flight.
- Learn how to build a solid engine rocket from a simple kit.
- Learn manual drone piloting skills and techniques.

- Learn how to build advanced rocket kits.
- Learn the proper technique to pack a parachute and flame-retardant cloth to prevent damage to the rocket.
- Learn how lift and drag affect the flight of the rocket and how to increase efficiency.
- Learn to use computer coding to enable autonomous drone flight.

- Learn how to build a rocket without a kit from component materials.
- Learn how to calculate the obtained altitude of the rocket.
- Learn about careers related to the Aerospace industry.
- Be able to teach others about aerospace and prepare presentations to assist.

## Leadership

- Start a 4-H Aerospace Club in your community to engage others with similar interests
- Teach younger 4-H Members the skills you have learned.

4-H is a community of young people who are learning leadership citizenship and life skills.

Learn more at [www.kentucky4h.org](http://www.kentucky4h.org) or contact your county extension office.





# Take Aerospace Further!

Here are some other opportunities to explore aerospace:

- Start a 4-H Rocketry Club.
- Use Drone technology to assist with mapping local places of interest.
- Investigate the concept of aerodynamics and the science behind the flight of the rocket.
- Experiment with differing constructions of rockets to see how flight is affected.
- Start a 4-H Drone Club.
- Explore the outside landscape surrounding the launch pad for potential safety hazards.
- Make new friends while building and launching rockets with others.
- Demonstrate the use of model rockets to other youth using skills learned in the project.
- Trace the history and contributions of nations to rocket development.
- Teach less experienced members about aerospace and rocketry.
- Start other Science, Engineering, and Technology projects within your county

## Exhibit Ideas

- Create a poster showing the different parts of a rocket.
- Develop a display showing how the forces of flight affect drones.
- Develop a poster showing the principles of drone flight.
- Create a display showing examples of careers related to the Aerospace industry. Develop an exhibit showing the history of rockets use in space flight.

## Resources

4-H Resources	Other Resources	Record Keeping
<ul style="list-style-type: none"> <li>• National 4-H Aerospace Adventures Curriculum. <a href="https://shop4-h.org/pages/search-results-page?q=aerospace">https://shop4-h.org/pages/search-results-page?q=aerospace</a></li> <li>Level 1 - Pre-Flight</li> <li>Level 2 - Lift Off</li> <li>Level 3 - Reaching New Heights</li> <li>Level 4 - Pilot in Command</li> </ul>	<ul style="list-style-type: none"> <li>• National Association of Rocketry (<a href="https://www.nar.org/">https://www.nar.org/</a>)</li> <li>• NASA STEM Engagement (<a href="https://www.nasa.gov/STEM">https://www.nasa.gov/STEM</a>)</li> <li>• PITSCO Flight Guide: Drone Competition Curriculum (<a href="https://www.pitsco.com/Shop/Drones/Activity-Guides-and-Curriculum/">https://www.pitsco.com/Shop/Drones/Activity-Guides-and-Curriculum/</a>)</li> </ul>	<ul style="list-style-type: none"> <li>• Keep a record book of rocket launch dates, weather conditions, flight results, and rocket modifications.</li> <li>• Record expenses (and income) associated with your rocketry or drone project.</li> </ul>

