



4-H Small Engines

North Dakota 4-H Project Sheet

Small engines power our lives for work and play. Learn how small engines work, how to maintain and repair them, and how to apply this information to a hobby or career.



- Learn basic to advanced information about small engines.
- Learn life skills such as planning, organizing, comparing and measuring, decision making, communication, safety and problem solving.

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

Communication

- Present a demonstration or speech at your area 4-H communication arts contest.
- Provide a small-engine safety seminar during a community event.

Citizenship

- Help a friend or family member maintain or repair a small engine.
- Organize a group to mow lawns for elderly homeowners.

Leadership

- Plan a tour for your 4-H club of a mechanic shop or lawn-care business in your community.
- Organize a small-engine tune-up day, with proceeds going to a local charity or donate labor for the underprivileged or less fortunate.

Entrepreneurship

- Start a lawn-mowing business.
- Job shadow a mechanic or lawn care business owner for a day.

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Here's what you can do all year!

Starting Out Basic/Level 1	Learning More Intermediate/Level 2	Expanding Horizons Advanced/Level 3
<ul style="list-style-type: none"> • Identify parts of a small engine. • Start an engine. • Identify tools used with small engines. • Identify and use safety equipment. • Understand oil grades. • Understand and perform deck maintenance procedures. • Understand water and air cooling systems. • Learn to perform engine maintenance on spark plugs, air cleaners and carburetors. • Understand safety labels. • Match the machine to the job. • Compare how different cuts affect grass growth. • Determine engine size. 	<ul style="list-style-type: none"> • Classify small-engine types. • Identify internal small-engine parts. • Identify specialty tools. • Test the compression of an engine. • Be able to clean a carburetor and understand carburation. • Learn to season a small engine. • Understand transmission of power in the engine. • Understand a machine's center of gravity. • Buy small-engine parts. • Obtain information about careers related to small engines. 	<ul style="list-style-type: none"> • Identify small engines by sound. • Identify and use diagnostic tools. • Learn to assemble and tear down an engine. • Learn to tear down and rebuild an engine's electrical system. • Maintain work machines. • Investigate trends in the small-engines industry. • Learn about rules pertaining to small engines. • Select a replacement engine. • Make recommendations for buying a machine with a small engine. • Start your own business.



Science, Engineering and Technology

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Opportunities to explore small engines:

- Give a presentation or demonstration on small engines at your club meeting and communication arts event.
- Teach younger 4-H members in your club about small engines by playing small-engine bingo.
- Research careers that work with small engines.
- Research education requirements for working with small engines.
- Visit a mechanic shop.
- Attend local workshops or tradeshow.
- Interested in a college education in engineering or landscape architecture? Schedule a visit with North Dakota State University, www.ndsu.edu.



Exhibit Ideas

- Create a poster on small engine safety or maintenance.
- Display proper and improper or defective plugs.
- Create a poster or display demonstrating routine repair and maintenance .
- Display a small engine you overhauled or repaired.
- Display a reconstructed engine in good running order.
- Create a safety poster on any lawn and garden equipment.
- Create a poster on how an engine runs.
- Display maintenance or equipment operations (gears, belts, etc.).
- Create a display comparing 2- and 4-cycle engines.
- Display lawn and garden equipment or some other application of small engines.

4-H Resources

- [National 4-H Small Engines Curriculum](#):
 - [Crank It Up!](#) (HCG101)
 - [Warm It Up!](#) (HCG102)
 - [Tune It Up!](#) (HCG103)
 - [Helper's Guide](#) (HCG256)
 - [Online Curriculum](#)
- [Educational Trunk](#)
 - The Advanced Engine Trunk comes in two Stanley tool chests with wheels and requires a pickup or van to carry.

(Reserve through your county Extension office.)

Other Resources

- [Four-stroke Combustion Engine](#)
- [Howstuffworks](#)
- [John Deere Kids](#)
- [API \(American Petroleum Institute\)](#)
- [ASABE](#)
- [The Lawn Institute](#)
- [Outdoor Power Equipment Institute](#)
- [Professional Lawn Care Network](#)
- [SAE \(Society of Automotive Engineers\)](#)

Recordkeeping

- [Planning for My Project Adventure](#) (PA093)
- [ND 4-H Project Plan](#) (PA095)
- [ND 4-H Plan of Action](#) (PA096)
- [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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