



# Farm Mechanics

## Merit Badge Workbook

This workbook can help you but you still need to read the merit badge pamphlet (book). No one can add or subtract from the Boy Scout Requirements #33215. Merit Badge Workbooks and much more are below: [Online Resources](#).

Workbook developer: [craig@craiglincoln.com](mailto:craig@craiglincoln.com). Requirements revised: 2008, Workbook updated: August 2008.

Scout's Name: \_\_\_\_\_ Unit: \_\_\_\_\_

Counselor's Name: \_\_\_\_\_ Counselor's Ph #: \_\_\_\_\_

1. Do the following:

a. Discuss with your counselor the safety equipment, \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

tools, \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

and clothing used while checking or repairing farm equipment. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Use this equipment, tools, and/or clothing (when needed or called for) in meeting the requirements for this merit badge.

b. Draw a plan showing a well-equipped farm shop. Point out the shop's mandatory safety devices and features.

c. Find all the universal warning and safety symbols on a piece of equipment and explain what they mean. \_\_\_\_\_

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d. Describe what a material safety data sheet (MSDS) is and tell why it is used. \_\_\_\_\_

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Obtain the MSDS for any engine coolant, oil, grease, fuel, hydraulic or transmission fluid, or other flammable or hazardous materials you use in meeting the requirements for this merit badge. \_\_\_\_\_

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2. Explain how power is produced or transferred in a:

a. Diesel engine \_\_\_\_\_

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b. Hydraulic system \_\_\_\_\_

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c. Transmission or any other power system. \_\_\_\_\_

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3. Do TWO of the following:

a. Replace the handle on any tool found on the farm. \_\_\_\_\_

b. Organize a tool rack or a storage system for nails, bolts, nuts, and washers. \_\_\_\_\_

c. Using a hand file, properly dress the mushroom head of a chisel or punch. \_\_\_\_\_

d. Using a hand file, properly dress a screwdriver tip. \_\_\_\_\_

4. Do ONE of the following:

a. On an engine-powered machine: Grease all fittings, change the oil and oil filter, clean the air filter, clean the radiator fins, and replace the fuel filters. \_\_\_\_\_

b. For any engine-powered machine, create a preoperational checklist; include checking the engine coolant, engine oil, hydraulic and/or transmission fluid, and battery voltage (using a voltmeter). Using your checklist, conduct a preoperational check of that machinery or equipment. \_\_\_\_\_

c. Prepare any farm machine for winter storage. \_\_\_\_\_

5. Visit an implement dealer. Interview the dealer, technician, or service manager for hints on good preventive maintenance. Ask why it is important, the costs, and what causes wear or damage? Report what you learn. \_\_\_\_\_

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6. Explain each step in ONE of the following maintenance procedures:

- a. Tightening hydraulic fittings
- b. Checking the air filter
- c. Cleaning a work piece with a wire-brush wheel.

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7. Find out about three career opportunities in farm mechanics. \_\_\_\_\_

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Pick one \_\_\_\_\_

and find out about the education, training, and experience required for this profession. \_\_\_\_\_

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Discuss this with your counselor, and explain why this profession might interest you. \_\_\_\_\_

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**Online Resources** *(Use any Internet resource with caution and only with your parent's or guardian's permission.)*

**Boy Scouts of America:** ▶ [scouting.org](http://scouting.org) ▶ [Guide to Safe Scouting](#) ▶ [Age-Appropriate Guidelines](#) ▶ [Safe Swim Defense](#)  
▶ [Scout](#) ▶ [Tenderfoot](#) ▶ [Second Class](#) ▶ [First Class](#) ▶ [Rank Videos](#) ▶ [Safety Afloat](#)

**Boy Scout Merit Badge Workbooks:** [usscouts.org](http://usscouts.org) -or- [meritbadge.org](http://meritbadge.org) **Merit Badge Books:** [www.scoutstuff.org](http://www.scoutstuff.org)

Agrinet: <http://agrinet.tamu.edu/>

Agriculture.com: <http://www.agriculture.com/>

US Department of Agriculture: <http://www.usda.gov/>