



FARM MECHANICS

Merit Badge Requirements

- 1) List 10 common tools found in a well-equipped farm shop and explain how to safely use each one.
- 2) Do the following:
 - A) List ten safety devices in a well-equipped farm shop and explain the function of each.
 - B) Demonstrate proper safety apparel and equipment to be worn and used when operating a grinder, wire-brush wheel, welder, or drill.
 - C) Draw a plan showing a well-equipped farm shop. Point out mandatory safety devices and features in the shop.
- 3) Explain how power is produced or transferred in a:
 - A) Diesel engine
 - B) Hydraulic system
 - C) Transmission or any other power system
- 4) Do TWO of the following:
 - A) Replace the handle of any tool found on the farm.
 - B) Build a tool rack with storage for nails, bolts, nuts, and washers.
 - C) Properly grind the mushroom head off of a chisel or punch.
 - D) Correctly grind or file a screwdriver tip.
- 5) Do ONE of the following:
 - A) Make necessary adjustments to ready a piece of farm equipment or machinery for field operation.
 - B) Choose a piece of farm machinery or equipment. Check all nuts, bolts, and screws. Tighten any that are loose. Replace those that are missing, worn, or damaged.
 - C) Repair broken or worn farm machinery or equipment.
- 6) Make a list of safety precautions for adjustments or repairs you make for requirement 5.
- 7) Do ONE of the following:
 - A) On an engine-powered machine: grease all fittings, change oil and oil filter, clean air cleaner, flush cooling system, clean radiator fins, and replace diesel fuel filters.
 - B) With any farm machine, do a daily service check for field use. (Do things needed for best field performance.)
 - C) Prepare any farm machine for winter storage.
- 8) Visit an implement dealer. Interview the dealer technician or service manager for hints on good preventive maintenance. Ask why it is important. What are the costs? What happens that causes wear or damage? Report on what you discovered.
- 9) Explain each step in ONE of the following maintenance procedures:
 - A) Tightening hydraulic fittings.
 - B) Servicing spark plugs.
 - C) Lubricating a clutch-release bearing.
 - D) Cleaning a work piece with a wire-brush wheel.

Requirement 1

List 10 common tools found in a well-equipped farm shop and explain how to safely use each one:

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Tool: _____ How to use one safely: _____

Requirement 2

List 10 safety devices in a well-equipped farm shop and explain the function of each:

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

Safety Device: _____ Function: _____

List the proper safety apparel and equipment to be worn and used when using each of the following:

Grinder: _____

Wire-Brush Wheel: _____

Welder: _____

Drill: _____

Use the following area to draw a plan showing a well-equipped farm shop. Identify mandatory safety devices and features in the shop:



Requirement 3

Explain how power is produced or transferred in a *diesel engine*: _____

Explain how power is produced or transferred in a *hydraulic system*: _____

Explain how power is produced or transferred in a *transmission* or any other power system: _____

Requirement 4

For this requirement you have been given 4 options. Select and complete two of them.

If you selected *Option A*:

Replace the handle of any tool found on the farm.

Handle replaced: _____

Time it took: _____

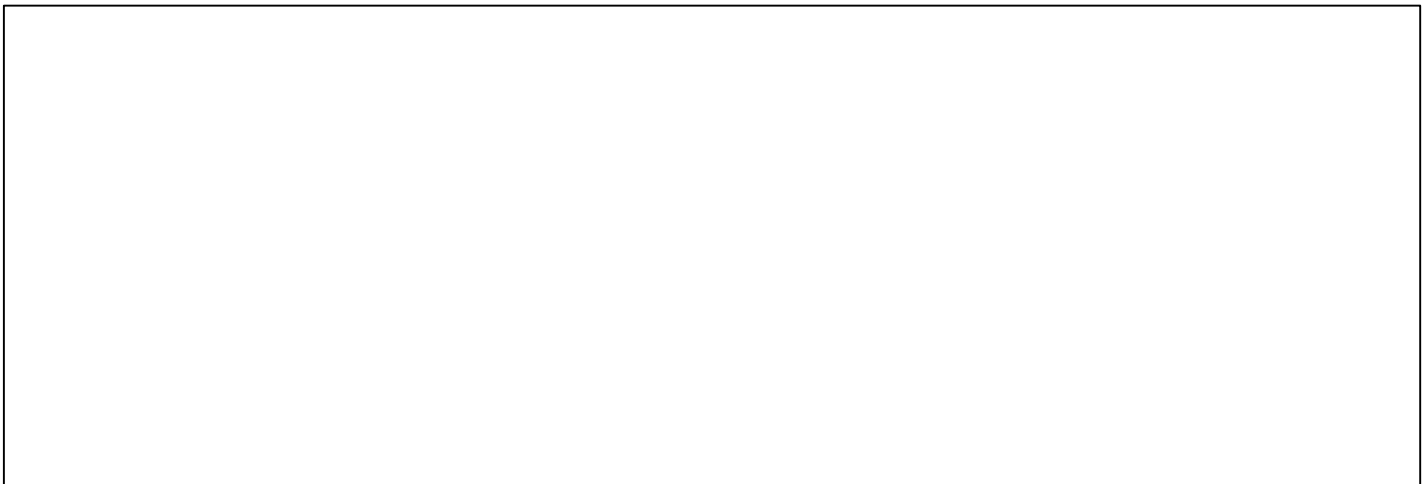
Briefly describe the process of replacing the handle: _____

If you selected *Option B*:

Build a tool rack with storage for nails, bolts, nuts, and washers.

Time it took: _____

Draw a small sketch or attach a photo of your tool rack:



If you selected *Option C*:

Properly grind the mushroom head off of a chisel or punch.

Time it took: _____

Briefly describe the process: _____

Safety devices used: _____

If you selected *Option D*:

Correctly grind or file a screwdriver tip.

Time it took: _____

Briefly describe the process: _____

Safety devices used: _____

Requirement 5

For this requirement you have been given three options. Select and complete one of them.

If you selected *Option A*:

Make necessary adjustments to ready a piece of farm equipment or machinery for field operation.

Describe the adjustments made: _____

If you selected *Option B*:

Choose a piece of farm machinery or equipment. Check all nuts, bolts, and screws. Tighten any that are loose. Replace those that are missing, worn, or damaged.

Name of equipment checked: _____ Date: _____

Did anything need tightening? YES NO Did anything need replacing? YES NO Describe your inspection: _____

If you selected *Option C*:

Repair broken or worn farm machinery or equipment.

Name of equipment repaired: _____ Date: _____

Description of repair: _____

Requirement 6

Make a list of safety precautions for adjustments or repairs you made in requirement 5:

Safety Precaution: _____
Safety Precaution: _____
Safety Precaution: _____
Safety Precaution: _____
Safety Precaution: _____
Safety Precaution: _____

Requirement 7

For this requirement you have been given three choices. Select and complete one of them.

If you selected *Option A*:

On an engine-powered machine: Do the following

- Grease All Fittings Change Oil Change Oil Filter Clean Air Cleaner
- Flush Cooling System Clean Radiator Fins Replace Diesel Fuel Filters

If you selected *Option B*:

With any farm machine, do a daily service check for field use. (Do things needed for best field performance.)

Describe your service check: _____

If you selected *Option C*:

Prepare any farm machine for winter storage.

Describe the process of preparing a farm machine for winter storage: _____

Requirement 8

For this requirement you have been asked to visit an implement dealer and interview the dealer technician or service manager. After your interview answer the following questions:

What hints did the technician give on good preventive maintenance? _____

Why is preventive maintenance important? _____

What are the costs of preventive maintenance? _____

What happens that causes wear or damage? _____

What else did you learn or discover from your visit and interview? _____

Requirement 9

For this requirement you have been given four options. Select and complete one of them.

If you selected *Option A*:

Explain each step for the maintenance procedure of tightening hydraulic fittings: _____

If you selected *Option B*:

Explain each step for the maintenance procedure of servicing spark plugs: _____

If you selected *Option C*:

Explain each step for the maintenance procedure of lubricating a clutch-release bearing: _____

If you selected *Option D*:

Explain each step for the maintenance procedure of cleaning a work piece with a wire-brush wheel: _____
