



4-H Aerospace

North Dakota 4-H Project Sheet

This 4-H project is designed to help you explore the world of aerospace, from learning about rocket parts and how they fly to building a rocket and demonstrating to others what you have



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

Communication

- Prepare and give a speech about a model rocket exhibit at a science fair, club or achievement days.
- Demonstrate glider flight capabilities.
- Interview a pilot.

Here's what you can do all year!

| Stage 1 Pre-Flight <i>Grades 1-3</i> | Stage 2 Lift-Off <i>Grades 3-5</i> | Stage 3 Reaching New Heights <i>Grades 6-8</i> | Stage 4 Pilot in Command <i>Grades 9-12</i> |
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| <ul style="list-style-type: none"> • Build a rocket and identify rocket parts. • Learn how birds and airplanes fly; compare birds to airplanes. • Identify aerospace careers. • Design and make a spacecraft. | <ul style="list-style-type: none"> • Make and read a map. • Identify types of aircraft. • Discover how weather affects flying. • Understand the "angle of attack." • Identify parts of a hot-air balloon and make a hot-air balloon. • Learn and use the International Phonetic Alphabet. • Discover the effects of disorientation in space. | <ul style="list-style-type: none"> • Build a straw and balloon rocket. • Make a paper flight simulator. • Make a flying wing glider. • Build a controllable glider. • Build a Nagasaki Hata Fighter kite. • Discover basic helicopter functions and parts. • Make a hang glider. | <ul style="list-style-type: none"> • Build a Viking rocket. • Construct and use an altitude tracker. • Research how to qualify for a pilot's certificate. • Plan and teach an aerospace session. • Evaluate and design navigation systems. • Build a flat-style box kite. • Complete a career profile. |

Citizenship

- Organize a rocket launch.
- Organize a kite-flying contest.
- Volunteer at a local airport or airshow.

Leadership

- Organize an airport tour for your 4-H club.
- Conduct an aerospace skillathon.
- Teach a workshop on aerospace.

Entrepreneurship

- Build and sell kites.
- Organize a kite flight contest.
- Teach a class on model rocketry, kite building and model airplane flying.
- Open a small retail operation to sell airplane, kite and rocket kits.



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Opportunities to explore aerospace:

- Explore an aerospace career using online resources.
- Shadow an airline employee for one day.
- Attend an aerospace event or camp.
- Visit a local airport and have a pilot and/or mechanic talk about flying.
- Look for opportunities to take the ground school portion of a flight training class.
- Visit with an aircraft maintenance engineer to learn about aircraft maintenance.
- Take a flight with a flight instructor.



Exhibit Ideas

- Build model rockets from a kit.
- Build model rocket from your own design.
- Build a model airplane from a kit or your own design.
- Create a display of aviation principles.
- Create a display of in-flight procedures.
- Create a poster with pictures of places you've visited, your first plane ride, programs you've participated in, types of planes, etc.
- Develop a booklet on specific types of planes; knowledge of how planes/rockets work.
- Do a report (could include interviews with people) on the history of space flight; history of space exploration or astronauts; careers; aerospace related to agriculture; how planes or rockets work; principles of flight or military air battles.
- Write a story about aerospace or space flights, rockets, etc. (can be science fiction).
- Create a booklet on specific types of planes; knowledge of how planes/rockets work.
- Build any other model (helicopter, etc.).

4-H Resources

- [National 4-H Curriculum Books](#)
- [Pre-Flight \(HCA131\)](#)
- [Lift-Off \(HCA132\)](#)
- [Reaching New Heights \(HCA133\)](#)
- [Pilot in Command \(HCA134\)](#)
- [Flight Crew Helper's Guide \(HCA231\)](#)
- [Educational Trunk](#)
 - Pop Bottle Rocket Trunk (*Reserve through your county Extension office*)
- [Aerospace Event](#)
- [National Youth Science Day](#)

Other Resources

- [UND Aerospace](#)
- [Basics of Rocketry](#) (*Educators area of NASA website*)
- [National Association of Rocketry](#)
- [NASA Science](#)
- [NASA Kids Club](#)
- [NASA Education for Students](#)
- [NASA Education for Educators](#)

Recordkeeping

- [Planning for My Project Adventure \(PA093\)](#) (*Ages 8-10*)
- [4-H Project Plan \(PA095\)](#)
- [4-H Plan of Action \(PA096\)](#) (*Ages 11-18*)
- [ND 4-H Participation Summary for 11- to 19-year-olds \(PA098\)](#)

Learn more at www.ndsu.edu/4h or contact your county NDSU Extension office.

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