



Missouri 4-H

University of Missouri
4-H Center for Youth Development

Small Engines Project Brief

Learning Objectives

- Learn about engine size and compression ratios, seasoning engines and safety issues
- Focus on basic small engine knowledge
- Learn about occupational possibilities by interviews and learn about starting one's own business
- Study external engine parts
- Demonstrate the use of diagnostic tools, rules and regulations about using small engine machines, and about selecting a replacement engine
- Understand uses of small engines and safety issues regarding small engines
- Discover tools of the trade, learn concepts of what makes small engines work
- Study internal parts of engines and more advanced tools
- Understand the process of tearing down and rebuilding an engine

Fair Projects

- Parts board
- Engine Cutaway
- Refurbished engine

Demonstration Ideas

- Tuning an engine
- Preparing an engine for storage
- Cranking an engine
- Safe use of lawn mowers
- My two-cycle engine
- Grades of oil
- Adjusting a carburetor
- The importance of clean air
- How to correctly start and stop
- How to service engines
- How to prepare for winter storage
- Identification of engine parts
- Change Oil
- Perform tune up
- Winter Storage

Field Trips

- Visit a local repair shop
- Tour a factory
- Job shadow a mechanic

Ideas for Speech Topics

- Basic Parts & Functions
- Difference between 2 cycle & 4 cycle
- Winter storage of engine
- Small engine repair to make money
- Lawn mower maintenance
- Choosing the right motor for go-carts
- 4 wheeler engine maintenance
- Explain different types of outboard motors

Critical Thinking

- How has learning about small engines helped you learn responsibility?
- What are some careers that you are interested in exploring with small engine repair or sales?
- What effect does horsepower have on gas consumption? Machinery wear?
- How can you turn your project into a money maker?

Community Service

- Organize a lawn mower tune up clinic
- Mow lawns or weed eat for elderly
- Winter prep clinic
- Collect used oil
- Pick up highway ditch trash before it's mowed

Science & Technology

How have you used the science and technology process in this project area?

Examples:

- Build or construct an engine so that it runs correctly.
- Compare different types of engines and their uses.
- Troubleshoot possibilities to fix an engine that is not working properly.
- Test your theory about an engine that is not running properly.

Show Me Character

Trustworthiness - includes honesty, promise keeping and loyalty.

- Be dependable when working with dangerous equipment
- Be honest with your project leader and your teammates
- Only use equipment you have been trained to use
- Show off your talents-choose to build from scratch not using kits or pre-assembled projects

Respect - includes courtesy and proper treatment of people and things.

- Don't judge people based on the quality of their projects remember that everyone has tried their best
- Show care and respect for everyone's projects
- Treat others' projects the way you want your project treated

Responsibility - includes the pursuit of excellence, accountability and perseverance.

- Learn safety procedures for all equipment you use
- Be prepared with the materials you need to complete your projects
- Listen carefully to the instructions of your leaders
- Do your part when working in groups

Fairness - involves consistently applying rules and standards appropriately for different age groups and ability levels.

- Take turns using the equipment so everyone has equal time building and constructing
- Follow specifications and guidelines for your project
- Allow everyone access to the same materials

Caring - promoting the well being of people and things in a young person's world. It denotes action and not just feelings.

- Be willing to help friends even if you are competing against them
- Thank leaders and facilitators that help you with your project
- Share your tools and supplies if someone else runs low or is having trouble

Citizenship - includes making the home community and county a better place to live for themselves and others.

- Always clean up your workspaces and messes left behind by others
- Share your talents by building something that you can donate or give as a gift
- Don't use any supplies that are not allowed
- Create waste free environments and think of ways to better your community and environment by using your skills

Show Me Standards

Missouri 4-H members will acquire the knowledge and skills to gather, analyze and apply information and ideas, communicate effectively, recognize and solve problems, make decisions and act as responsible members of society.

4-H members will acquire a solid foundation which includes knowledge of:

- **Communication Arts** - participating in formal and informal presentations and discussions of issues and ideas
- **Mathematics** - discrete mathematics
- **Science** - properties and principles of force and motion

Resources

851 Small Engines Unit 1

Y620 4-H Project Record
Y8510 Crank It Up
LG8540 Small Engines Helper's Group Activity Guide

852 Small Engines Unit 2

Y620 4-H Project Record
Y8520 Warm It Up!
LG8540 Small Engines Helper's Group Activity Guides

853 Small Engines Unit 3

Y620 4-H Project Record
Y8530 Tune It Up!
LG8540 Small Engine Helper's Group Activity Guide

To Order

Extension Publications online at <http://extension.missouri.edu/explore/shop/> or by phone 1-800-292-0969
For additional resources check with your local University of Missouri Extension Center or the 4-H Source Book at

<http://www.4-hmall.org/educationalresources.aspx>.