

LESSON 3

SPPSL40.4

TOOLS OF THE TRADE

12-18 YEAR OLDS

PURPOSE

To introduce youth to basic lawn care tools and how they function.

OBJECTIVES

Youth will be able to:

- identify basic lawn care tools.
- describe how, why and in what circumstances tools are used.
- comparison shop for lawn mowers or other lawn care equipment.
- understand the importance of tool maintenance.
- perform basic maintenance tasks.

LIFE SKILLS

Youth will develop:

- decision making skills.
- a sense of responsibility (for the care and maintenance of items).
- problem-solving and critical thinking skills.

LESSON TIME

Lesson time will vary depending upon the learning activities selected as well as the age and number of youth involved. The lesson activities selected will also vary with age group. Most activities will not require more than 30-45 minutes.

LEARNING ACTIVITIES (with target participant age ranges)

TAKE TOOLS TO TASK (16-18)

MOWER MANIA (12-18)

TOOL MYSTERY (12-18)

IMACHINATION (12-18)

TUNE IN! (12-18)

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ADVANCE PREPARATION

1. Review TOOLS OF THE TRADE...Background Basics.
2. Review activities and choose appropriate one(s) to use.
3. Secure necessary materials as described.

Do

Explore the TOOLS OF THE TRADE!

- ◆ Introduce tools in TAKE TOOLS TO TASK.
- ◆ Demonstrate tool use with activities in MOWER MANIA and TOOL MYSTERY.
- ◆ Orient youth to using an owner's manual in IMACHINATION.
- ◆ Identify tool parts and maintenance tasks with TUNE IN!

REFLECT

After completing the lesson, help youth reflect on what they have learned with these questions:

- ◆ What did you learn about tools?
- ◆ Which tool was the easiest to use? Why? Which was the most difficult to use?
- ◆ How do you decide which tool to use?
Depends on what tools you have and the job at hand.
- ◆ What are general maintenance tasks that should be done after using tools?
Cleaning and checking our tools on a regular basis helps to prolong the life and prevent major damage.

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APPLY

- ◆ What are some tools we use frequently?
Our brains, thumbs, silverware, hammers, books, computers.
- ◆ How do we decide when and how to use them?
Depends on the situation, our needs and our objectives.
- ◆ Can the principles of maintenance and repair be applied to other aspects of your life?
Maintaining our health and bodies, our houses, roller blades, skateboards and vehicles.

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BACKGROUND BASICS...Tools of the Trade

A tool is something used to perform an operation or task. Hammers, nails, knives, forks and sticks can all be used as tools. Tools can make a tough job easy or an easy job hard. The right tool for the right job can save much time and energy. The wrong tool or a tool used incorrectly can add to the effort required to complete a task.

When purchasing tools, it is not only important to know the job you want your tools to perform, but also the quality of the tool itself. If tools are not cared for and maintained properly, they could malfunction or break. But they can also break if they are pushed beyond their limit or they are poorly manufactured. The old saying, “You get what you pay for” is very true. One indicator of a quality tool is a manufacturer's guarantee or warranty. A **guarantee** is an agreement that secures the existence or maintenance of something—in this case, a tool. Many tools come with a lifetime guarantee. A **warranty** is a type of guarantee that ensures that goods will be as represented and, if not, will be replaced or repaired. In many cases, warranties are limited and only cover certain aspects of an item. A highly visible example is a car warranty. Certain aspects of a car usually have a 3 year, 36,000 mile warranty. After that period expires, the manufacturer no longer assumes any responsibility for the integrity of the car. Often a tool with a guarantee may be more expensive, but chances are it is a higher quality. Companies usually do not offer a guarantee if they expect to lose money by always replacing their goods. However, make sure you keep the receipt. Most manufacturers require proof of purchase. Staple the receipt to the front of your owner's manual or keep it with your business records.

There are many different kinds of tools used in lawn maintenance. Some of the commonly used tools for lawn care include **lawn mowers, rakes, sprinklers, garden hoses, trimmers, edgers, blowers** and **shears**. In this lesson, the function, use and care of lawn care tools will be explored.

MOWERS

Lawn mowers are used to cut grass. Although most people are familiar with the gasoline-powered rotary mower, there are actually two different kinds of mowers, and many different ways of powering them. Here are some of the types of mowers you may run across.

Reel Mowers:

These were once the only way (other than sheep and cattle!) to keep large amounts of grass neatly trimmed. These days, we seldom see them except on golf courses and old TV reruns. Reel mowers use a large number of sharp, wavy blades rotating against a fixed metal knife which glides along the surface of the grass. The blades meet the bedknife, as it's called, like scissors, and shear the grass off very gently and evenly.

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Because of the tremendous amount of cutting surface, reel mowers stay sharp a long time, but are quite difficult to sharpen. They are easily damaged by sticks and small rocks. Furthermore, they don't work as well on the thick grass species commonly found in most Florida lawns. They are becoming more popular, however, because some models use no power other than the person pushing them. They're quiet, small, and economical to operate. Many reel mowers allow you to either catch grass clippings for composting or let them fall back onto the lawn.

Rotary Mowers:

This is the kind of mower with which nearly everyone is familiar. A large blade rotates horizontally under the mower and whacks the tips of the grass off like a sword. Because the blade must spin very quickly to do this, rotary mowers are always powered by some sort of motor. Most mowers have blades with little wings on them to lift the grass as it is cut. It then blows the clippings out the side (**side chute mower**) or into a bag (**bagging mower**). **Mulching mowers** are designed to keep clippings suspended under the mower housing until they are cut several times before letting them fall back onto the lawn. Some mowers are designed for use as discharging and/or mulching mowers. This usually requires the changing of blades. **ALWAYS** use the blade type recommended by the manufacturer to avoid costly repairs later on (refer to your owner's manual).

Since the rotary mower blade must be traveling very quickly in order to chop off the tops of the grass blades, only the fast-moving outer tips (about 3") of the blade are sharpened. This means that there is very little to sharpen, but also that the blade dulls very quickly. Also, the quickly-rotating blade can throw objects out from under the mower. Be sure the blade is balanced after it is sharpened. An unbalanced blade will cause the mower to vibrate, making it unsafe to operate.

POWER

Lawn equipment performs the work and that means they require a power source. Here are some of the ways modern lawn mowers are powered:

Muscle:

Although not as common as they used to be, push-type reel mowers require no energy other than a push on the handle. Gears linking the wheels to the blades cause them to turn at the same time.

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Gasoline Engines:

This is by far the most popular source of mower power. Both reel and rotary mowers may be powered by gasoline engines. These engines are fairly small, light and powerful. There are two types of gasoline engines:

4-cycle engines: These use straight gasoline and have a separate place to put motor oil, just like a car. They tend to be reliable and only moderately noisy when properly maintained.

2-cycle engines: These burn a mixture of gasoline and special oil. For their size and weight, these engines are more powerful than the 4-cycle kind. However, they also may be noisier and smokier.

Diesel Engines:

For larger equipment, diesel engines sometimes are offered. They use a special type of fuel, separate oil and no spark plugs. Although they tend to be very simple and dependable, they also tend to be the loudest of all mower engines.

Electric Motors:

Just like a home vacuum cleaner, some mowers are powered by a large electric motor. Electric mowers usually plug into a standard outlet and require extension cords in order to reach out into the lawn. A few electric mowers are now available with large batteries to power the motor, eliminating the need for a bothersome cord except when recharging. A full charge can cut about $\frac{1}{4}$ acre. Due to limits on cord length or battery endurance, electrically-powered mowers are currently suitable only for small areas. They have the advantages, however, of being quiet, easy to maintain and environmentally friendly.

Solar-powered:

These are really a category of electric mowers that use solar power to charge a set of batteries which run an electric motor. Some look like a regular battery-powered mower covered in solar cells and are used in the same fashion. Others are small, completely automated robots that mow the grass by themselves, including breaks for recharging in the sun.

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PROPULSION

Both reel and rotary mowers need to move over the grass in order to cut it. There are many ways to accomplish this:

Push:

The push-type mower requires the user to push it over the lawn, while the motor powers the blade(s) to cut the grass. Some reel mowers even use muscle-power to do the cutting by linking the wheels to the cutting blades so that they turn at the same time while you push. Because push mowers are fairly simple to produce, they tend to be the cheapest way to cut grass. Prices range from \$125 to \$600, depending on size, engine type, mulching ability and so on. They are available with 2- and 4-cycle gasoline engines, as well as electrical motors.

Self-propelled:

These mowers take advantage of the powerful engine by using it to move the mower as well as cut the grass. These mowers may be either **front-wheel** or **rear-wheel drive**, just like a car. Each has its own advantages and disadvantages. Although these mowers are much easier to use, they are also more expensive. Prices range from \$200 to \$800, with the same options as push mowers. They are available with 2- and 4-cycle gasoline engines.

Riding:

These large mowers actually have seats for the user and use engine power to drive and mow. Obviously, the engines on these vehicles must be large (8-10 hp) and are usually limited to 4-cycle gasoline, with some diesel-powered models. Riding mowers nearly always have electric starters and steering wheels, making them very easy to use. They can cut large amounts of grass very quickly and may come with either a large grass-catcher, mulching capability or both. Prices are in the \$1000-\$2000 range.

Tractors:

More than just mowers, these machines can usually be equipped with a variety of tools and implements for many different tasks. Lawn tractors typically have a 12-14 hp engine, with cutting decks containing several blades. Prices range from \$900-\$4000. Garden tractors are generally larger, with 16-20 hp engines and have even more options. They also have a higher cost: \$2000-\$5000+.

When purchasing any mower look for heavy duty, long life, dependability, easy starting, quiet running, fuel efficiency and a good guarantee/warranty with a parts service center located near you. Have youth research the latest consumer information in magazines such as *Consumer Reports* at their local library for detailed comparisons before purchasing power equipment.

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LAWN RAKES

Lawn rakes have fan-like, flat, springy teeth. These rakes are designed to glide over the grass so that they can remove clippings or leaves without catching in the sod. Lawn rakes are commonly made of steel, polypropylene or bamboo. While polypropylene and bamboo don't rust, often the wire holding the bamboo together may rust if not stored correctly. Lawn rakes work most efficiently when handled like a broom. Use a sweeping motion rather than a raking action.

Steel-tine rakes:

Unlike the wire tines that characterize leaf rakes, steel-tine lawn rakes have flat tines. These flat tines vary considerably in steel quality. This quality can't really be determined simply by looking at the rake, but price gives one indication. The tines on a good steel lawn rake are made of spring steel; they will snap back into position even when severely bent. However, cheaper rakes will stay bent. You can straighten the tine with a pair of pliers, but it will be weak at that point and may bend again. In addition to the problem of bending tines, this type of lawn rake requires more rust-preventive care than others.

Polypropylene rakes:

Polypropylene rakes do not rust like metal rakes and they do not become brittle and frayed like bamboo rakes. Look for good reinforcement across the tines and around the area where the head attaches to the handle. The heavy-duty models are most durable and are worth buying even if your lawn is small.

Bamboo rakes:

Bamboo rakes do not rust like metal rakes and are very light weight. Look for good reinforcement across the tines and good attachment to the handle. As with all equipment, keep them out of the sun and rain when not in use. Bamboo rakes can become brittle and frayed if not protected from the elements between jobs. Also, wire is often used to attached the bamboo tines to the handle. As mentioned earlier, this wire may rust if the rake is not dried off before storage in a covered area.

SPRINKLERS

It isn't easy to decide on a sprinkler-there are so many kinds from which to choose. Some throw water in a round, rectangular, or square pattern; others revolve, oscillate, pulsate or are fixed. Then there is the travelling sprinkler, which looks like a toy tractor crawling around the grass. You can even get a sprinkler that obligingly rolls up the hose behind it and shuts itself off when done!

To some degree your choice is predetermined by the size and shape of the area to be covered and by the existence or nonexistence of trees that might block the water pattern. Before purchase,

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obtain manufacturers' specifications for a variety of sprinklers. See if the water patterns of these sprinklers match the area you want watered. Take into account how quickly your soil type absorbs water. Don't buy a sprinkler that puts out water so fast that most of it runs off into the street.

Impulse sprinklers have the most versatile patterns. They and revolving sprinklers can be height-adjusted to cover the area under trees. If the yard is so large that individual sprinklers won't achieve adequate coverage, you can opt for an underground system. More energy-efficient irrigation systems are constantly being developed for consumer use. It's a good idea to visit an irrigation supply house to find out their current recommendations for optimum performance in your area. Some towns now offer reduced rates for using treated water for irrigating lawns and ornamentals. Call your local utility company to see if this is available in your area.

HOSE AND NOZZLES

Select a good quality reinforced hose. Be sure hose length and diameter suit your needs. A $\frac{5}{8}$ inch hose is the best choice. Good quality hoses, made of rubber with a polymer coating, usually come with a 5 year or more guarantee. An adjustable nozzle is best. A trigger (gun-type) handle or shut off valve is a must for water conservation. It allows you to turn the water off from the hose end rather than walk back to the spigot.

TRIMMERS, EDGERS, BLOWERS and SHEARS

Note: This section of information is to provide you as leader with comprehensive background information. State and federal regulations may prohibit youth from operating certain motorized equipment. Please refer to the introduction of this leader's guide for more details on these regulations.

Trimming means cutting *horizontally*, across the top. Turfgrass is frequently trimmed near trees, fences and other obstructions where a mower cannot reach. Edging means cutting *vertically*, along the sides. Turfgrass is edged along sidewalks and plant beds to keep the boundary looking crisp and neat. Shears are used to trim landscape plants in order to maintain the desired size and shape. A large variety of tools have been developed to keep grass and plants looking their best. Choosing the right tool means making decisions based on the size of the job, the time you are willing to spend and the price you are willing to pay for upkeep.

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String Trimmer:

The well-known line trimmer or string trimmer uses a rapidly-spinning nylon line to whack the tops off the grass blades or small weeds and plants. They may use either electric motors (cord or battery) or gasoline engines (usually 2-cycle) and can be a very versatile tool when used safely and properly. Some models may be used as edgers and most can use a variety of nylon line types.

Semicircular Turf Edger:

This non-powered hand tool looks like a hoe that's been straightened out, with a half-moon-shaped blade. Kept sharp, the curved edge will cut through grass and soil. It is good for cutting the grass along sidewalks and plant beds. It requires no maintenance except cleaning and sharpening, but it is fairly slow to use.

Rotary Edger:

Small wheels roll along the sidewalk as you push this type of edger along the edge. These wheels drive a set of rotating teeth which cut the grass along the sidewalk. It may be usable around some plant beds, depending on the surface. Although more difficult to clean and sharpen, this hand tool edges much more quickly than the semicircular edger.

Power Edger:

For large edging jobs, nothing is more effective than a power edger. These tools use an electric motor or a gasoline (2- or 4-cycle) engine to rapidly spin a short, metal blade. This blade is run along the edge of the sidewalk or plant bed, where it cuts rapidly through grass or soil. Because the blade spins rapidly, it should be treated with the same respect as any power tool. This rapid spinning also kicks up a great deal of dirt and grass, both onto the sidewalk and the machine itself. Cleaning, sharpening and regular maintenance are required to keep these tools running properly.

Blowers:

Power blowers have become an increasingly popular way to take care of that tedious task at the end of the landscaping job: cleanup. Unsightly clumps of leaves and grass clippings can be easily dispersed or blown together for collection. There are two main types of power blowers: electric or gasoline-powered. Electric power blowers are convenient for limited use areas with readily-available power outlets, such as small home yards. They are relatively quiet, inexpensive, lightweight, and easy to maintain. Rechargeable battery-powered models are far less powerful than corded models, but allow use away from outlets. Gasoline blowers provide portable, powerful blowing ability, and are well suited for areas such as parks and large yards. They are, however, quite loud, heavy and rather expensive. Gas blowers may be hand-held like electric blowers, or so large and powerful that they are mounted on wheels or a backpack.

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Grass Shears:

There are 2 basic types of grass shears: (1) the traditional sheep-shearer design, in which the shears are simply squeezed together and (2) spring-activated shears, with vinyl-covered handles and a vertical squeeze. The latter is more comfortable for extensive trimming. In both types, the blades must be kept sharp to be efficient. Battery-operated shears are also available, but the charge may not last very long.

TOOL CARE AND MAINTENANCE

Depending on use, all tools should be checked regularly for maintenance and safety. Specific maintenance tasks will depend on the tool being used and should be included in the owner's manual. General maintenance tasks include lubrication (wheels, cables and blade), blade sharpening, balancing and cleaning after each use. Keeping tools clean is one of the most important and the most often overlooked ways to increase the life span of a tool. Motorized equipment will require periodic tune-ups, including cleaning the spark plug and air filter and changing the oil. Tools which are not maintained will not operate efficiently and will slow you down. Moreover, they are more likely to break, which can be an expensive and time-consuming loss.

Small Gasoline Engine Primer

Small gasoline engines are so common that most people take them for granted. Many people who regularly use lawn mowers and similar equipment are unfamiliar with engine parts and unaware of the mechanisms by which engines function. An important skill is to help youth be able to identify or recognize the difference between two types: the 2-cycle and the 4-cycle engine.

The small gasoline engine is an internal combustion engine; energy for driving the **crankshaft** is developed inside the engine through the combustion of a fuel-air mixture inside a confined chamber (the **cylinder**). The fuel-air mixture burned in the cylinder is mixed and delivered to the cylinder by the **carburetor**. Two **needle valves** in the carburetor regulate how much liquid fuel is added to the incoming air. This mixture is then delivered to the cylinder. A fuel-air mixture with a high fuel-to-air ratio is said to be **rich** - a mix with a low fuel-to-air ratio is said to be **lean**. The location of the crankshaft, cylinder, carburetor, needle valves and other major parts of a small engine can be found in many publications. Contact a local small engine maintenance shop if you need help and want to go into further detail.

Small engines are identified by the position of the crankshaft and the type of engine (2-stroke per cycle vs. 4-stroke per cycle). The crankshaft may be vertical (as in a push-type mower), horizontal (as in small lawn tractors) or multi-position (as in a chain saw). All crankshafts operate

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at a right angle to the cylinder. A small engine may be identified as a 4-cycle engine by the presence of an **oil sump** and an **oil filler cap or plug**. Moving internal parts are lubricated when the oil stored in the sump is splashed about. The presence of the oil sump prevents a 4-cycle engine from being operated at extreme angles. A 2-cycle engine does not have an oil sump and requires that oil be added to the fuel in order to provide proper lubrication. One advantage of the 2-cycle engine is that it may be operated at any angle. Other differences between a 2-cycle and 4-cycle engine include the method of getting the fuel-air mixture into (and burned gases out of) the combustion chamber and the number of power strokes per crankshaft revolution.

Power is created by the rise and fall of the **piston**, which is located in one wall of the cylinder. A precise series of events (called a **cycle**) is required to supply power to the crankshaft. The events in a cycle are:

1. **Intake:** intake of fuel-air mixture into the cylinder (piston travels towards crankshaft)
2. **Compression:** compression of the fuel-air mixture by the pushing piston (piston travels away from crankshaft)
3. **Power:** ignition of fuel-air mixture by the spark plug and expansion of the heated fuel-air mixture (piston travels towards crankshaft)
4. **Exhaust:** exhaust of burned gases (piston travels away from crankshaft)

In a 4-cycle engine, each of these steps is distinct and separate; 2-cycle engines consolidate the steps of a cycle into **intake and compression** and **power and exhaust**.

The travel of the piston in one direction, either toward or away from the crankshaft, is called a **stroke**. Two strokes of the piston produce one full revolution of the crankshaft. Four strokes per cycle engines complete a cycle during two revolutions of the crankshaft (4 strokes of the piston). Two strokes per cycle engines, on the other hand, complete a cycle in a single revolution of the crankshaft (2 strokes of the piston).

With proper care and regular maintenance, some small engines may run for as many as 1,000 hours. Typically, however, a small engine fails much sooner. By familiarizing yourself with your mower's owner's manual, you can learn what maintenance tasks should be performed to extend the "life" of your mower.

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WORKBOOK OVERVIEW

ON MY OWN: TOOLS OF THE TRADE Workbook page 13, Recordbook pages 4-7

This EQUIPMENT INVENTORY chart will assist youth in determining the tools they already have and those they need. This can be used in conjunction with Recordbook pages 4 through 7.

TOOL CARE AND MAINTENANCE Workbook page 14, Recordbook pages 8 and 9

The CARE AND MAINTENANCE chart provides a checklist for the tasks youth need to perform for keeping lawn care equipment in working order. This can be used in conjunction with Recordbook pages 8 and 9.

SUGGESTED AGE: 16-18 years

OBJECTIVES: Youth will be able to:

- identify basic lawn care tools by name and task.
- identify and inventory tools needed for various lawn care services.

LIFE SKILLS:

- Communication skills.
- Critical thinking skills.
- Decision-making skills.

MATERIALS: ON MY OWN: TOOLS OF THE TRADE Workbook page 13
Copies of TOOL INVENTORY activity sheet for each youth
A LAWN CARE TASKS/SERVICES CARD for each group
A set of TOOL CARDS (or pictures from advertisements, etc.) for each group
Examples of lawn care tools (optional)
Cardboard and glue (optional)
Pens/pencils
Scissors
Old catalogs, newspaper ads, etc.
Copies of JOSE'S EQUIPMENT INVENTORY Recordbook pages 4 and 5 for youth actually going into business
Copies of TOOLS OF THE TRADE: EQUIPMENT INVENTORY Recordbook pages 6 and 7 for youth actually going into business

TIME: 30-45 minutes

SETTING: A comfortable room with tables and chairs.

ADVANCE PREPARATION:
Review BACKGROUND BASICS especially the section on lawn care tools and their uses.
Prepare sets of TOOL CARDS for each group (copy, cut and sort).
Glue Lawn Care Tools/Services Cards to piece of cardboard (for durability) and cut apart.

INTRODUCTION

Let's take a moment to think about some of the tools needed to start your lawn care business. What are tools?

Something used in performing a specific task.

What are some of the tools you use for school? Why do you use them? How do you use them? What kind of tools and equipment are used in lawn care?

See how many they can list!

In this activity, you will identify the various lawn care and business tools, learn how they are used and identify which ones you will need to start your lawn care business.

Do

TAKE TOOLS TO TASK!

- ◆ Divide the youth into small work groups.
- ◆ Provide each group with a **LAWN CARE TASKS/SERVICES CARD** and a set of **TOOL CARDS**.

Note: Several variations are suggested to do this activity depending upon the age and experience of your group:

Sort card sets so that varying cards are missing to allow youth to use critical thinking skills to determine what they need to match the tasks/services.

For older youth, you may choose to have them create their own tool cards using the blank cards provided to write or draw supplies and equipment.

- ◆ Explain to each group that they are to determine the appropriate tools for their lawn care tasks/services.
- ◆ Provide each youth with the **TOOL INVENTORY** activity sheet. Have them estimate the “leasing” cost of the tools they will borrow and, using the old catalogs, newspaper ads, etc., determine the costs of the tools they need.

REFLECT

- ◆ Have each group share their situation and the inventory of tools (equipment and supplies) they identified needing. Ask them to explain how they will use the tool in providing their lawn care services.
- ◆ How did your choice of tools compare to those listed? Have each group share and compare.

What tools were most frequently identified?

What tools were least often identified?

What tools did you NOT think about needing?

It's likely that youth did not think about adding items related to safety/clothing or the business items needed.

- ◆ Which of these tools do you think is most expensive? How does this relate to deciding what type of services you offer?
Point out the value of equipment investments and the need to learn how to take care of equipment and cost of replacement.
- ◆ Which tools do you think are the most dangerous? What considerations will you need to consider in using these tools in conducting your lawn care business?
Introduce the safety concerns they will need to explore before beginning their business and what they will need to learn about protecting themselves and others.
- ◆ Which business items do you think will be necessary for conducting your own business? Relate to later meetings to learn more business skills and practices.

APPLY

First, help youth apply their knowledge to equip their new business enterprise:

- ◆ What lawn maintenance tasks will you need to perform in your area?
- ◆ Which tools will you need to perform those tasks?
- ◆ Use ON MY OWN...TOOLS OF THE TRADE EQUIPMENT INVENTORY on Workbook page 13 and copies of newspaper advertisements, catalogs, etc. to help each youth (or small group) determine their equipment needs and costs if time permits.
- ◆ For those youth who are actually going into business, refer them to Recordbook pages 4 and 5. They can keep their personal records on Recordbook pages 6 and 7.

Second, remind youth to think about how we use tools and equipment in all aspects of our lives, using the following questions:

- ◆ What are some tools you use everyday? What are those tools used for?
- ◆ How do you decide when to use them?
- ◆ How did you learn to use them? (Relate that learning to use equipment properly is often a requirement PRIOR to using any piece of equipment.)
- ◆ Remind youth of the importance of safety in all aspects of lawn care.

SUGGESTIONS FOR ADDITIONAL STUDY:

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Activity 1: Take Tools to Task

Invite a representative from lawn care business to come talk to the group, or go visit their shop. Ask them to address:

- What tools they use most often?
- What tools are used for what task?
- What services do they provide?
- How are the tools maintained?

LAWN CARE TASKS/SERVICES CARD

Jose wants to start a basic mowing business this summer that includes:

1. Mowing, using his family's push mower.
2. Raking, if needed or customers ask for it.
3. Cleaning up walkways and driveways after each job.

What equipment and other tools will he need to conduct his business?

Susan wants to earn some money this summer by mowing her neighbors' yards and doing several odd jobs such as weeding, trimming with grass shears, mulching and clean-up jobs.

All her potential customers have indicated an interest in these tasks/services:

- Mowing
- Trimming grass around trees, walkways and flower beds
- Mulching
- Leaf raking and bagging

What equipment and tools will she need for her work?

Shawn would like to earn some money this summer by offering lawn care services in a nearby neighborhood. Shawn's family lives in an apartment complex and doesn't own a lawn mower since the owners of the complex hire someone to mow the common area.

What options should Shawn think about in starting his business?

1. Convince apartment owner to buy him a mower and let Shawn mow around the apartment complex. The cost of the mower would be deducted from his wages until it was paid off.
2. Secure a "loan" for purchasing a mower.
3. Other options?

What equipment and tools do you think Shawn should invest in?



Tool Cards

LAWN CARE TASKS/SERVICES CARDS

Dimetri lives in a rural community. His family has a large lawn that he has responsibility for mowing. There's no lawn care business in his area although there are a lot of older citizens who could be one of his major "markets". His dad is willing to let him use the family mower to start his own business.

What other resources will Dimetri need to consider?

Marie plans to earn money this summer by weeding, raking, mulching and other similar tasks for friends, relatives and neighbors.

What will she need in order to conduct her business?

TOOL INVENTORY

The chart below lists tools and equipment you will need to consider when starting out.

WHAT YOU NEED:

HOW TO GET IT

BASIC LAWN EQUIPMENT

Borrow/Rent
(cost)

Purchase
(cost)

Lawn Mower _____

Lawn Rake _____

Grass Shears _____

Safety Gas Can _____

BASIC PERSONAL/BUSINESS EQUIPMENT

Safety Glasses _____

Sturdy Work Gloves _____

Heavy Footwear _____

Calendar _____

Receipt Book _____

Recordbook _____

Customer Information Cards _____

CLEAN UP SERVICES

Hose _____

Broom _____

Rake (leaf) _____

Leaf Bags or Trash Can _____

Blower _____

Electrical cord (if needed) _____

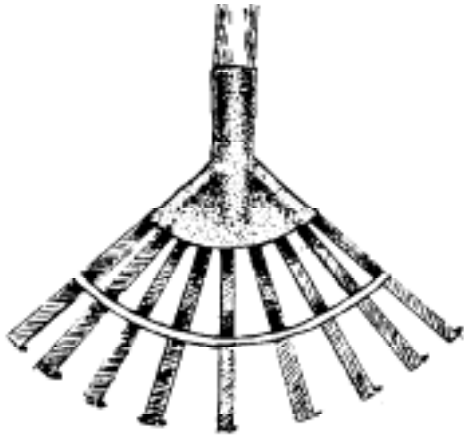
SPECIAL SERVICES:Trimming/Edging

Grass line trimmers _____

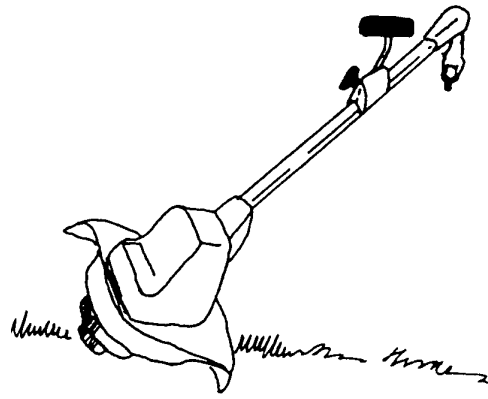
Edger _____



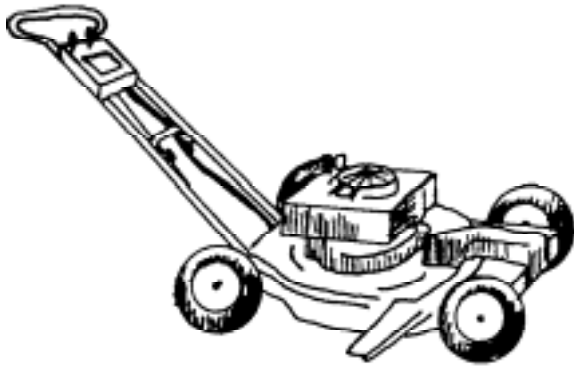
Tool Cards



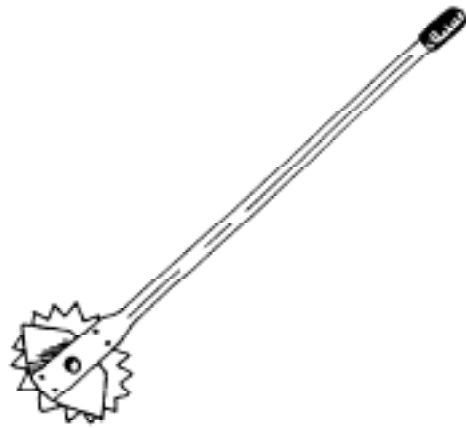
LAWN RAKE



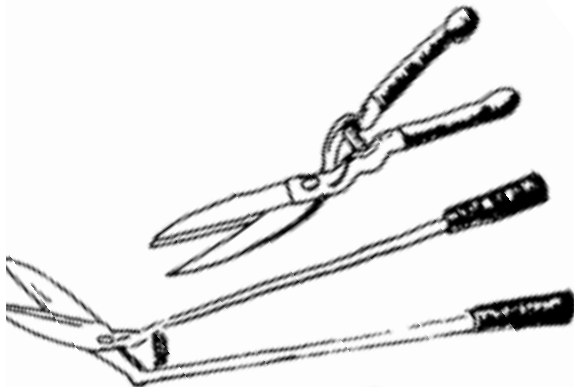
ELECTRIC LINE TRIMMER



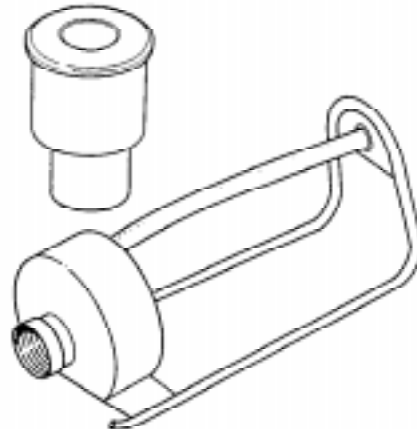
ROTARY LAWN MOWER



MANUAL EDGER

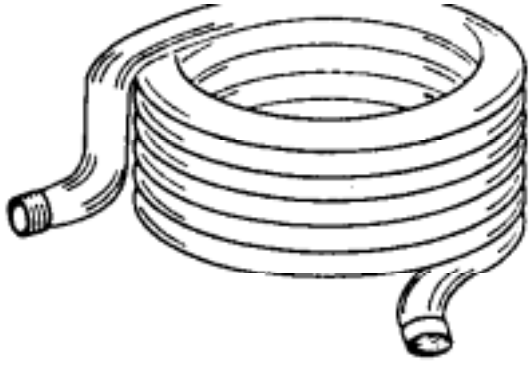


GRASS SHEARS

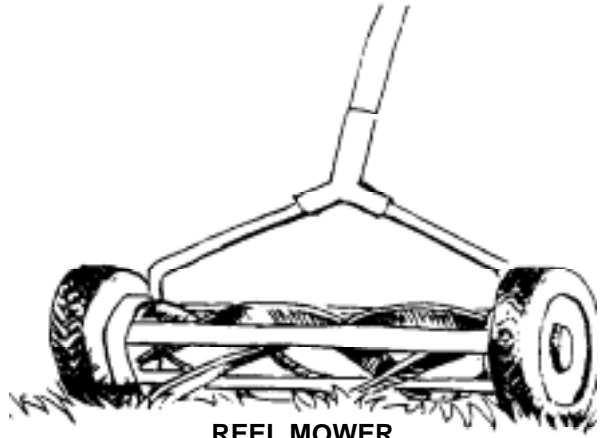


SPRINKLER/IRRIGATION

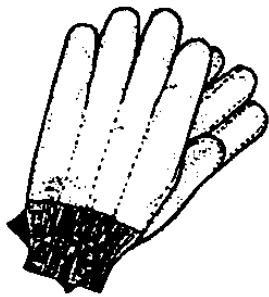
Tool Cards



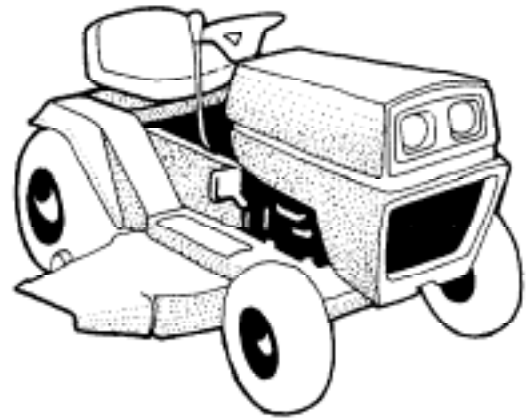
HOSE



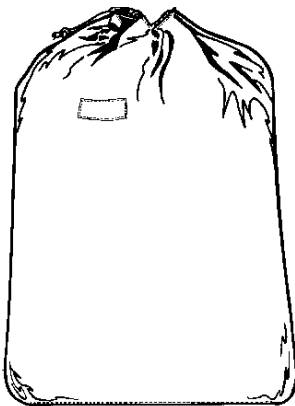
REEL MOWER



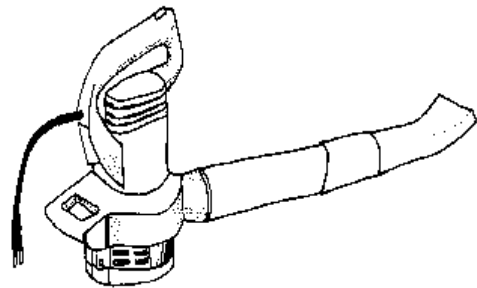
WORK GLOVES



RIDING MOWER

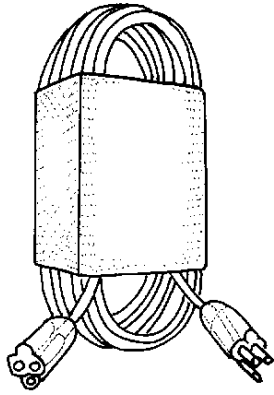


TRASH BAG



ELECTRIC BLOWER

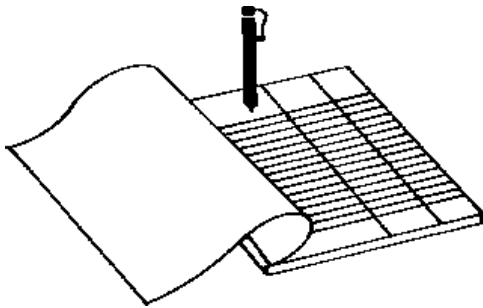
Tool Cards



OUTDOOR ELECTRICAL CORD



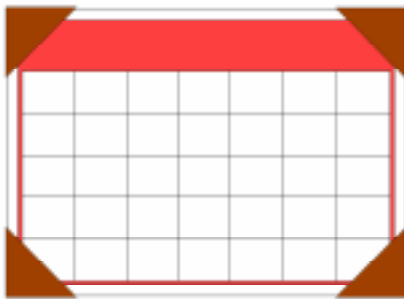
GAS CAN



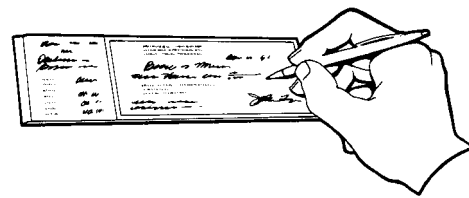
LEDGER



BROOM



CALENDAR



RECEIPT BOOK

Tool Cards

<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>

SUGGESTED AGE: 12-18 years

OBJECTIVES: Youth will be able to:

- identify the distinguishing characteristics of the 3 kinds of lawn mowers.
- identify the basic parts of a rotary mower.
- make decisions on type of mower to select for appropriate lawn maintenance.

LIFE SKILLS: ○ Decision-making skills.

- Evaluation skills.

MATERIALS: BEWARE OF MOWER! Workbook activity page 8
Copies of MOWER POWER...WHICH ONE FOR WHAT JOB? handout for each youth
Copies of MOWER MANIA Score sheet for each youth

Cardboard

Scissors

3 display or cork boards

Hook and Loop Tape (Velcro™) or thumbtacks/double-sided tape

Stop watch or timer

Pens/pencils

Glue

STATION 1: Parts A & B-Types of Mowers

STATION 2: Parts A & B-Mower Parts

STATION 3: Parts A & B-Mower Match

TIME: 30-45 minutes

SETTING: A room with tables large enough to hold all stations (see below).

ADVANCE PREPARATION:

Make copies of Skill-A-Thon cards.

Cut out cards and glue to pieces of cardboard for stiffness.

Affix Hook and Loop tape to the backs of each. You can also use thumbtacks or double sided tape.

To prepare room for Skill-A-Thon:

Place display boards around room to make 3 stations.

Post Part A from each station on the display board with places for corresponding answers from Part B.

Place Part B (corresponding answers) in a pile by each station.

You can add stations by creating your own situations using tool cards from previous lessons or from magazine/catalog cut-outs.

Post a helper at each station to score youth, so you can stay free to keep time.

INTRODUCTION

Suppose your neighbor asks you to dig a hole in his backyard. Do you want to use a garden spade, a shovel or a backhoe? Before you can decide which tool to use, you have to know 2 things: the size of the hole your neighbor wants and how the tools work.

Before you can choose your tools, you have to know about the project ahead of you. The type of mower you use depends on the grass species' proper mowing height, grass height before you begin mowing and the size of the lawn.

Today's activities will help you learn how different mowers work, which ones are better for what types of jobs and then you can decide which one is best for you, now or in the future.

Do

Catch MOWER MANIA

- ◆ Have youth complete BEWARE OF MOWER! Workbook activity page 8.
- ◆ Review the various types of mowers that you have previously seen and discussed. Hand out and review MOWER POWER...WHICH ONE FOR WHAT JOB? with youth.
- ◆ Introduce and explain to youth the MOWER MANIA Skill-A-Thon Activity.
 - Choose 3 individuals or pairs to start, 1 at each station.
 - Have youth match Part B to Part A in a predetermined amount of time (you decide based on youths' experience).
 - When time is called, each youth stops.
 - Tally up scores and record.
 - EVERYBODY, SWITCH!!!

Note: You can add additional stations and situations. Space has been left on the score sheet. Use other lawn care equipment like hoses, sprinklers, grass shears, blowers, line trimmers and edgers prepared with advertisement cut-outs and situations written on index cards.

REFLECT

- ◆ How well did you do? Review accurate results with the group.
- ◆ What did you learn from this activity? Did the Skill-A-Thon help you test your knowledge?

APPLY

- ◆ Why is it important to know the different types of mowers?
- ◆ Why is it important to know the different parts of a mower?
- ◆ Why is it important to match the equipment to different consumer needs?

SKILL-A-THON Answers

Station 1: Types of Mowers

This mower uses several blades. While 1 bedknife remains still, the other 5 or 6 blades rotate to cut the grass. This mower provides a close, smooth cut that is best used on fine-textured (thin bladed) grasses.

answer: reel mower

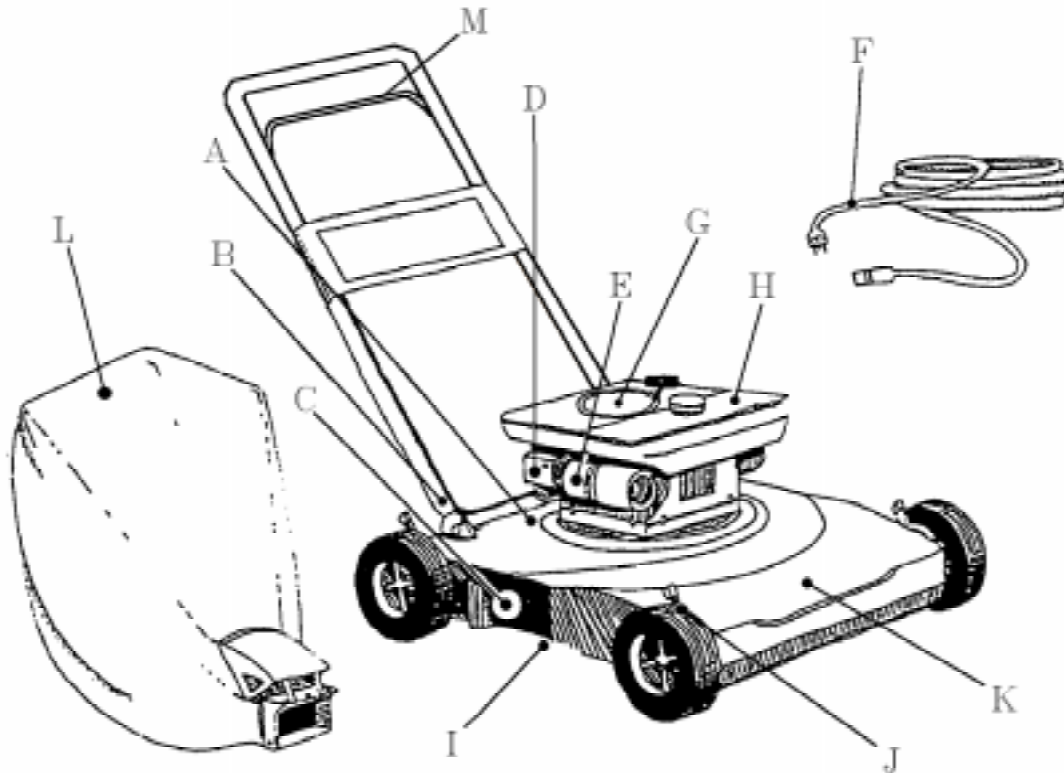
This type of mower uses only 1 blade that rotates like a ceiling fan. The blade is sharp at both ends to cut the grass. Grass clippings are thrown out or caught in a bag.

answer: rotary mower

This mower uses one or more blades that rotate like a ceiling fan and cut the grass and keep the clippings suspended under the mower until they are cut several times.

answer: mulching mower

SKILL-A-THON Answers
Station 2: Mower Parts



- A) Rear
- B) Handle
- C) Discharge chute
- D) Spark plug
- E) Exhaust
- F) Electric cord
- G) Pull cord
- H) Fuel tank and lines
- I) Blade
- J) Cutting height adjustments
- K) Mowing deck
- L) Grass bag
- M) Safety Handle

SKILL-A-THON Answers

Station 3: Mower Match

The correct answer is not as important as the process of finding the answer. Take time to discuss answers. The answers listed here may be debated. More information about youth, distance to travel to a job site, transportation for equipment, etc. are really needed to make the best choice.

<p>1</p>	<p>Jerome is 16 years old and lives in a very rural community that has homes with very large (1 acre, sometimes more) lawns. Many of the community residents are senior citizens that Jerome has as regular customers throughout the year. He's saving for a new mower that will reduce his time spent on each job and allow him to take on a few more customers. Which mower type should he consider? Why? answer: lawn tractor</p>
<p>2</p>	<p>Shannon only mows lawns during the summer vacation in her neighborhood. The lawns are average size (about ¼ acre lots). Her parents are helping her buy a new mower this spring for her use-they have set aside \$200 to help her out. Which mower type should she consider? Why? answer: gasoline powered mower</p>
<p>3</p>	<p>Jason lives in south Florida where many of the lawns are large and flat. He mows a lot of lawns since the growing season is long. He works full time during his school vacations and tries to mow at least 2 lawns in the afternoons during the school week when needed. He wants to invest in a new mower that best meets his needs. He has \$1200 to invest. Which mower type would be best? Why? answer: riding mower</p>
<p>4</p>	<p>Bryan mows lawns in a neighborhood of small attached homes that have only small front lawn areas. He has saved \$450 to buy a mower. He walks to all his customers' homes in his neighborhood and wants to eliminate using gasoline. Which mower should he consider and why? answer: battery-powered electric mower</p>
<p>5</p>	<p>Yolanda mows lawns in a neighborhood that no longer supports pickup of curbside lawn debris. Most owners in this neighborhood think compost attracts rodents and therefore do not bag or compost grass clippings. Which mower would save Yolanda time, money and energy? Why? answer: self-propelled gas mulching mower</p>
<p>6</p>	<p>Stacy wants to buy a new mower for her lawn care business this season. Her old mower was hard to start, sometimes very difficult to push over the lush, somewhat hilly lawns of her customers. Which mower should Stacy consider to meet her needs? answer: self-propelled gas mower with an electric starter</p>

Mower Power

Which one for what job?

Description	Best for lawns	Price
<p>ELECTRIC-powered mowers use an electric motor to power the spinning blade. You supply the pushing power!</p> <p>Variations: Battery-powered electric mowers do away with the electric cord. A full charge can cut about ¼ acre.</p>	¼ acre	\$120-\$300 Corded models \$350-\$500 Battery
<p>SOLAR-powered mowers are now available. Disadvantage: Slower/less effective in tall grass than gas-powered mowers.</p>		\$2000
<p>GASOLINE-powered push-type mowers have a 1-cylinder, 4-cycle engine. However, a few models have a 2-cycle engine which requires a gasoline/oil fuel mixture.</p> <p>Variations: Oversized wheels for rough terrain or mulching models. Electric start option eliminates tugging a rope starter.</p>	flat lawns to ½ acre	\$125-\$600
<p>SELF-PROPELLED mowers have engines that power the front or rear wheels so less person - power is needed for pushing! Easier to maneuver than riding mowers for the average lawn.</p>	½ acre hilly	\$200-\$800
<p>RIDING mowers typically use an 8-10 hp engine to power the wheels and a 30" blade.</p>	½ acre or larger	\$1000-\$2000
<p>LAWN TRACTORS use a 12-14 hp engine, mounted in front, to power the wheels and a 38-45" cutting deck with 2-3 blades.</p> <p>Variations: Larger version known as "garden tractors."</p>	1 acre or larger	\$900-\$4000 \$2000-\$5000+

Source: *Consumer Reports* magazine



MOWER MANIA

SKILL-A-THON

Score Sheet

NAME: _____

<u>Station</u>		<u>Possible Points</u>	<u>Your Score</u>
1	Types of Mowers	3	_____
2	Mower Parts	13	_____
3	Mower Match	6	_____
4			_____
5			_____
6			_____
	Total		=====



MOWER MANIA

SKILL-A-THON

STATION 1: Part A Types of Mowers

This mower uses several blades. While 1 blade remains still, the other 5 or 6 blades rotate to cut the grass. This mower provides a close, smooth cut that is best used on fine-textured (thin bladed) grasses.



Mowing for Money

This type of mower uses only 1 blade that rotates like a ceiling fan. The blade is sharp at both ends to cut the grass. Grass clippings are thrown out or caught in a bag.



Mowing for Money

This mower uses 1 or more blades that rotate like a ceiling fan and cut the grass and keep the clippings suspended under the mower until they are cut several times.

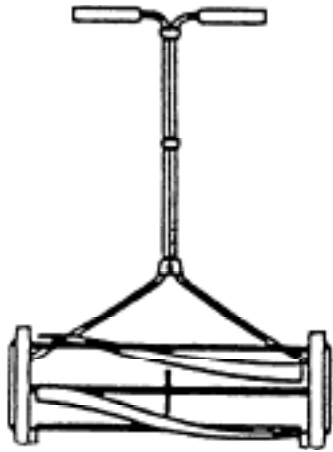


Mowing for Money

MOWER MANIA
SKILL-A-THON
STATION 1: Part B
Types of Mowers



Mowing for Money



REEL MOWER



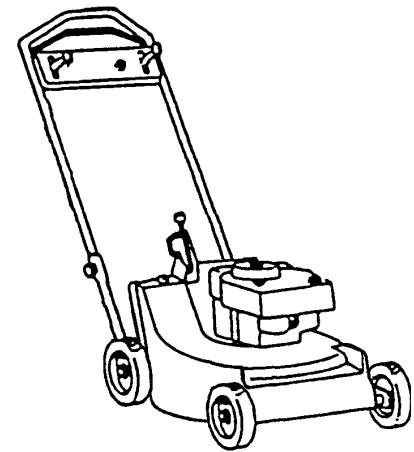
Mowing for Money



ROTARY MOWER



Mowing for Money



MULCHING MOWER

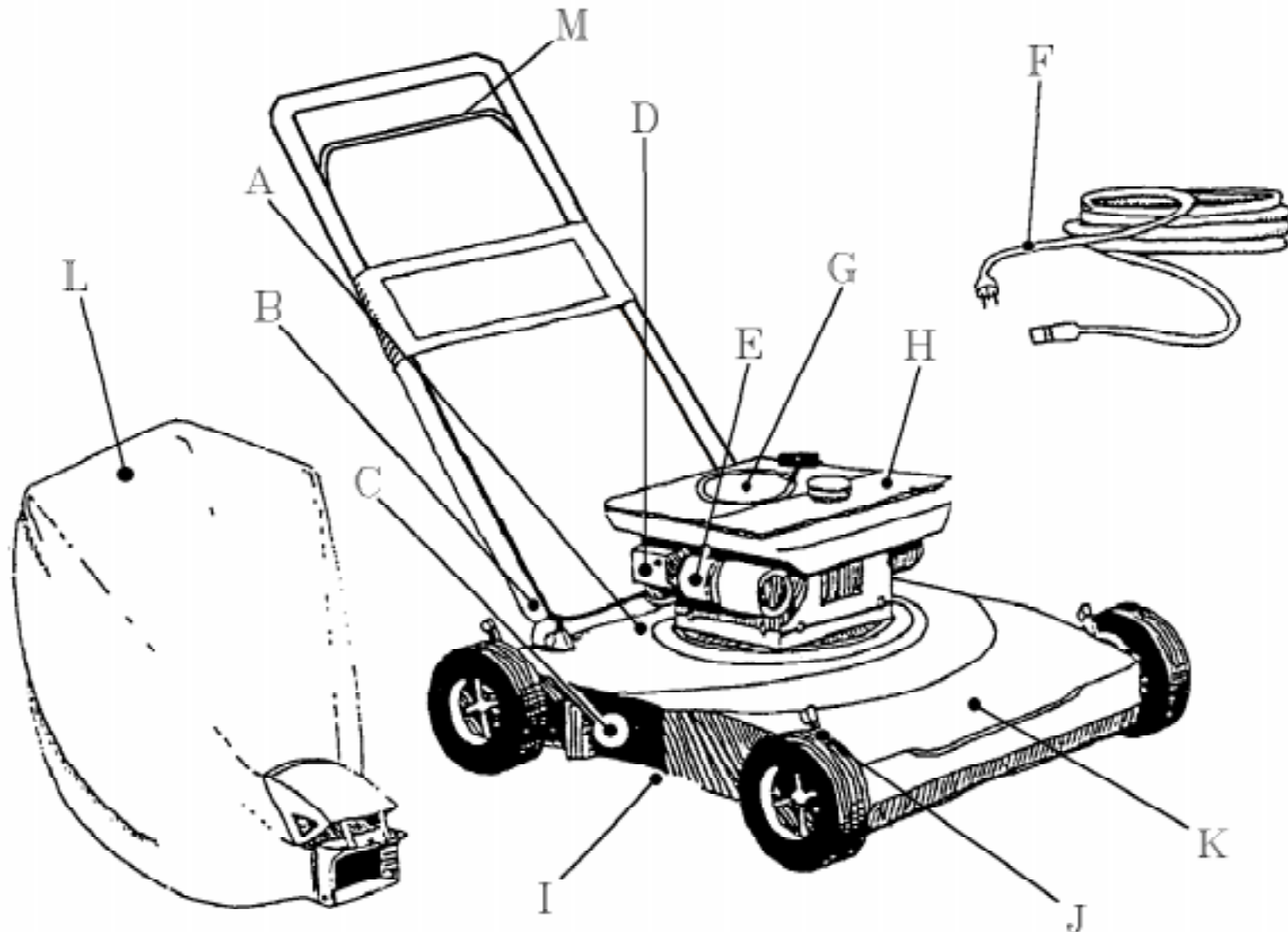


Mowing for Money

MOWER MANIA

SKILL-A-THON

STATION 2: Part A MOWER PARTS



MOWER MANIA
SKILL-A-THON

STATION 2: Part B
MOWER PARTS

Rear	Pull Cord
Handle	Fuel Tank & Lines
Discharge Chute	Blade
Spark Plug	Cutting Height Adjustments
Exhaust	Mowing Deck
Electric Cord	Grass Bag
Safety Handle	



MOWER MANIA

SKILL-A-THON

STATION 3: Part A

MOWER MATCH

1

Jerome is 16 years old and lives in a very rural community that has homes with very large (1 acre, sometimes more) lawns. Many of the community residents are senior citizens that Jerome has as regular customers throughout the year. He's saving for a new mower that will reduce his time spent on each job and allow him to take on a few more customers.

Which mower type should he consider? Why?

2

Shannon only mows lawns during the summer vacation in her neighborhood. The lawns are average size (about $\frac{1}{4}$ acre lots). Her parents are helping her buy a new mower this spring for her use - they have set aside \$200 to help her out.

Which mower type should she consider? Why?

3

Jason lives in south Florida where many of the lawns are large and flat. He mows a lot of lawns since the growing season is long. He works full time during his school vacations and tries to mow at least 2 lawns in the afternoons during the school week when needed.

He wants to invest in a new mower that best meets his needs. He has \$1200 to invest. Which mower type would be best? Why?



MOWER MANIA

SKILL-A-THON

STATION 3: Part A

MOWER MATCH

4

Bryan mows lawns in a neighborhood of small attached homes that have only small front lawn areas. He has saved \$450 to buy a mower. He walks to all his customers' homes in his neighborhood and wants to eliminate using gasoline.

Which mower should he consider and why?

5

Yolanda mows lawns in a neighborhood that no longer supports pickup of curbside lawn debris. Most owners in this neighborhood think compost attracts rodents and therefore do not bag or compost grass clippings.

Which mower would save Yolanda time, money and energy? Why?

6

Stacy wants to buy a new mower for her lawn care business this season. Her old mower was hard to start, sometimes very difficult to push over the lush, somewhat hilly lawns of her customers.

Which mower should Stacy consider to meet her needs?



MOWER MANIA
SKILL-A-THON

STATION 3: Part B
TYPES OF MOWER CARDS

ELECTRIC-POWERED MOWER

SOLAR-POWERED MOWER

GASOLINE-POWERED MOWER

SELF-PROPELLED GAS MULCHING MOWER

RIDING MOWER

LAWN TRACTOR

BATTERY-POWERED ELECTRIC MOWER

SELF-PROPELLED GAS MOWER
with ELECTRIC STARTER



SUGGESTED AGE: 12-18 years

OBJECTIVES: Youth will be able to:

- identify current prices of common lawn care tools.
- determine what lawn care equipment they have or need.

LIFE SKILLS: ○ Decision-making and comparison shopping skills.
○ Basic research and information collection skills.

MATERIALS: ON MY OWN: TOOLS OF THE TRADE Workbook page 13
Copies of TOOL MYSTERY CHART activity sheet (one per group)
Pens/pencils
Telephones
Phone books
Newspaper ads
Copies of TOOLS OF THE TRADE EQUIPMENT INVENTORY Recordbook pages 6 and 7 for youth actually going into business

TIME: 30-45 minutes

SETTING: Comfortable room with tables and chairs.

SUGGESTIONS:
Have youth work in teams of 2 to complete the project. This is also a good independent project youth can do on their own at home and bring the results to the group meeting for sharing, comparing and analyzing.

VARIATIONS: If youth have not already done so, have them complete the equipment inventory chart of ON MY OWN: TOOLS OF THE TRADE Workbook page 13. Youth 16+ can complete Recordbook pages 6-7 when they make their actual purchases. Youth can refer to Jose's example on Recordbook pages 4-5.

INTRODUCTION

What is the price of an average gasoline-powered, push-type lawn mower? Can you afford one? Which types are the most expensive? Which are least expensive? How much might it cost to operate and maintain it?

As consumers, we learn the value of price, quality and service in the products we buy. Being a smart consumer is like being a detective in a mystery case. In TOOL MYSTERY, we will learn the range of prices for mowers and other equipment as well as other factors that influence owning and operating a lawn mowing business.

Do

Play TOOL MYSTERY

- ◆ Split youth into teams of 2 (1 group per type of equipment); each group will investigate one type of equipment. If more than 6 youth attend, duplicate more of the TOOL MYSTERY CHARTS.
- ◆ Pretend you are a homeowner and want to find out the cost of various lawn care equipment.
- ◆ Think of the questions you want to ask store clerks before you call. Write them down so that you will be sure to ask the same questions and can later compare one response to another.

Variations: Use weekly newspaper ads to gather information for initial comparison shopping and then take a store field trip to investigate equipment in better detail. Newspaper ads will help youth identify varying characteristics before making phone calls.

Choose other equipment items that youth may be needing to purchase immediately as an alternative to mowers.

- ◆ Use the Yellow Pages in the phone book as your first source of information.
- ◆ Call different stores in town to get prices or estimates.
- ◆ Have all youth groups discuss their findings and compare the prices, characteristics, warranty or services offered. (Look at recent issues of magazines such as *Consumer Reports* for comparisons.)

Note: Warranty information will have to be gathered during store visits where written documentation can be reviewed.

REFLECT

- ◆ Which of the items we discussed cost the most? Which cost the least?
- ◆ Is the cheapest item to buy going to be the cheapest to own and operate?
- ◆ What effect on price did different warranties and guarantees have? Did they affect the choices you made?
- ◆ Did the prices surprise you? Which was the most surprising?

APPLY

- ◆ What do you think you will need to buy to operate your lawn mowing business?
- ◆ How much will it cost you to get started? Do you have enough money to get the equipment you will need and to maintain it?
- ◆ If not, where can you get the equipment and supplies you need?
- ◆ How could you manage your money differently to use fewer of your resources?
 - Look for good prices or sales, compare prices, look in the classified advertisements. Consider purchasing used equipment.**
- ◆ What should you look for in shopping for lawn care equipment?

SUGGESTIONS FOR ADDITIONAL STUDY

Invite a lawn care service representative and/or a lawn care equipment sales representative to speak to your group. Have youth make up a list of questions to ask ahead of time.

TOOL MYSTERY CHART

Group 1

Type of Lawn Mower	Characteristics	Warranty/ Guarantee	Price



TOOL MYSTERY CHART

Group 2

Type of Lawn Care Tool	Characteristics	Warranty/ Guarantee	Price

TOOL MYSTERY CHART

Group 3

Type of Sprinkler	Characteristics	Warranty/ Guarantee	Price

SUGGESTED AGE: 12-18 years

OBJECTIVES: Youth will be able to:

- read and understand the importance of owner's manuals.
- identify the important aspects of tool use, maintenance and repair which should be included in a manual.

LIFE SKILLS: ○ Creative writing skills.

MATERIALS: TOOL CARE AND MAINTENANCE Workbook page 14
LAWN CARE TOOLS LIST
Small container (hat, box, etc.)
As many owner's manuals as you can find (for anything)
Easel pad and markers
Pens/pencils
Markers
Crayons
Scissors
Paper
Copies of TOOL CARE AND MAINTENANCE Recordbook page 9 for those youth actually going into business

TIME: 30-60 minutes

SETTING: Comfortable room with tables and chairs.

ADVANCE PREPARATION:
Ask youth to bring in owner's manuals from home (lawn tools would be best, but not essential). Review list of LAWN CARE TOOLS and choose appropriate ones for your group. Cut out and place in small container for youth to draw from.

VARIATION: For 16+, transfer their actual information to copies of TOOL CARE AND MAINTENANCE CHART Recordbook page 9. See Jose's example on Recordbook page 8.

INTRODUCTION

When we receive a new tool or other piece of equipment, how do we learn how to use or operate it?

Observe others, ask adults, read instructions.

What kind of information do we need to know in order to use a new tool/piece of equipment?

Make a list.

Do

Use your IMAGINATION!

- ◆ Allow youth to browse through available owner's manuals.
- ◆ What kind of information is included in an owner's manual?
- ◆ Make a list of the information that should be included in their manuals.
- ◆ Have individual youth or teams choose one of the LAWN CARE TOOLS and make an owner's manual, including all of the important information necessary to explain how to use the tool to others. (They can even make up their own tool and describe how to use it.)
- ◆ Share ideas from everyone with all youth.

REFLECT

- ◆ Are owner's manuals important? Why?
Explain how to use things properly, save time, describe maintenance tasks, explain what to do in case of emergency
- ◆ Do all the manuals include the same information? What types of information do they include?
Compare and contrast each individual/group's manual for similar/different types of information.
- ◆ Which of the example manuals brought in are the best (vote)? Why?
- ◆ Which is the least helpful? Why?
- ◆ What criteria did you use to judge the manuals? What makes a good manual?

APPLY

- ◆ Using your mower's owner's manual, make a maintenance chart to follow on Workbook page 14.
- ◆ Check out the owner's manuals during your next comparison shopping for equipment.
- ◆ Make an owner's manual for yourself or a pet! What information should be included? How should you be maintained and repaired? Any safety tips, special do's and don'ts?

LAWN CARE TOOLS LIST

Lawn Rake	Electric Line Trimmer
Electric Edger	Electric Mower
Rotary Mower	Riding Mower
Grass Shears	Manual Edger
Water Hose	Gas Line Trimmer
Reel Mower	Self-Propelled Gas Mower

SUGGESTED AGE: 12-18 years

OBJECTIVES: Youth will be able to:
○ perform a basic lawn mower tune-up.

LIFE SKILLS: ○ Follow written or verbal instructions.
○ Develop mechanical dexterity.
○ Learn the value of regular preventive maintenance.

MATERIALS: TOOL CARE AND MAINTENANCE Workbook page 14
Lawn mowers with owner's manuals (may be provided or have youth bring their own)
Combination wrenches or socket set
Spark plug socket
Spark plug gap wire feeler gauge
Screwdrivers
Wire brush
Motor oil appropriate for example mower (check owner's manual for specific oil type)
Kerosene (or liquid detergent and water)
Clean, dry rags
Hand cleaner
Pens/pencils
Scrap paper
Copies of TOOL CARE AND MAINTENANCE CHART Recordbook page 9 for those youth actually going into business

TIME: 60 minutes

SETTING: A large area (preferably a "shop" or garage environment) with room to accommodate mowers for tune-ups.

ADVANCE PREPARATION:
Review BACKGROUND BASICS and read the owner's manual for each of the mowers you have available. Tune-up tasks will differ depending on the make and model of each mower.

VARIATION: For youth 16+, transfer their actual information to copies of TOOL CARE AND MAINTENANCE CHART Recordbook page 9. See Jose's example on Recordbook page 8.

INTRODUCTION

What is a tune-up?

Routine maintenance which, when done regularly and correctly, can help prevent the formation of serious problems.

How do we tune up a lawn mower?

Tune-ups involve thorough cleaning of the air filter, changing engine oil, cleaning spark plug and resetting plug gap and cleaning mower's cooling grill (vents).

How often should a tune-up be performed?

Varies. For example, Briggs and Stratton recommends performing a tune-up as part of each week's work.

In this activity, we will practice tuning up lawn mowers and become more familiar with routine lawn mower maintenance.

Do

TUNE IN! and tune up a mower

- ◆ Divide youths into groups of 2 or 3. Give each group a mower (with blade removed) and an owner's manual.
- ◆ Demonstrate a maintenance task and have youth perform the task on their mower; repeat for each additional task. Because each task may be slightly different for each mower, have groups refer to the owner's manual for the mower they are working on **before** performing any maintenance tasks.
- ◆ Have youth transfer information for their mower onto Workbook page 14 and research the cost of any supplies by calling local companies.
- ◆ Youth 16+ should use their lawn mower owner's manual to complete Recordbook page 9 (TOOL CARE AND MAINTENANCE CHART). They can refer to Jose's example on Recordbook page 8 for ideas. They can also research prices by calling local companies.

REFLECT

- ◆ Why is it important to tune up a lawn mower regularly?
To keep the mower running well and prevent serious problems and repairs.
- ◆ What tasks were included in the tune-up?
Cleaning the air filter, changing engine oil, cleaning spark plug and resetting plug gap and cleaning the mower's protective grill.

- ◆ What was the most difficult task? What was the easiest?
- ◆ Do you think you could perform a tune up on your own?
- ◆ How often or when should you perform a tune-up?
Many manufacturers recommend tune-ups after every 20-25 hours of operation for most tools. Some manufacturers recommend having air filters and oil cleaned/changed after 20 hours of normal operation.

APPLY

- ◆ What other machines get tune ups?
Cars, trucks, motorcycles, bikes
- ◆ Do people get “tune-ups?”
Yes, routine care such as dental cleaning and physical examinations help find and prevent more serious problems
- ◆ What do you do to “tune up” and feel better?